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Cruising at Different Speeds: Similarities and Divergences between the German and the French Economies

G. Cléaud, F. de Castro Fernández, J. Durán Laguna, L. Granelli, M. Hallet, A. Jaubertie, C. Maravall Rodriguez, D. Ognyanova, B. Palvolgyi, T. Tsalinski, K.-Y. Weißschädel and J. Ziemendorff

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Cruising at Different Speeds:

Similarities and Divergences between the German and the French Economies

Guillaume Cléaud, Francisco de Castro Fernández, Jorge Durán Laguna, Lucia Granelli, Martin Hallet, Anne Jaubertie, Carlos Maravall Rodriguez, Diana Ognyanova, Balazs Palvolgyi, Tsvetan Tsalinski, Kai-Young Weißschädel and Johannes Ziemendorff

Abstract

GDP growth rates in France and Germany have differed significantly since the crisis. As a result, per-capita income and employment trends have diverged markedly. This Discussion Paper assesses a number of possible explanatory factors behind these developments and suggests, in particular, that differences in labour-market institutions appear critical. Social partners play a key role in both countries, but the application of collective bargaining at the firm level allows for more flexibility in Germany. However, the higher resilience and flexibility of the German labour market comes at the price of higher market-income inequality and poverty across individuals and age groups. There are also differences in economic structure, especially in the public sector, but to some extent also in the private sector, while nominal divergences appear less relevant in explaining recent income divergences. Although Germany's growth model has allowed it to benefit from the strong post-crisis recovery in the global economy, especially among emerging economies – reflecting Germany's favourable composition of products and export markets – it also makes it more exposed to swings in the global cycle. France's growth model, by contrast, has relied more on domestic demand. Together with a larger public sector, this has helped to smoothen economic cycles, but has also implied some losses in cost competitiveness and a significantly higher tax burden.

JEL Classification: E0, E2, E6, H0, H2, H6, J3, J5, O3, O4, O5

Keywords: Cruising at Different Speeds: Similarities and divergences between the German and the French economies, income-per-capita differentials, productivity.

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"Stylised facts regarding differences in per capita income between Germany and France" by Guillaume Cléaud and Tsvetan Tsalinski

"A comparative view on similarities and divergences between the German and the French economies: the long-term picture" by Martin Hallet

"Labour Market Institutions in Germany and France – How do they compare?" by Lucia Granelli and Johannes Ziemendorff

"Social and regional outcomes in Germany and France" by Francisco de Castro Fernández, Lucia Granelli, Anne Jaubertie, Balazs Palvolgyi, Johannes Ziemendorff

"Nominal divergences between Germany and France" by Jorge Durán Laguna

"Comparison of Public Finances between France and Germany" by Francisco de Castro Fernández and Kai-Young Weißschädel

"State-owned enterprises in Germany and France" by Carlos Maravall Rodriguez

"Productivity developments in Germany and France" by Diana Ognyanova

"Business environment, corporate dynamics, and research and innovation in Germany and France" by Diana Ognyanova

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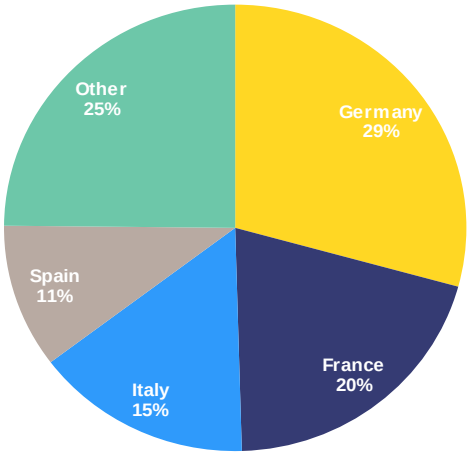
EXECUTIVE SUMMARY

GDP growth rates in France and Germany have differed significantly since the crisis. As a result, per-capita income and employment trends have diverged markedly. In general, differences in the key features of economies can result in important differences in their resilience to shocks and in their ability to swiftly recover from them. They can also contribute to the build-up of macroeconomic imbalances, thereby increasing the risks of negative spill-overs and costly adjustments at a later stage. This could complicate the coordination of economic policies between the two largest economies in the euro area and gives rise to the question of what can be done to enhance convergence and resilience in order to sustain a high level of social welfare in the long term.

Graph 0.1: **Share in euro area GDP, 2018**



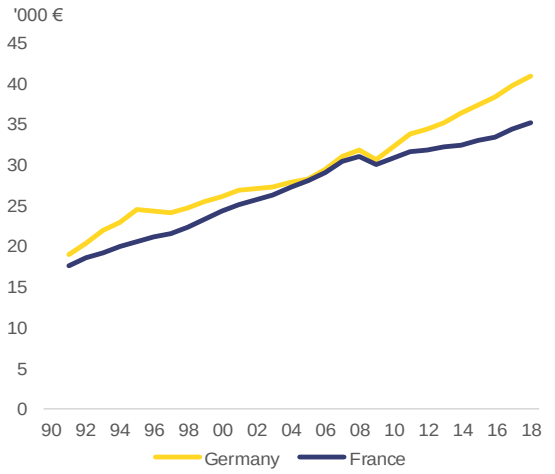
Source: Ameco, European Commission.

It is therefore important to identify and understand the main characteristics, similarities and differences of the French and German economies, which together account for almost half of the euro area's GDP (Graph 0.1**).** They are, albeit to different degrees, both highly complex, diversified, technologically advanced and integrated in global value chains, whilst having strong spillovers between them and with other EU Member States. However, the German and French economies showed different degrees of resilience and adaptability to the global financial crisis. For this reason, it is relevant to assess which aspects of their economies played the most important role in explaining the apparent divergences in economic developments over the last ten years.

In this perspective, this Discussion Paper will assess a number of possible explanatory factors. It starts out by presenting some stylised facts on economic developments in Germany and France. Subsequent sections will explore different explanatory approaches for this recent episode of income divergence (i.e. economic divergence) between them. Since the start of Economic and Monetary Union (EMU), much of the debate in Europe has centred around nominal convergence. This paper will first assess the extent to which nominal differences and the underlying macroeconomic policies may explain some of the divergences in income developments. It then turns to the functioning of labour markets to review the impact of labour-market institutions and social outcomes. Next, it discusses structural convergence further, providing a comparative view of the economic structures, including the role of the public sector, private-sector developments and specialisations, as well as the business environment. Finally, the question is raised whether this divergence is likely to continue.

Income and labour-market developments diverged since the crisis…

Graph 0.2: **GDP per capita in current prices, 1991-2018**



Note: 1991-1998 in ECU

Source: Ameco, European Commission.

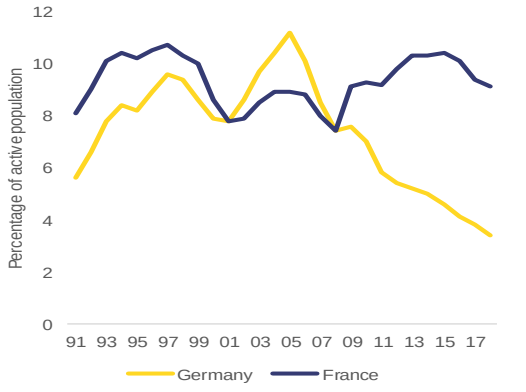
Income and labour-market developments diverged since the crisis…

Income per capita started to diverge between Germany and France after the global financial crisis. The German economy initially experienced

a much sharper fall, but also recovered much faster than France, after having developed more or less similarly between 1991 and 2008. In current prices, between 2005 and 2018, the difference in GDP per head increased from about EUR 330 to almost EUR 5 800 per year (Graph 0.2). These differences cannot be explained by labour productivity which, measured in GDP terms at current prices per hour worked, is no longer significantly different. Average working time is higher in France due to a higher incidence of part-time jobs in Germany. The main difference lies rather in the performance of the labour market.

In contrast to France, there was a rise in the employment rate and a sizeable fall in unemployment in Germany. The unemployment rate was identical in 2008 (at 7.8% of the labour force) in the two countries. While it increased until 2016 to over 10% in France, slowly declining thereafter to about 9%, it fell continuously in Germany to just over 3% at the end of 2018 (see Graph 0.3). Differences are even more pronounced for young and long-term unemployed. The employment rate was still similar in 2005 (at around 70% of population aged 20 to 64 years) and has remained broadly stable in France, while it increased to almost 80% in Germany. The higher labour-market participation and employment rates suggest that the German labour market has significantly more outreach.

Graph 0.3: **Unemployment rate 1991-2018**



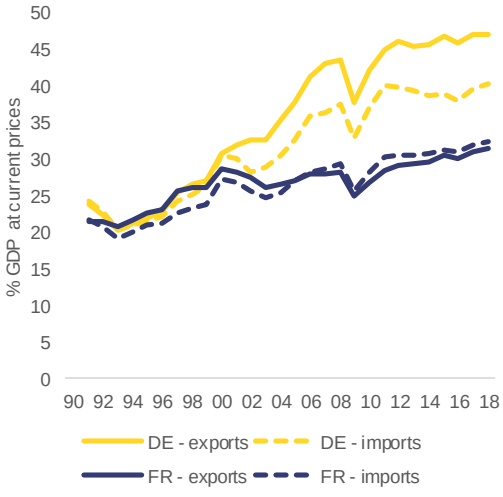
Source: Ameco, European Commission.

…but this needs to be seen in a longer-term perspective

Germany and France have always seen episodes when one country performed better than the other in terms of income and per-capita income developments. France had been catching up to West Germany between 1960 and 1974, but this process stalled until German unification had a statistical effect on the relative income levels. Then, after a period of buoyant growth in Germany in the years following unification, France regained economic ground between 1995 and the mid-2000s. Thereafter, however, France has been falling behind and incomes have risen relatively faster in Germany.

The two economies have fundamentally different growth models that have evolved gradually over time. Germany's post-war economic growth model is strongly based on exports, particularly of manufactured goods (Graph 0.4). In addition to substantial non-price factors, Germany has regularly made price-competiveness gains through relatively low inflation. This model was briefly interrupted by unification, which required higher investment and caused higher inflation. In contrast, GDP growth in France has traditionally relied on domestic demand, driven by its sizeable public sector and a lower household saving rate. In addition, France's large public sector has helped to smoothen economic cycles.

Graph 0.4: **Exports and imports of goods and services, 1991-2018**



Source: Ameco, European Commission.

These traditional growth models rely strongly on different strategies adopted by social partners and the corporate sectors. In Germany,

the private sector and social partners had to adapt to the regular appreciation of the Deutsche Mark (e.g. through wage moderation, specialisation in less price-elastic products, pricing strategies, and innovation). In France, and some other euro-area Member States (e.g. Italy and Spain), by contrast, social partners seemed to have depended on occasional deprecations to improve the competitiveness. In the run-up to the adoption of the euro, and notably thereafter, these 'business models' needed to adapt to the absence of nominal exchange-rate changes within the euro area, which the different countries have achieved, albeit to varying degrees.

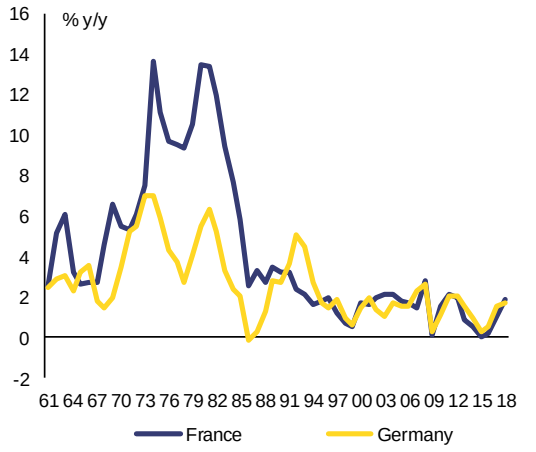
The two growth models also reflect stark differences in investment and savings. Germany's current account has been in surplus in most years since 1960, while France's current account has consistently been in deficit. With the exception of the post-unification years in the 1990s, investment has generally been higher in France, partly thanks to higher public investment. The lower private and public capital stock could come to constrain growth in Germany in the medium to long run. On the other hand, savings have tended to be higher in Germany and increasingly so in recent years. Underlying these trends are marked differences in terms of the net lending/borrowing positions of various sectors. In Germany, remarkably all sectors – except financial corporations – are now net lenders, while in France non-financial corporations and the government are important net borrowers. Private households in Germany also tend to save more than French households. If including the importance of corporate profits and retained earnings for the net worth of the wealthiest 10%, the households' savings rate would be even higher in Germany. Yet, the returns on low-risk assets are currently very limited in a low-interest-rate environment.

These differences in growth models have the effect that income growth in France tends to follow a relatively stable path while income growth in Germany tends to be more volatile. Germany usually outperforms France in times of strong global growth, while France usually outperforms Germany when the global economy is weaker. Therefore, Germany's current growth advantage may not be a permanent feature. Besides being more exposed to a cyclical slowdown of the global economy, as already visible in the Commission's spring 2019 macroeconomic forecast pointing to a sharp slowdown of growth in 2019, Germany would also be relatively more affected if current global risks were to materialise, such as a trade war or a disorderly withdrawal of the UK from the EU (even if France together with all other EU economies would also feel an impact).

Nominal divergences and the policy mix cannot explain the recent growth differences...

Since the mid-1980s, inflation has been broadly similar at slightly below 2% on average, with some minor differences before and after the financial crisis. Before the crisis, inflation in France was around 2%, while in Germany it was somewhat lower. This also reflected the wage moderation in Germany in the early 2000s. Since the crisis, inflation in France has been slightly lower than in Germany, although in both countries it was below 1% until 2017 (Graph 0.5).

Graph 0.5: **Consumer price inflation**



Source: Ameco, European Commission.

The monetary-policy stance does not appear to have been better suited to either economy, when assessed against their respective output gaps or inflation performances. If in recent years the monetary-policy stance seems to have been relatively closer to an optimal level for France, this does not appear to have been the case in the past. Moreover, lending conditions have fallen in a largely similar way since the crisis and could also not explain any significant, systematic differences in investment or growth.

Differences in the fiscal policy stance do not seem to have played a significant role in explaining growth differentials either. While the fiscal stance has been pro-cyclical in both countries on average, this feature has been more salient in France since 2005. In turn, while the larger size of automatic stabilisers in France contributed to a smoothening of cyclical fluctuations more than in Germany, this cannot explain medium-term differentials in growth rates.

The differences in labour-market institutions provide the strongest explanations for the differences in income developments since the crisis…

Labour-market institutions can explain a large part of the divergent dynamics of GDP per capita in France and in Germany. Indeed, the increase in Germany's potential growth since the crisis derives mainly from a higher labour contribution, while it remained more or less flat in France, as did the contributions from capital and total factor productivity in both countries. The main differences in labour-market institutions concern the organisation of collective bargaining, the influence of collective bargaining on wages and working time, and the coverage of employment-protection legislation.

First, as far as the organisation of collective bargaining is concerned, social partners play a key role in both countries and at all levels of the process, although it is applied more flexibly at the firm level in Germany. In France, the principle of favourability prevents firm-level agreements to set less favourable conditions than what is established by law or in sector-level agreements, although the 2017 ordinances reduced this scope somewhat. Also, the extension to all firms in the sector of collective agreements is granted in all cases when it is requested by social partners. By contrast, the extension of collective agreements is rarely requested by social partners in Germany and firms can decide whether to be part of sector-level agreements. Another key difference is that, in Germany, employee participation in the management of larger companies is the norm, with representatives of workers sitting on company supervisory boards. This practice, the so-called *Mitbestimmung* (or co-determination), has allowed for a better alignment of the interests of employers and employees, and it encourages consensus-seeking. Furthermore, works councils allow employee representatives to participate in the management decisions that directly affect them, such as social and personnel matters.

Second, collective bargaining also has a different influence on wages and working time in the two countries. Germany's higher flexibility, including through working-time accounts and short-time work arrangements (*Kurzarbeit*), has allowed firms to reduce working hours in bad times to a larger extent. This helped Germany to avoid a large drop in employment during the 2008 crisis. It also allows a more flexible reaction of wages to economic shocks. Notably, wage dynamics in Germany tend to adapt to avoid, at least to some extent, sudden erosions of the country's cost competitiveness in the aftermath of an external shock. Moreover, there seem to be less severe spillovers from minimum-wage increases in Germany than in France, due to the higher level of the French minimum wage (relative to the median wage) and the cautious, backward-looking increases in Germany, although this should not be over-interpreted given the short time period that has elapsed since Germany introduced a minimum wage in 2015.

Third, the level of employment protection legislation (EPL) is higher in France for fixed-term contracts, and there are fewer (and quicker) labour-court disputes in Germany than in France. On the other hand, EPL is relatively similar in France and Germany for individual and collective dismissals for the traditional permanent employment contract.

Fourth, smaller differences can also be observed in other labour-market institutions. The unemployment insurance and pension systems in the two countries have somewhat different features. Furthermore, the focus and governance of the vocational education and training system seems to offer a more effective answer to youth unemployment in Germany than in France, although there has been some convergence in performance.

… albeit with different effects on social and regional outcomes.

The differences in labour-market institutions have translated into differences in labour-

market and social outcomes. In simplified terms, the higher degree of flexibility allowed the German economy to weather the crisis better through wage adjustment with firm-level agreements to secure jobs (*Beschäftigungspakte*), industry-wide wage moderation, low-paid part-time jobs (*'Minijobs'*), and job schemes with public support (e.g. *Kurzarbeit*). In contrast, a lower degree of labour-market and company-internal flexibility in France forced firms to adjust more through cuts in employment, notably by reducing temporary jobs. Hysteresis effects and other features of the French labour market (high minimum wage relative to median income; weak apprenticeship system; industrial relations where trade unions have been less apt in factoring in the impact of wage developments on the economy at large) have made it more difficult for those who lost their jobs during the crisis to return to the regular labour market.

However, the higher resilience and flexibility of the German labour market comes at the price of higher market-income inequality and poverty across individuals, age groups or geographic areas. While flexibility has enabled a higher employment rate overall, market outcomes show more wage inequality and in-work poverty in Germany than in France. These considerably more unequal labour-market incomes in Germany are due to a higher inequality of hourly wages, higher variation in hours worked, and a higher share of part-time work.

In terms of labour-market opportunities, however, Germany has performed better. Despite the higher wage inequality and at-risk-of-poverty rate in Germany, labour-market opportunities appear considerably better than in France. Standard indicators of market-income inequality only take into account people in employment. For example, involuntary fixed-term employment has been on a divergent trend in the two countries, reaching 1.9% of the active population in Germany and 9.7% in France. However, unemployment is also a major form of labour-market inequality that results in essentially no market income. Major changes in the economic structure of a country might also lead to prolonged unemployment periods for groups of workers and long-lasting consequences on the productivity and potential growth of a country. When looking at the differences between France and Germany, however, these hysteresis phenomena do not seem to have a large explanatory power so far, although it cannot be excluded that it may have an impact on human capital in the longer term.

Overall, the distribution of disposable income (i.e. after redistribution) is similar in Germany and France. If pensions are considered social transfers, in 2016 the inequality of disposable income before transfers was higher in Germany than in France. After transfers, however, disposable-income inequality was similar in both countries, and slightly below the EU average. Indeed, pensions play an important role in the redistributive system in France. If pensions are not considered social transfers, the Gini coefficients of disposable income before transfers would be closer for the two countries. Apart from pensions, the tax-benefit system in France plays a more important role in correcting at-risk-of-poverty situations, whilst requiring higher social expenditure than in Germany, not least because of higher unemployment. Irrespective of their levels, the reduction of at-risk-of-poverty rates achieved by social transfers and benefits in France outweighs that in Germany.

By age group, the distribution of income and at-risk-of-poverty rates makes for a mixed picture. Interestingly, the share of middle-aged and elderly at risk of poverty is lower in France than in Germany, even if the unemployment rate is lower for this group in Germany. However, for those younger than 25, a more uneven income distribution and higher at-risk-of-poverty rates can be observed in France, mainly related to a higher youth unemployment rate combined with restricted access to the main means-tested benefits. Moreover, for those older than 55, income inequality in France is higher in spite of significantly lower at-risk-of-poverty rates. This is mainly explained by a relatively generous social system for relatively poorer elderly households in France. Consequently, income appears to be more evenly distributed in France than in Germany for those aged between 25 and 54 only.

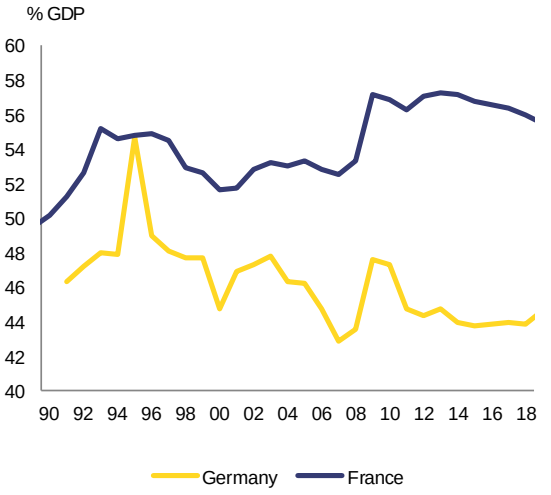
Across regions, inequalities in GDP per capita are relatively low by international comparison and have steadily decreased over time in both France and Germany. Income inequality is relatively lower in Germany and is accompanied by a faster catching-up in the poorest regions.

Similarly to the national level, different regional trends could be observed in the two countries after the 2008 crisis, with the gap between the 20% of the richest and poorest regions decreasing in Germany, while trending up in France until 2013 and thereafter stabilising. In Germany, this reflects factors such as the proximity to more dynamic regions in Eastern Europe and a more decentralised regional structure with more growth centres. While these are interconnected and located across the country, which contributes to the reduction of regional disparities, many of them may lack a critical mass to be centres of excellence competing with innovations at a global level. In contrast, French regions still struggle to contribute to (productivity) growth, except for Paris (or Île de France) which has a scale that results in strong positive and negative ('Marshallian') externalities. These data do not capture variations in purchasing power due to regional variations in housing costs that are particularly felt in the larger cities where affordability of housing can become an important factor to consider. Labour productivity represents an important element to explain such trends and mirrors different labour-market outcomes and roles by local authorities. An open question here is whether a more centralised territorial structure, as in France, or a more decentralised structure, as in Germany, is more supportive to medium to long-term growth for the country as a whole.

There are differences in the economic structure, especially in the public sector.

Looking at public finances, other aspects than the fiscal stance could help to explain France's lower overall growth performance. Small positive sovereign interest-rate spreads in France with respect to Germany might be explained by the high structural deficits in France and the upward trend in public debt that bring about higher sustainability risks in the medium term. Furthermore, public expenditure has proven more difficult to control in France. Contrary to Germany, public expenditure in France has increased broadly in line with or above potential GDP for most years since the late 1990s (Graph 0.6). Significant increases in the expenditure-to-GDP ratio in France tend to persist, whereas in Germany similar episodes tend to be transitory as they are offset in the following years by expenditure growth below potential. A relatively recent setting-up of expenditure ceilings for the different subsectors of the general government in France has helped contain expenditure dynamics, although no clear downward trend in expenditure can yet be observed. In addition, the spending reviews in place have yielded only very limited results in terms of expenditure savings so far. By contrast, control of public expenditure and the adoption of debt-brake mechanisms in Germany have proven more successful and put public debt on a clear downward trend. Consequently, the public expenditure-to-GDP ratio in France is currently about 12 percentage points higher than in Germany, while public debt is almost 40 percentage points higher.

Graph 0.6: **Public expenditure 1991-2018**



Source: Ameco, European Commission.

Looking at the efficiency of public expenditures, however, a slightly different picture emerges. In both countries, the functional classification of public expenditure unveils a broadly similar composition, although with smaller differences in some of the areas and no clear systematic pattern in terms of their respective efficiency. For example, lower per-capita expenditure together with overall better outcomes suggests that France's public healthcare system is more efficient. Furthermore, France spends more on benefits (such as pensions and social support) to mitigate income inequality and poverty. Specifically, while the transfer-benefit system helps reduce at-risk-of-poverty rates more in France, higher social spending translates into similar after-transfers income inequality as in Germany. On the other

hand, outcomes of spending on education (in terms of PISA results) and on R&D appear better in Germany.

The higher public expenditure in France implies a significantly higher tax burden, which, ceteris paribus, weighs on growth. The divergent trends in public expenditure since the early 2000's triggered a need for higher taxes in France and contributed to higher inflationary pressures and competitiveness losses in some years. As regards the composition, the tax systems of both Germany and France rely heavily on production factors labour and capital, which may constitute an obstacle to a more dynamic employment and business development. In particular, the tax wedge and taxes on labour are high, although more clearly in the case of France, which could be a disincentive for job creation. However, the tax wedge for low-wage earners is actually higher in Germany, which might entail a more negative impact on potential and actual consumption than in France for these workers. The overall income tax burden on corporations is higher in France. Moreover, while both corporate tax systems entail significant debt biases that may hamper private investment, this debt bias is almost twice as high in France than in Germany.

The higher role of state-owned enterprises (SOEs) in France compared to Germany may come with some efficiency losses. France continues to reform its approach to state ownership. SOEs were initially subject to public law and only recently made subject to private law. A new law (*Loi Pacte*) has been adopted to substitute minimum shareholding requirements for the state in SOEs by golden shares, thereby keeping some degree of influence and obtaining additional revenues while limiting the need for a further capitalisation by the state. Nevertheless, French holdings in network industries such as electricity, gas, and air transport remain significantly higher than in Germany. In addition, the French state is de facto expected to take responsibility for firms in need of restructuring, something that is not unheard of but less prevalent in Germany. For this reason, and while a disengagement of the French state in SOEs is still ongoing, it might not go as far as it has done in Germany in the foreseeable future.

Differences in the private sector may explain Germany's higher productivity growth.

A sectoral perspective shows that Germany has a marginally higher labour productivity in manufacturing than France, while France has a higher labour productivity in services, but these differences are diminishing. When turning to the private sector, productivity growth in the German car-manufacturing sector has been particularly strong compared to France, but its performance is noteworthy also in a global comparison. This can be explained by a range of factors such as (incremental) innovations, product variety, outsourcing and geographical location. However, the current and future ecological and technological transformations of car manufacturing could challenge the strong position of the German automotive industry in the future, as recently illustrated by the so-called "Diesel scandal", the disruptions linked to the revision of environmental certifications for cars in 2018 and the shifts in demand away from fossil-fuel engines. Productivity growth in the telecommunications sector has been higher in France, suggesting a potential for improved productivity growth also in Germany through a better regulatory framework. In professional services, productivity growth has been weak in both countries, at times even negative in Germany. This cannot be explained by measurement problems alone, but rather by entry barriers and other restrictive regulations governing the actual exercise of the profession, such as binding fixed prices.

Overall, the business environment appears at first sight more favourable in Germany, but the detailed picture is more mixed. Germany outperforms France on a number of aggregate indicators such as the World Economic Forum's Global Competitiveness Index (GCI), the –World Bank's Ease of Doing Business (EDB) index and the OECD's Product Market Regulation (PMR) index. In spite of a better ranking overall for Germany, these aggregate indexes mask some weaknesses in Germany, such as its relatively poor performance on the ease of starting a business, a subcomponent of the EDB, which might partly explain its lower firm birth rates and weaker corporate dynamics in general.

The German corporate sector positioned itself differently from that of France in the context of

both European integration and globalisation. The German manufacturing sector outsourced many low-productive activities to Eastern Europe, Asia and elsewhere while keeping them integrated with production in the headquarter, whereas the French manufacturing sector tended to relocate some entire production sites for various reasons (geographic and cultural distance, industrial structure, etc.). Accordingly, a non-negligible part of German private investment took place abroad, which could help explain the lower investment-to-GDP ratio in Germany and, combined with a more compressed wage dispersion in France, the French industries' relatively weaker cost-competitiveness position.

Indicators of research, development and innovation show a stronger performance in Germany. Total R&D intensity is higher in Germany and both private and public R&D intensities have grown more strongly than in France. Germany outperforms France in terms of scientific excellence and total factor productivity (TFP) growth. The structure of the economy largely explains the higher business R&D intensity in Germany. Germany and France follow different strategies in terms of public support to R&D. France provides a very high level of public support to business R&D, notably through a strong R&D tax incentives system, while Germany does not provide any R&D tax incentives and its level of direct public support to business R&D such as grants and loans is lower than in France. Public support to R&D in Germany has been more focused on strengthening its public science base (e.g. universities and public research institutes), which through cooperation with businesses, contribute to its innovation performance. One of Germany's major strengths lies in the strong cooperation between public research and business, which is a key factor behind Germany being a worldwide leader in incremental innovation. However, the cooperation of SMEs with universities and research organisations remains a challenge, also in Germany. With regard to human resources, France performs better than Germany on some indicators related to the numbers of graduates in science, technology, engineering and mathematics; in the field of computing; and on the share of population who have successfully completed tertiary education. In both countries, a number of measures have recently been taken to attract private investment in risk capital, but scaling-up remains a challenge. Both countries struggle to become leaders in disruptive innovation.

Are these recent divergences likely to continue?

The German export sector's product and geographical specialisations could prove challenging in coming years. As the global economy recovered after the crisis, notably in emerging markets, global demand favoured capital goods where German business is particularly competitive. As this trend changes, allowing for a more consumption-based growth model in e.g. China on the back of an emerging middle-income class, global demand is gradually shifting towards high-quality consumer goods and services, which could provide an opportunity for the French economy. Furthermore, globalisation and technological change is set to exert pressures for rapid structural changes in some of the hitherto well-performing industries, such as the car or capital-goods industries, which are an important part of the German economy.

Increasing labour shortages ahead in Germany also imply that the main driver for the recent episode of income divergence risks soon being exhausted. Indeed, labour shortages for certain qualifications are already becoming visible in Germany and could increasingly constrain economic dynamism. The scope for further increases in the labour force through higher participation or additional immigration seems to have reached its limits in Germany.

In the medium to long term, different demographic developments could also contribute to a reversal in labour-market trends. The demographic structure is currently in Germany's favour, as its share of working-age population (aged 15-64) is significantly higher than in France, including a higher involvement of elderly people in the German labour market. Still, this asset will become a liability in the future, as the retirement of baby boomers will not be counterbalanced by a corresponding entry of young people in the labour force. The share of working-age population will decrease considerably in Germany, while this trend will be less severe in France where the birth rate is higher. The Commission's medium-term potential-output

projections suggest that the contribution from labour will become a drag on Germany's potential growth; migration-driven population growth is balancing it at best and probably not for long. Indeed, these differences in demographic factors, notably in the prospects of an ageing society, could explain some of the higher savings in the household sector in Germany compared to France.

The contribution of capital to potential growth has been higher in France since the late 1990s, but is expected to converge with that of Germany by 2023. However, the fact that France's higher investment-to-GDP ratio does not spill over into higher productivity points to potential weaknesses in the quality and return of investment. On the other hand, persistently lower public and private investment could weigh on Germany's medium-term growth prospects.

Conclusions

For many, but not all, economic indicators Germany has performed better than France since the global financial crisis. This is illustrated by the faster pace of income-per-capita growth in Germany (until 2018), which in turn reflects a much higher employment rate, while labour productivity per hour was slightly higher in France between 2000 until 2015. Germany has benefitted over the past decade from its export-based growth model with a competitive manufacturing sector and a favourable composition of production and export markets. At the same time, this makes the German economy more exposed to swings in the global cycle that, combined with increasing labour shortages and a more adverse demographic outlook, could constitute future downside risks. It cannot be excluded that upward pressure on wages stemming from labour shortages will become more pronounced and could have a larger impact on competitiveness than on household consumption. Germany's traditional export-oriented growth model could thus face risks, which suggests that a structural strengthening of domestic demand could help to achieve a more stable growth path. Stronger domestic demand in Germany would also support a rebalancing of the current-account imbalances within the euro area. France's growth model, on the other hand, relies more on domestic demand that, together with a larger public sector, has enabled a certain smoothening of economic cycles. Nevertheless, with persistently high unemployment and a significantly higher tax burden, France's human capital and its growth potential may face risks.

Key policy challenges seem to derive in particular from differences in labour-market institutions. The higher degree of labour-market flexibility, including a more employment-oriented collective bargaining and with a greater capacity to internalise the general interest of the country, as well as the existence of a low-wage sector, allowed the German economy to better weather the crisis and to provide more employment and market-income opportunities. This brought some adverse social outcomes that the tax-benefit system needed to correct in a way that reduces poverty and undue inequalities in disposable income, whilst avoiding a negative impact on the incentives to take up work. The higher unemployment partly resulting from a lower labour-market flexibility implies that such redistribution is a higher burden for public finance in France. Indeed, ongoing reforms in Germany to re-calibrate its tax-benefit system and in France to reform its labour-market institutions are already addressing several of these challenges, although it make take a few more years for results to show.

Recent consolidation efforts in Germany have weighed on public investment, while there remains scope for efficiency gains, e.g. of investment, in France. The higher public expenditure-to-GDP ratio in France comes along with a higher tax burden and a higher public deficit and debt. The stronger role of state-owned enterprises in the French economy – in view of their soft budget constraints – may come with a lower efficiency of their services and losses to be covered by the taxpayer. In turn, all this can negatively affect the business environment and the incentives for private investment. In Germany, efforts in the last decades to reduce the size of the public sector and of public expenditure have apparently also affected public investment. Recent evidence suggests that underinvestment in network infrastructure and education may have reached a point where it is starting to disadvantage Germany vis-a-vis some of its global competitors.

In addition, France and Germany have common structural challenges that affect the conditions for private investment and the longer-term growth potential. Challenges in both

countries include weaknesses in the business environment, the challenge of creating the right framework conditions and policies to encourage disruptive innovations, and weak competition in certain activities such as professional services. Both countries benefit from a high level of human capital, with virtually no unemployment for high-skilled workers. However, employment opportunities for lower-skilled workers are higher in Germany than in France and coupled with more on-the-job training opportunities.

This German-French discussion paper also shows how challenging the coordination of economic policies in the EMU can be in concrete terms. Income divergences between the two largest economies in the euro area are potentially a source of concern because they could complicate the coordination and conduct of economic policies. For example, low interest rates are certainly less popular in countries in a net-lending position (e.g. Germany) than in countries that are net borrowers (e.g. France). Structural convergence does not come automatically in a monetary union, recalling how the income convergence noted during the first decade of EMU across countries largely coincided with structural divergence. Moreover, there is no one-size-fits-all approach that can easily be applied everywhere, regardless of the economic and social context. On the contrary, the close integration of EU Member States through the Single Market - and especially those sharing a common currency underpinned by a single monetary policy - underlines the need for well-functioning and integrated capital, product and labour markets as well as an efficient public sector, but these need to be assessed and improved in their own specific settings.

Finally, the question remains whether the recent episode of higher per-capita income growth in Germany compared to France could reverse at some stage or whether it is only the beginning of a longer-term trend. All in all, one cannot be sure that the better performance of the German economy, at least until 2018, is a trend that is here to stay. The labour market, which has been the main driver of growth in Germany, is already reaching its limits. Moreover, persistently lower public and private investment could weigh on medium-term growth prospects. Overall and based on the outcome of this data-driven discussion paper, it appears that the different growth models have a larger impact on the volatility of their respective economic performances than on their longer-term growth dynamics. While corporate structures and the business environment might look somewhat better in Germany at present, there are *a priori* no reasons why the framework conditions and the economy in France cannot adapt accordingly. It is worth recalling that it is not too long ago that Germany was dubbed ‘the sick man of Europe’. Economic, technological and demographic developments imply that there is no guarantee that Germany’s current growth model, which has given it an advantage in recent years, willcontinue to serve it well in the medium to long term.

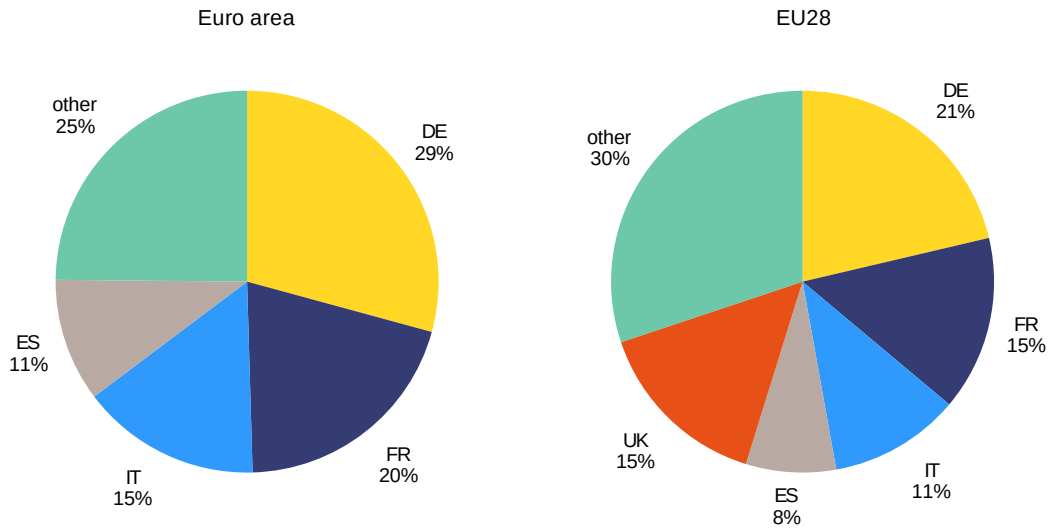
1. INTRODUCTION

Given their economic weight in the euro area, it is important to identify and understand the characteristics, similarities and divergences of the French and German economies. These are the two biggest euro area economies, they are highly complex, diversified, technologically advanced and integrated in global value chains (Graph 1.1). However, they face different macroeconomic imbalances as identified in the Commission's in-depth Country Reports presented as part of the European Semester each year. Germany's imbalances relate to the large current-account surplus and the strong reliance on external demand. France, in turn, faces imbalances relating primarily to weak competitiveness and a high and increasing public debt in a context of low productivity growth and a large public sector. Continued divergences between the two biggest economies in EMU would complicate the conduct of a single monetary policy and may ultimately erode its popular support. Continuing macroeconomic imbalances may increase the risks of spill-overs and costly adjustments at a later stage. This gives rise to the question of what can be done in these two countries to enhance convergence and resilience in the euro area as a whole. An up-to-date analysis on economic similarities and divergences between Germany and France appears both useful and timely.

The debate in the two countries shows diverging views on the respective imbalances. On the German side, the usual argumentation suggests that the current-account surplus is driven by temporary factors such as exchange rates and oil prices, as well as long-term factors such as the strong competitiveness of German exports and demographic developments. In addition to that, the German authorities usually refer to the low competitiveness of competitors in foreign locations as another driver. Consequently, competitiveness-enhancing structural reforms in other euro area countries are seen as crucial for reducing the current-account surplus. Although the German authorities have also acknowledged the need for domestic measures (e.g. boosting public investment) to help reduce the current-account surplus, the argumentation remains that a large share of the current-account surplus is outside the control of German economic policy. In turn, on the French side, the argumentation usually focuses largely on the weak growth performance of the euro area as a whole, France's main trade and financial partner, not least due to an excessive focus on fiscal consolidation and asymmetric cost-competitiveness adjustments. High unemployment and difficulties for public finances in France are seen as resulting, at least to some extent, from a weak economic performance of the euro area.

A number of studies have taken a similar approach of comparing directly the German and the French economies, albeit with different perspectives. Enderlein/Pisany-Ferry (2014) take

Graph 1.1: **Shares in euro area and EU GDP, 2018**



GDP in current prices in euro.
Source: Ameco, European Commission.

a policy-oriented perspective by proposing priority areas for reforms and investment in the two countries as well as at EU level. Piketty (2017) has a focus on explaining the similarities and differences of Germany and France in terms of labour productivity and GDP per capita, also relative to some other advanced economies. Lallement (2017) identifies the strengths and weaknesses of the German economy by comparing key macroeconomic indicators to those of France and the euro area average. Praet (2018) uses the divergent developments of Germany and France to illustrate the emergence of macroeconomic imbalances in EMU.

This paper will analyse a number of issues and proceeds as follows. Section 2 presents some stylised facts on income developments in Germany and France, in particular since the global financial crisis. In view of the apparent income divergence between them, subsequent sections will explore different explanatory approaches.

Section 3 analyses to what extent any differences in monetary and financial conditions and in fiscal policy stance(s) may explain some of the differences in income developments. Section 4 gives an assessment of the explanatory power of differences in labour-market institutions and it compares both countries in terms of social outcomes. Section 5 provides a comparative view on similarities and differences in economic structures in the public and the private sector, respectively. Section 6 provides some tentative answers to the question whether the recent divergences are likely to continue.

The paper aims at providing policy-relevant analysis, but stops short of providing any policy recommendations. Its main operational purpose is to underpin further the country-specific analysis conducted by several of its authors in the context of the European Semester framework. The cut-off date for data and information was 24 April 2019, the same as for the Commission's spring 2019 economic forecast on which the most recent data presented in this paper is based.

2. SOME STYLISED FACTS

In this chapter, we start to analyse the growing divergence in per capita income (defined as GDP per inhabitant) between Germany and France observed over the last decade. This is done by a traditional decomposition of the labour components. The results illustrate that the German labour market involves a larger proportion of the population across all age groups. Productivity growth in France has relied more on capital deepening, while Germany's has benefited more from total factor productivity gains resulting in a marginal advantage in hourly productivity. The chapter then reviews inflation dynamics, noting that since the introduction of the euro, the two economies have not displayed any pronounced systematic divergences. Lastly, putting the recent developments into a longer-term perspective since the 1960s, it becomes clear that there have always been episodes when one country was outperforming the other. The German economy has shown a higher volatility reflecting, in particular, its openness. Ultimately, this is the outcome of the different growth models of the two economies, with the German one being more export-oriented and the French one more based on domestic demand.

2.1. RECENT INCOME AND LABOUR MARKET DEVELOPMENTS

Income developments

Table 2.1: **GDP per capita average growth rate**

	1996-2005	2006-2018	2017-2018
DE	1.2	1.1	1.5
FR	1.7	0.5	1.6
EU 28	2.2	0.8	2.0
EA 19	1.8	0.6	1.9

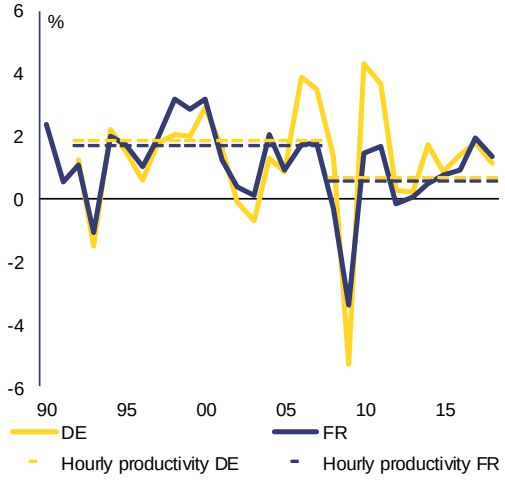
Change in volume terms.
Source: Ameco, European Commission.

Germany's per capita GDP recently exceeded that of France in a significant manner. In 1995-2005, the difference was reduced from 17% to 1% as France's per capita income grew on average by 1.7% annually and thus 0.5 pp. more than Germany's (Table 2.1). Since then, France's per capita income growth declined to 0.5% on average, while Germany's roughly preserved its pace, declining marginally to 1.1%. This way, Germany's advantage gradually widened again to 15% by 2018. In 2006-2007, Germany enjoyed a much more pronounced upswing in per capita income. It took a roughly similar hit during the recession of 2008-2009, but recovered more vigorously in 2010-2011, catching up in only two years with the lost ground. Since then, it has fared somewhat better on average than France (Graph 2.1). By contrast, France's GDP per head nearly stagnated, exceeding its pre-crisis peak in 2016 only. In 2017-18, per capita output grew somewhat more sluggishly in Germany, but in nominal terms income per capita income growth remained higher than in France. In absolute terms, since 2005, the difference in GDP per head increased from about EUR 330 to almost EUR 5 800. In a longer-term perspective, the current gap in per capita GDP is a return to the post-unification situation, when Germany's per capita GDP exceeded that of France by 3 800 ECU in 1995 (see top-left panel of Graph 2.2).

A comprehensive decomposition illustrates in detail the factors contributing to the growing differential in per capita income between Germany and France. Per capita income, defined as the ratio of GDP over total population, can be broken down into a number of determinants, notably productivity, the performance of the labour market, labour market participation and the age structure of the population as detailed in Box 2.1. The results are presented below (Graph 2.5).

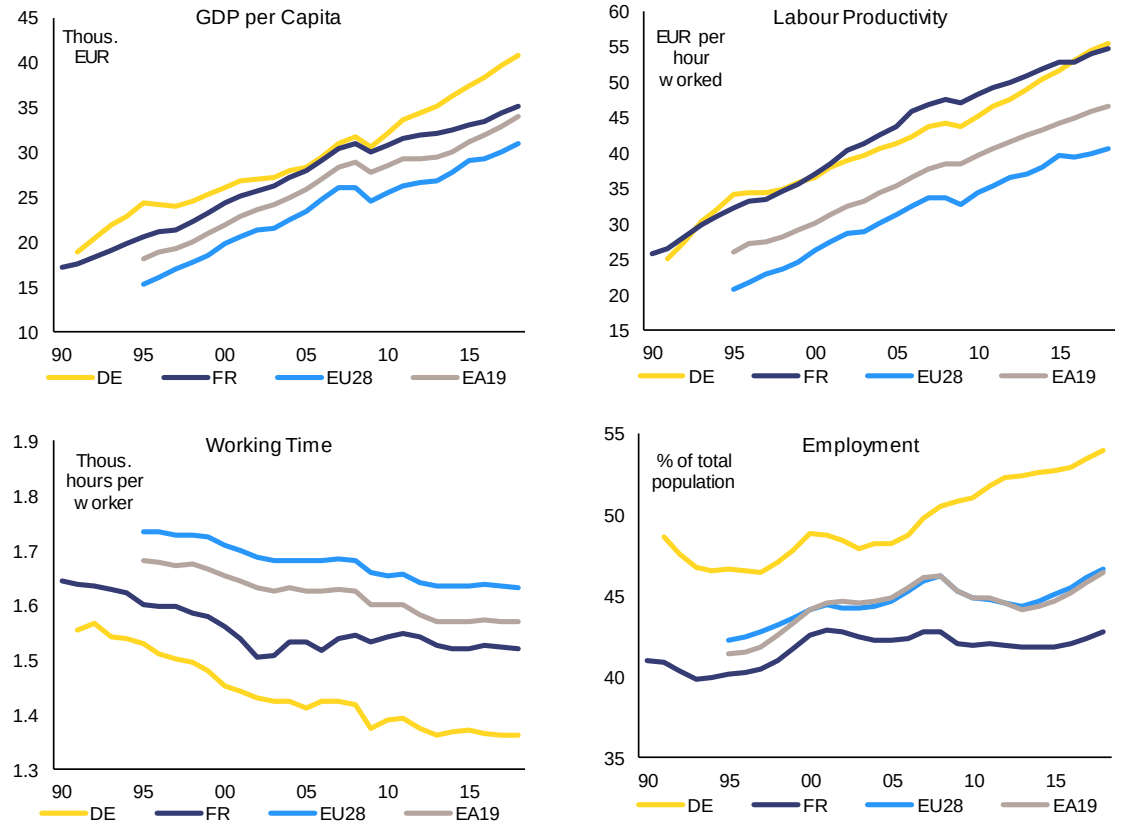
Labour productivity

Graph 2.1: **GDP per capita and average hourly labour productivity growth**



Chain linked volumes.
Source: Eurostat, own calculations.

Graph 2.2: **Main drivers of per capita GDP**



Source: Eurostat, own calculations.

Neither Germany, nor France have demonstrated systematically higher aggregate productivity levels or dynamics. In volume terms, Germany has tended to have a slightly better productivity *growth*. In nominal terms, France's productivity *level* was higher over the period 1999-2015 (Graphs 2.2 and 2.5). The difference peaked at close to 8% just before the 2008 financial crisis. Since then, hourly productivity growth has declined in both countries (Graph 2.1), however Germany has been catching up, to regain a slight advantage as of 2016 ([1]).

The productivity differential has evolved heterogeneously across sectors. A notable case is manufacturing where Germany tended to have a significant advantage in terms of hourly productivity with the exception of 1998-2004. France consistently enjoyed higher productivity in business services (since 2006), information and telecommunications and the utilities sector. Over a series of years, Germany gradually closed the productivity gap vis-à-vis France in the construction and in the sector combining distributive trade, catering and transport.

Working time

Moreover, hours worked per employee are approximately 11% lower in Germany than in France. This difference in hours worked per employee is mainly the reflection of a higher share of part-time jobs in Germany, which is not offset by the higher number of hours worked per employee working full-time in the country (Costes *et al.*, 2015).

([1]) Hourly productivity growth declined from 1.8% in Germany and 1.7% in France on average from 1991 to 2007 to 0.7% in Germany and 0.6% in France since 2009.

Box 2.1: **A labour decomposition of per capita GDP**

Per capita GDP can be broken down into fundamental drivers according to the following equation:

$$GDP\ per\ capita\ = \frac{GDP}{POP_{NA}}$$

$$= \left(\frac{1}{PPP}\times\right)\frac{GDP}{Hours_{NA}} \times \frac{Hours_{NA}}{EMPL_{NA}} \times \frac{EMPL_{LFS}}{LF_{LFS}} \times \frac{LF_{LFS}^{15-64}}{POP_{LFS}^{15-64}} \times \frac{POP_{demo}^{15-64}}{POP_{demo}} \times other$$

$$= \left(\frac{1}{PPP}\times\right)\frac{Productivity}{Hour} \times \frac{Hours}{Employee} \times \underbrace{(1-u) \times Particip.\ rate}_{Employment\ \ rate} \times \frac{Demogr.}{factors} \times other$$

Where:

GDP is gross domestic product according to national accounts statistics

$Hours_{NA}$ is total hours worked according to national accounts statistics

$EMPL_{NA}$ is total employment according to national accounts statistics

$EMPL_{LFS}$ is total employment according to the labour force survey

LF_{LFS} is total labour force according to the labour force survey

LF_{LFS}^{15-64} is labour force aged 15-64 according to the labour force survey

POP_{LFS}^{15-64} is population aged 15-64 according to the labour force survey

POP_{demo}^{15-64} is population aged 15-64 according to demographics statistics

u is the unemployment rate

PPP is the purchasing power parity (the price level of a representative basket of goods) relative to a reference area

$$other = \frac{EMPL_{NA}}{EMPL_{LFS}} \times \frac{LF_{LFS}}{LF_{LFS}^{15-64}} \times \frac{POP_{LFS}^{15-64}}{POP_{demo}^{15-64}} \times \frac{POP_{demo}}{POP_{NA}}$$

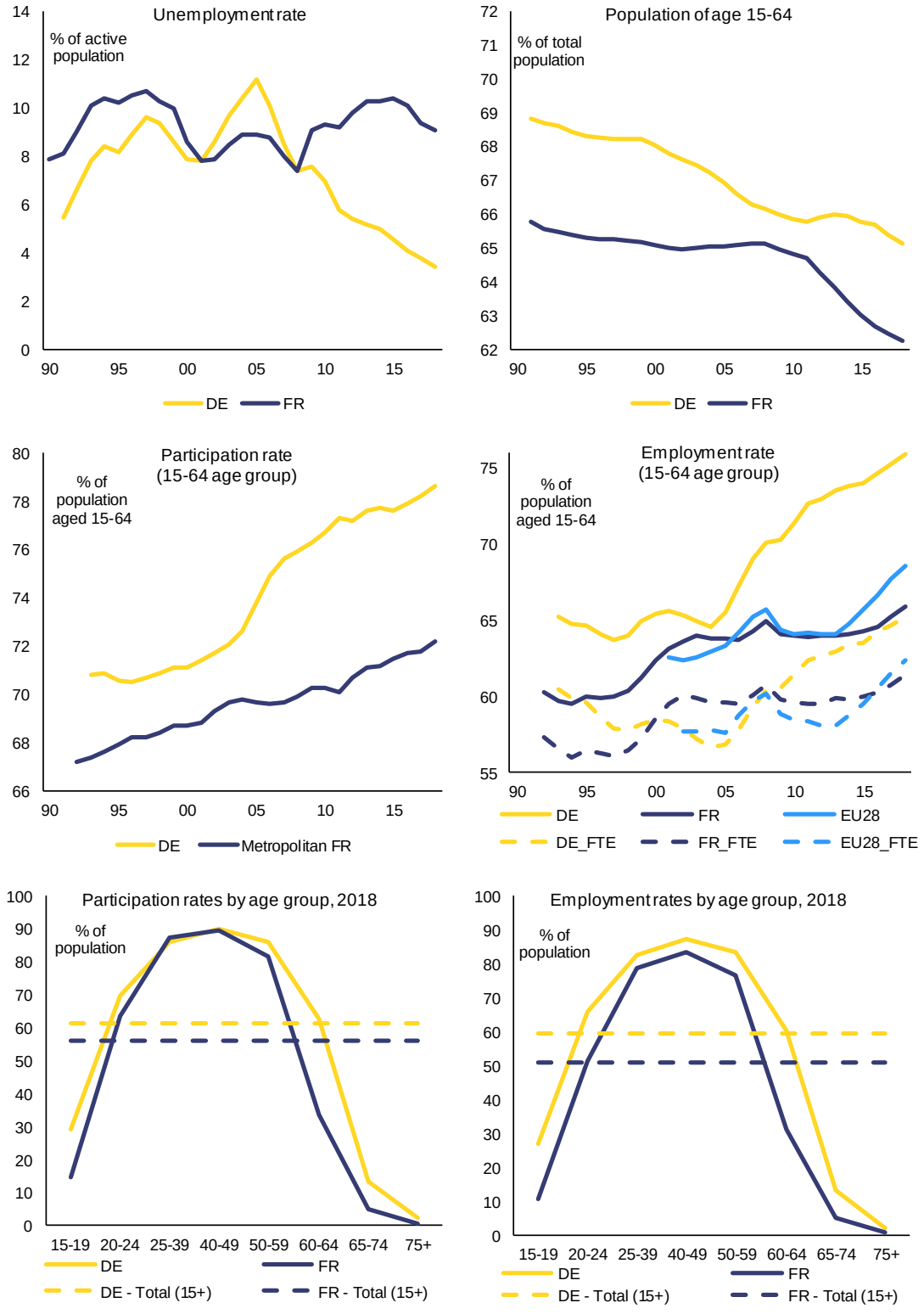
accounts for older workers (i.e. aged 65 and above) being active on the labour market and reconciles available data sources, notably national accounts, population statistics and the labour force survey.

This result allows computing additive contributions. Once this decomposition is obtained for both countries, the ratio of per capita income can be represented as the product of the ratios between the components. By taking logarithms, one can construct approximated additive percentage point contributions.

This ratio tended to widen over the long term. From just 5% in the early 1990's the difference reached 11% currently. In both countries, hours worked per employee were decreasing in the 1990's. However, this decrease has a different cause in the two countries. While the decrease can be explained by a reduction in the hours worked per employee occupying a full-time job in France, it is accounted for by the intensified development of part-time jobs in Germany (Costes *et al.*, 2015). The incidence of part time work is higher in Germany not only among the older workers, but also among the prime agers (Graph 2.4). As of 2000, the hours worked stabilised in France, while they continued to decline in Germany.

All in all, productivity per employee has thus been persistently lower in Germany compared to France. Hence, the diverging economic performance observed in recent years between the two major economies of the euro area cannot be explained by labour productivity developments.

Graph 2.3: **Labour market performance**



Source: Labour Force Survey, Eurostat, own calculations.

Labour market performance

By contrast, developments in the labour markets in the two countries have shown marked differences in favour of Germany. In particular, the unemployment rates diverged significantly between Germany and France since the financial crisis (Graph 2.3). In both countries, the unemployment rate stood at 7.4% in 2008 after which it declined markedly in Germany, reaching 3.4% in 2018, while it has been hovering around 10% since 2012 in France and only started to decline from mid-2015 onward.

Moreover, the participation rate is higher in Germany than in France. This gap has substantially widened between 2003 and 2010, from +2.4 pps. to +6.4 pps., remaining broadly at that level. This divergence is even more pronounced when looking at the participation rate of young people (15-24 years) and seniors (55-64 years), for both women and men (Thubin, 2014, see also Graph 2.3 lower left-hand panel).

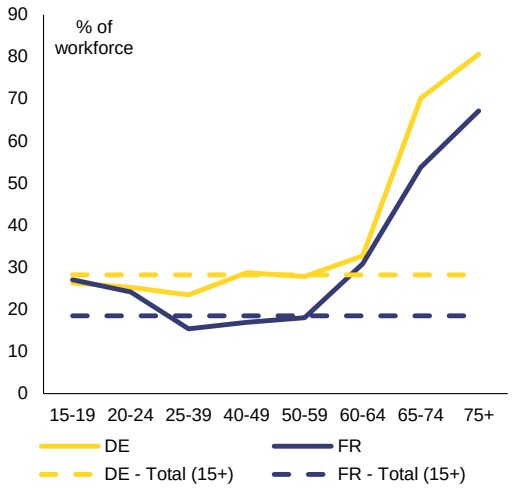
As a result, the employment rate (the ratio of employment over total population from 15 to 64 years) is substantially higher in Germany than in France. In 2018, the employment rate stood at 75.9% in Germany, compared to 65.9% in France. Correcting for part-time work([2]), to arrive at full-time equivalent (FTE) employment, discounts the German employment rate more heavily than the French. The data series obtained this way reveals that the adjustment of the German labour market in the early 2000's consisted partly in reducing average hours worked to avoid a more acute rise in unemployment. Generally, however, Germany's employment rate has tended to be above that of France (65.2% and 61.5% respectively in 2018, see mid right panel of Graph 2.3). In some respects this echoes the situation in Western Germany in the second half of the 1980's, when the negative productivity gap vis-à-vis France was similarly explained by higher participation and lower unemployment.

([2]) The correction factor is calculated as the ratio of usual average weekly hours worked across all categories of workers and the usual weekly hours worked by full-time workers. The data source is Eurostat's Labour Force Survey.

Demography

Finally, differences in the demographic structure of both countries also play a significant role in explaining the higher per capita income in Germany. The demographic structure is currently in favour of Germany, as its share of working-age population (aged 15-64) in the total population is significantly higher than in France (Graph 2.3). In addition, Germany's labour force comprises relatively more workers aged above 65+, both on account of the age structure and because of higher involvement of the German elderly in the labour market. This situation is largely due to lower past birth rates, which have led to a significantly lower share of children in Germany, as well as, to a lesser extent, to higher immigration (Lallement, 2017). Pension system reforms also contributed to higher activity rates among the senior age groups.

Graph 2.4: **Incidence of part-time work, 2018**



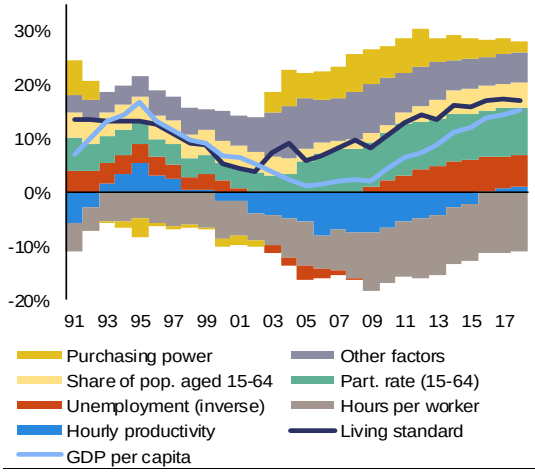
Source: Labour Force Survey, Eurostat.

However, this current asset of a higher participation of older population groups could become a liability in the future, as baby boomers' retirement will not be counterbalanced by an increase of the young labour force. In recent years, this has been partly alleviated by strong labour immigration, particularly from the rest of the EU and also by a relatively stronger activation of older workers in Germany. The latter may have contributed to aggravate the negative differential in hours

worked per employed person, however, as the incidence of part-time work rises sharply for workers above 60 years of age (Graph 2.4).

Recent potential output estimates and projections suggest that the (old-age) dependency ratio is becoming a drag on German potential growth despite an immigration-driven population growth. The share of working-age population is expected to largely decrease in Germany, while the deterioration is set to be less severe in France where a higher birth rate is currently noticed (Baquero *et al.*, 2015). According to the 2018 Ageing Report projections, the share of working-age population will decrease from 65.7% in 2016 to 55.3% in 2070 in Germany. Meanwhile, the share of working-age population in France will only decrease from 62.6% in 2016 to 57.3% in 2070, not least because the French population is younger.

Graph 2.5: **Decomposition of the per capita GDP difference**



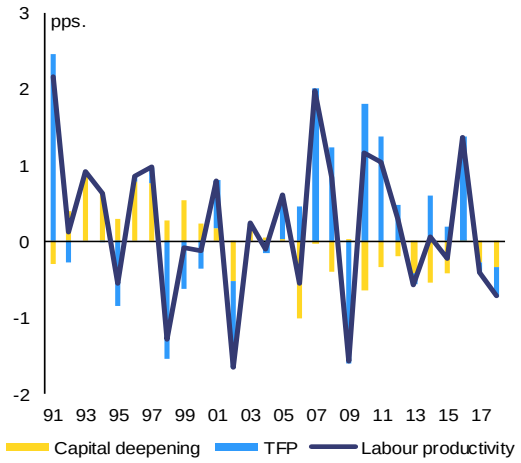
Source: Eurostat, Ameco, European Commission, own calculations.

Total factor productivity in Germany grew faster than in France and contributes more to labour productivity growth. A deeper look into productivity determinants is offered by growth accounting data. These provide a decomposition of the differential in hourly labour productivity growth into the contributions by the capital-labour ratio and TFP. As also elaborated in the Section 5.2, capital deepening in Germany has been slower than in France (Graph 2.6), in particular after the crisis and with regard to non-ICT capital, which suggests lower investment rates, but also higher employment creation and lower propensity to substitute labour by capital (OECD 2018). TFP growth, which can be described as the change in output that cannot be explained by changes in the quantity of capital and labour inputs, and which is assumed to be linked to technological progress([3]), has been stronger in Germany than in France, before and also after the crisis. During the crisis years, TFP, i.e. the efficiency with which labour and capital are used together, declined in both countries, due to labour hoarding and postponement of investment, which have created a temporary setback for TFP growth (van Ark et al. 2013).

In short, over the past two decades, France's GDP growth has tended to be more investment-driven, while Germany's has relied relatively more on an inclusive labour market and TFP. The latter may prove difficult to sustain without reviving investment activity and ensuring adequate human capital.

([3]) TFP is also described as the unexplained remainder resulting from the so-called Solow residual.

Graph 2.6: **Determinants of the difference in hourly productivity dynamics between Germany and France**



Percentage point difference in real productivity growth. Source: Ameco, European Commission, own calculations.

Main findings on income and labour market developments

To sum up, Germany's higher per capita GDP since 2006 is the result of a higher degree of involvement of the population in the labour market. The age structure and participation rate of the German population are still more supportive of labour supply compared to the French. They also compensate for the higher incidence of part-time employment in Germany. The German labour market has also tended to perform better, with unemployment typically being much lower. The lower capital/labour ratio of Germany with respect to France, implying that Germany relies on a more labour intensive production is nevertheless combined with higher total factor productivity and has not resulted in a persistent productivity disadvantage.

2.2. PRICE AND INFLATION DIFFERENTIALS

France and Germany had experienced periods of divergent price dynamics until the mid-1980s. Germany's inflation was typically lower than that of France, (or than the average of the 12 countries making up the euro area in its composition prior to 2007 - EA12). In particular over 1974-84 France's inflation was persistently around 6 pps. higher than that of Germany.

Since the mid-1980s, Germany and France posted moderate inflation rates with no systematic pattern in inflation differentials. Over 1986-93, the absolute difference in inflation rates came down to 2 percentage points. Abstracting from the years immediately after the German reunification, when Germany's inflation was somewhat elevated, both countries' inflation was significantly below the average for the EA 12 throughout this period. The stability of French prices thus predates by several years the Maastricht treaty. Banque de France seemed as committed to low and stable inflation as the Bundesbank well before the conception of the euro and no significant inflation differential was observed before the adoption of the euro.

In the run-up to and since the adoption of the euro, both countries have experienced on average similar inflation below 2% with some differences before and after the crisis. Graph 2.7 (a) shows that inflation in France was around 2% before the crisis, while it was somewhat below in Germany. The scenario reversed after the crisis: France has been slightly below Germany although both under 1% and only picking up in 2018. ECB 2012 ([4]), argues that inflation differentials in monetary unions are not uncommon, and in particular puts forward the difference in business cycle fluctuations as a factor explaining inflation differentials. This is indeed the case for France and Germany. Before the crisis, output in France was consistently above potential output, likely inducing some inflationary pressures (Graph 2.7 (a)). Over the same period the German economy, on the contrary, was more affected by the 2001 recession and remained below potential until 2006. The situation reversed after the crisis. Following the 2009 contraction, Germany recovered more swiftly than France and managed to close its negative output gap more quickly and returned to positive territory in 2016. By contrast, only in 2018 was the negative output gap in France closed and became slightly positive. However despite the significant

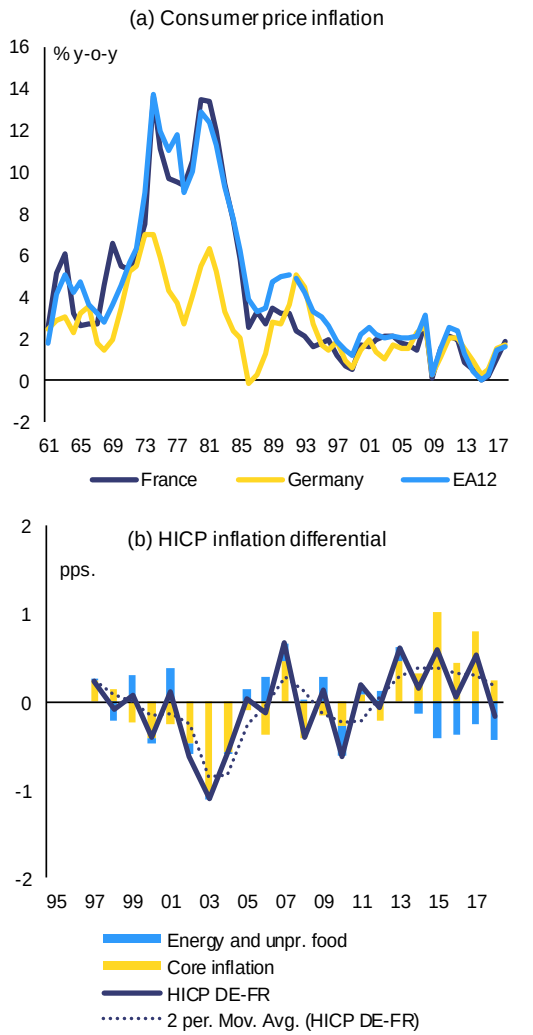
([4]) Inflation differentials in the euro area during the last decade, Article, Monthly Bulletin 11/2012, ECB

differences in cyclical conditions, the inflation differentials have tended to be rather contained, rarely exceeding 0.5 percentage points on a two-year average basis (Graph 2.7).

The firming up of the economic expansion gave a mild boost to Germany's HICP inflation over a number of years recently. Since 2013, Germany's inflation has consistently exceeded that of France and the euro area, even if not strongly. The tightening labour market and the strengthening consumer demand seem to have exerted some pressure on the price dynamics of various products. This has caused the purchasing power parity difference to shrink, although it remains in favour of German consumers (Graph 2.5). Throughout the period, energy price inflation remained somewhat weaker in Germany, partly alleviating the increases in the core inflation basket.

The appreciation of the real exchange rate of Germany vis-à-vis France has not posed a competitiveness problem. The mild positive inflation differential of Germany since the crisis implies an appreciation of the real exchange rate. This has not posed a competitiveness problem for Germany, which maintained a strong export performance and a large current account surplus. With respect to France, Germany has tended to run a current account surplus, which has hovered around 1.5% of GDP for well over a decade. This is supported by the fact that developments in cost competiveness, measured by the relative dynamics of productivity and wages, have been favourable to Germany.

Graph 2.7: **Consumer price inflation**



(1) Western Germany prior to 1991.
(2) The lower panel presents contributions by core inflation and prices of energy and non-processed food.
Source: Eurostat, Ameco, European Commission, own calculations.

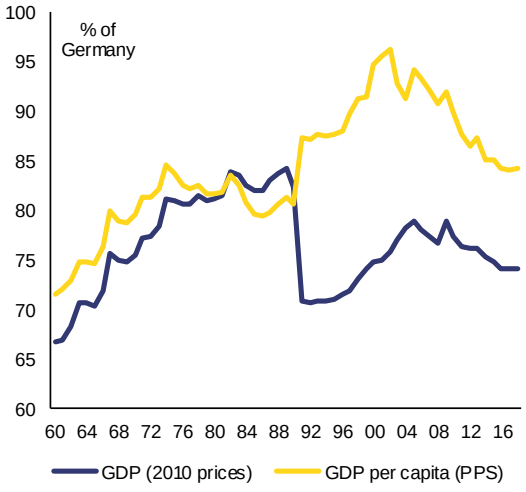
2.3. THE LONGER-TERM PICTURE

A longer-term perspective shows that Germany and France have always seen episodes when one country performed better than the other. Comparing the relative size of the two economies as measured by GDP in volume terms gives a first idea about such episodes (Graph 2.8). Starting from about two thirds, the French economy caught up on the West-German economy until reaching 80-85% in the 1980s. Due to the one-off size effect

following the German reunification, the French economy dropped to a proportion of about 71% in 1991 until gradually regaining ground between 1995 and 2005. During that latter period, Germany was often labelled "the sick man of Europe" due to its weak economic performance (with both low growth and high unemployment), which at the same time created a momentum for taking difficult decisions on far-reaching reforms that enabled an adjustment.([5])

Due to differences in demographic developments, income per capita evolved somewhat differently. In France, the population increased steadily from about 47 million in 1960 to 58 million in 1989 and 67 million in 2018. The West-German population increased from 55 million in 1960 to 62 million in 1989; the unified Germany had a population of 80 million in the first years of the 1990s, which increased to nearly 83 million in 2018. GDP per capita in France relative to West-Germany, expressed in purchasing power standards, was catching up from 72% in 1960 to 85% in 1974, but retreated gradually to about 81% in 1990 (Graph 2.8). France's per-capita income was about 87% of that of the unified Germany and increased to about 96% in 2002. Since then, it has been on an overall downward trend, bringing the ratio down to about 84% in 2018.

Graph 2.8: **GDP (in constant prices) and GDP per capita (in Purchasing Power Standards, PPS) in France in % of Germany, 1960-2018**



(1) GDP in constant prices is at 2010 reference levels.
(2) GDP per capita is GDP at current prices per head of population in purchasing power standards (PPS).
(3) 1960-1990 data relate to West-Germany only.
Source: European Commission.

([5]) This is in line with the IMF (2016) review of 26 advanced economies that suggests that labour- and product-market reforms are, overall, more common during periods of either weak economic growth or high unemployment (or both).

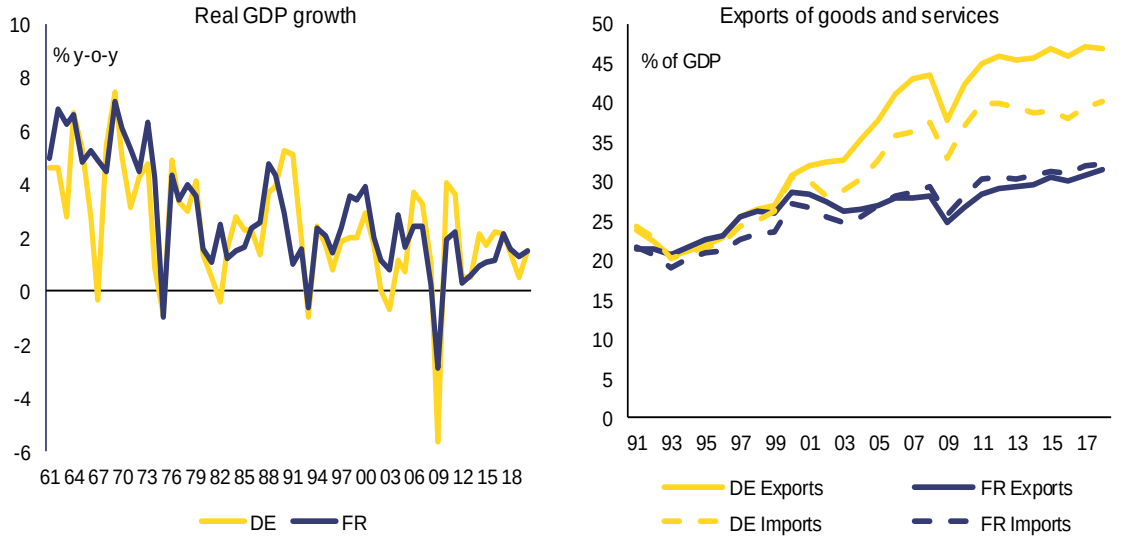
Implications of two different growth models

These long-term national income developments are expressions of fundamentally different growth models in the two economies that gradually emerged after the second world war.

With the exception of the years following German unification, there was generally a stronger reliance on domestic demand in the case of France and on net exports in the case of Germany. Indeed, the share of exports (of goods and services) in GDP was about 31% in France compared to about 47% in Germany in 2018. This may help explain why income growth in France followed a much more stable path, while the German economy was more volatile due to its exposure to the global economy. Related to this, France's larger public sector (compared to Germany) might have smoothened economic cycles further, not least due to stronger automatic stabilisers. Between 1961 and 2018, Germany had six years of negative GDP growth while France had only three years of recession (Graph 2.9). The correlation coefficient of the world's real GDP growth between 1980 and 2018 with that of Germany is 0.6, while it is 0.49 for France.

Germany's growth model is strongly reliant on net exports. In addition to non-price factors, price competiveness gains in post-war Germany were traditionally made through relatively low inflation, occasionally re-adjusted through revaluations of the Deutsche Mark. This de-facto 'model' was briefly interrupted by the German reunification with high consumption and investment, including a construction boom, which was supported by net imports and net capital inflows. This period of high domestic demand, associated with strongly increased public and private indebtedness, ended in 1993. It was followed by a period of low growth and rising unemployment, until 2005, as financial deleveraging, strong wage moderation and wide-ranging labour-market reforms contributed to a subdued domestic demand. Some economists argue that these policies were also the result of an overvalued exchange rate, as a legacy of reunification, at which the Deutsche Mark was pegged to other European currencies (and then entered EMU in 1999, requiring several years of internal devaluation of the real exchange rate to regain external competitiveness. Indeed, for several years unit labour costs in Germany were continuously undershooting those of most trade partners, which led to gains in export-market shares and high net exports. This changed only

Graph 2.9: **Economic growth and trade openness in Germany and France, 1961-2018**



Real GDP growth at 2010 reference levels; 1961-1991 data relate to West-Germany only.
Source: European Commission.

in recent years with a higher growth contribution of domestic demand and a weakening contribution of net exports, also due to a tightening labour market and a reversal of the real exchange-rate development in terms of unit labour costs relative to trade partners.

In contrast, GDP growth in France relies traditionally on domestic demand, driven by a larger public sector, dynamic wage developments and a relatively low savings rate among households. As analysed in further detail in Section 4, labour-market institutions have been such that wage agreements did not always take into account productivity developments. Wage developments generally supported private consumption, while in some years affecting price competitiveness negatively and implying a somewhat higher inflation. In addition, compared to Germany, more dynamic demographic developments, lower household savings and a sizeable government sector in France helped to sustain private and public consumption. ([6]) Correspondingly, net exports were a drag on economic growth in most years since 1998 but, on the other hand, the strong reliance on domestic demand made the economy less exposed to external economic shocks such as in 2008/09.

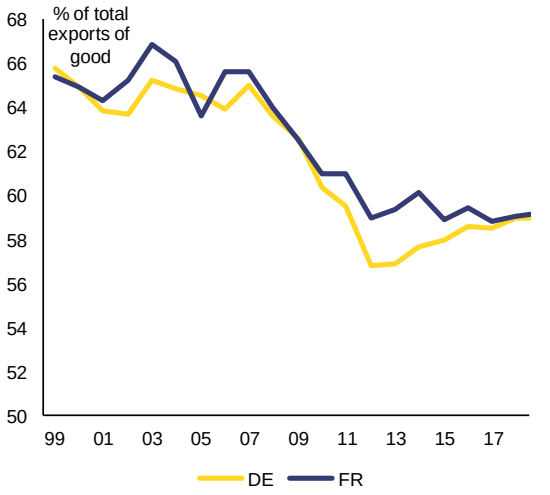
Its growth model might have positioned Germany well to adapt to and benefit from the increased competitive pressures arising from European and global integration. The behaviour of social partners and corporate strategies in adapting to regular revaluations of the Deutsche Mark (e.g. wage moderation, specialisation in less price-elastic products, pricing strategies, innovation) seemed to have continued in the run-up to the introduction of the euro and thereafter. This appears true irrespective of the need to adapt to exchange-rate appreciations of the euro and in the absence of appreciation risks within the euro area. Other euro-area members - including France, but also Italy and Spain that were traditionally relying on nominal exchange-rate devaluations - were less used to applying such strategies and instead continued relying on occasional devaluations, which possibly explains a large part of Germany's widening price-competitiveness gains within the euro area. However, following a trend depreciation since the late 1960s, the exchange rate of the French Franc and of the currencies of several of the other future euro-area participants were already broadly stable vis-à-vis the Deutsche Mark since 1987.

Still, the share of intra-EU exports decreased from the early 2000s until 2012 in both Germany and France (Graph 2.10). While one would expect Germany's geographic trade patterns to have followed its increases in price competitiveness within the euro area and the wider Single Market, its share of extra-EU exports actually rose since emerging markets, notably China, were more dynamic and less hit by the crisis. Germany benefited from the catching-up of emerging economies outside the EU, as this required in particular building up production capacities by acquiring investment goods in which Germany is relatively specialised. Germany's share of intra-EU exports converged again with that of France as the economic recovery in the EU strengthened. It should be noted, though, that France's world market share decreased more - from 5.7% (1999) to 3.1% (2018) - than that of Germany that fell from 9.6% (1999) to 8.4% (2018). ([7])

([6]) The size of the public sector, measured in terms of the public expenditure-to-GDP ratio, was similar in the two countries at 36% until 1970 when it started to increase in both countries. However, it essentially remained in a corridor of 40-45% in Germany while it kept on rising in France to above 45% in the 1980s, to above 50% in the 1990s and 2000s, and to around 55% since 2009.

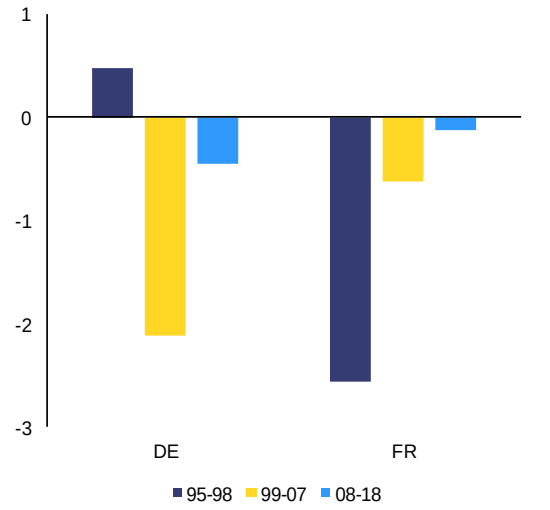
([7]) Share of exports of goods in % of world exports including intra-EU exports.

Graph 2.10: **Share of intra-EU exports of goods in % of total exports of goods, 1999-2018**



Intra-EU 1999-2001 excluding Croatia.
Source: European Commission.

Graph 2.11: **Growth of non-tradables over tradables**



Source: Ameco, European Commission.

The economic structures in terms of broad sectors differ accordingly in the two economies. In Germany, the manufacturing sector is much more important than in France, which is relatively more specialised in services (Table 2.2). The production of tradables accounts for 47% of Germany's gross value added compared to 38% in France. However, the dynamics has been such that the importance of non-tradables diminished in France in particular in the period 1995-98 while in Germany it diminished strongly in the period 1999-2007; since 2008 the growth of tradables and non-tradables was broadly similar in both countries (Graph 2.11).

Table 2.2: **Gross value added in % of total, 2018**

	Germany	France
Agriculture, forestry and fishery products	0.8	1.8
Building and construction	5.3	5.6
Industry excluding building and construction	25.8	13.4
Services	68.2	79.2

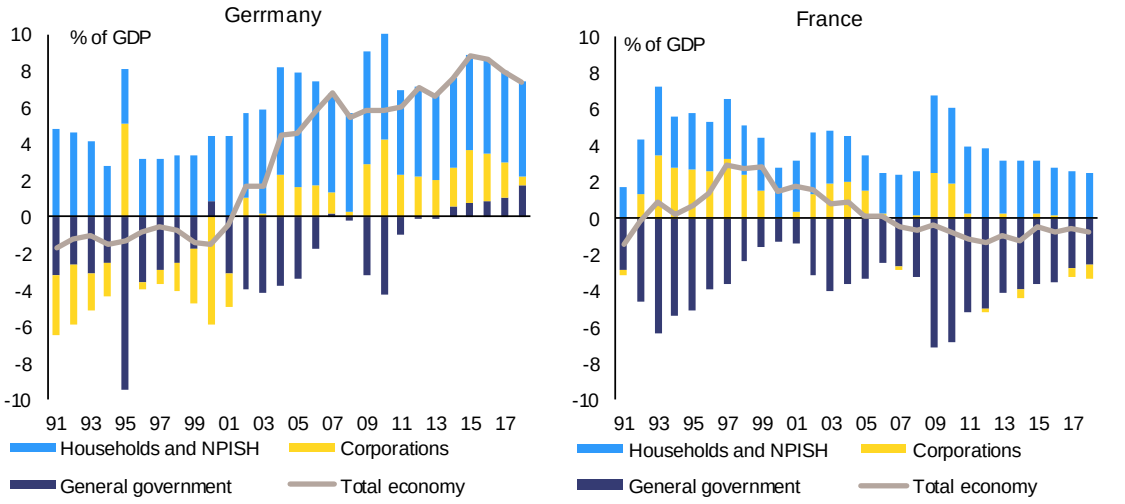
Source: Ameco, European Commission.

Differences in the evolution of investment and savings

The other side of the coin of these growth models is a diverse performance in terms of investment and savings, with its balance expressed by the current account. In most of the years since 1960, West-Germany's current account was in surplus, rising to more than 4% of GDP in the end-1980s, while France's current account was in deficit. Following reunification and the associated high capital needs, the traditional German current-account surplus turned into a small deficit throughout the 1990s and only turned into a sizeable surplus again from 2002 onward. Since then it kept increasing to a peak of 8.9% of

GDP in 2015 and appears to be decreasing only gradually (down to 7.6% by 2018). In contrast, France had a current-account surplus between 1993 and 2004, peaking at 2.9% of GDP in 1997. The current-account balance turned negative in 2007 and remained between -½ and -1¼% of GDP thereafter.

Graph 2.12: **Net lending (+) or net borrowing (-) of the German and French economies 1991-2018 (% of GDP)**



Source: European Commission.

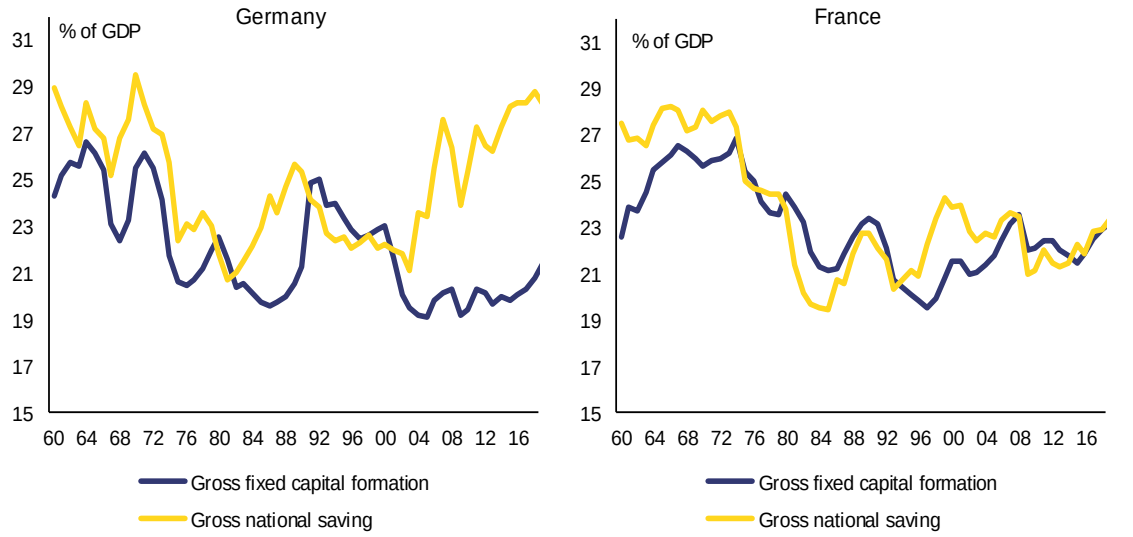
There were marked differences in terms of net lending/borrowing positions of the different sectors (Graph 2.12 for the years since 1991):

While **corporations** are usually expected to be net borrowers to finance their investments, German companies turned into net lenders in 2002 and have contributed to the high savings of the German economy in recent years. Thus, all sectors in Germany – except financial corporations – are now net lenders, and this might be a key source of divergence in growth dynamics. In France, corporations have varied between net-lending and net-borrowing positions in the period under consideration. The gross operating surplus of corporations differed considerably in the two countries since the early 1990s. In Germany, there was a low of 20.5% of GDP in 1993 after which it kept increasing to a peak of about 28% of GDP in 2007 and stabilised in subsequent years at around 25% of GDP. In France, the gross operating surplus of corporations remained in a range of 16% to 18% of GDP in most years. This compares to values of between 22% and 24% of GDP in the euro area since 1999.

- Differences between Germany and France for the net lending of **private households** were less pronounced in the 1990s, but German household savings continuously exceed those of French households by 1 to 4 percentage points of GDP per year since the early 2000s. The higher savings propensity can partly reflect structural factors such as the more rapid ageing envisaged for Germany ahead. It may also reflect a stronger concentration of wealth among the 10% wealthiest households that own 60% of the economy's net wealth (the ECB, 2017) and whose income and net worth have been further boosted by rising corporate profits and/or retained earnings in recent years. This, in turn, contributed to holding back consumption and sustaining a higher current-account surplus.

- **General government** is traditionally a net borrower in France, while in Germany it has become a net lender since 2014, as further explained in Section 4. Therefore, public debt has kept on increasing in France, reaching nearly 100% of GDP. In Germany, the debt-to-GDP ratio is on a descending path towards less than 60% of GDP.

Graph 2.13: **Investment and savings in Germany and France 1960-2018, in % of GDP**



Source: Ameco, European Commission.

Overall, investment relative to GDP tends to be higher in France than in Germany, with the exception of the reunification-related boom in Germany in the early 1990s. Since the mid-1960s, the investment-to-GDP ratio in France was usually some 2 to 3 percentage points above that in Germany, except for the years 1991 to 2001 (Graph 2.13). Part of the explanation is that public investment is higher in France than in Germany. Public investment was around 4% of GDP in France in most of the years (dropping to 3.4% since 2015) while in Germany, it fell from above 4% of GDP in the 1960s to around 2% of GDP in the 2000s, having exceeded 3% of GDP the last time in the years following reunification. ([8]) However, Germany's developments in total investment in recent years could also be seen as a 'normalisation' to the levels seen in the years before German reunification. Moreover, German firms have invested more abroad than their French counterparts, which is not included in the investment-to-GDP ratios, reflecting a strategy of outsourcing of low-productive activities, in particular to Eastern Europe and Asia.

Savings relative to GDP tend to be higher in Germany than in France, leading to a widening divergence in savings since 2004. The savings-to-GDP ratio remained broadly similar in the two countries in the 1960s and 1970s (Graph 2.13). From 1982 German savings usually exceeded French savings, with the exception of the years 1998 to 2003. Germany's savings rate kept on increasing since 2004 to above 28% of GDP since 2015 whereas it showed a falling trend in France to below 21% of GDP in 2009 and gradually recovered to 23% of GDP in 2018, maintaining a difference of around 5 percentage points in this decade. While ageing and financial deleveraging can explain a part of this difference, other features may also be at play, such as less owner-occupied housing.

([8]) It should be noted, though, that the figures are not fully comparable given the wider perimeter of the public sector in France, including for example hospitals where in Germany investment is accounted as private.

3. MONETARY DEVELOPMENTS AND FISCAL POLICY STANCE(S)

This chapter assesses the possible role of monetary conditions and of the fiscal policy stance as potential sources of the observed differences in economic activity. The chapter finds that differences in neither monetary conditions nor fiscal stances play any material role to explain trend-growth differentials, especially as of 2004 when they started to clearly diverge.

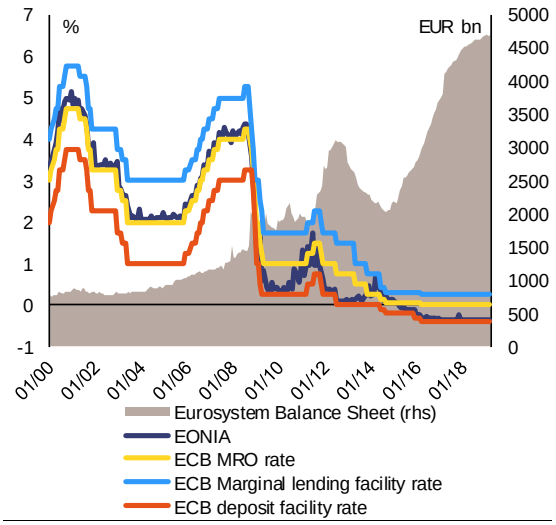
3.1. THE ROLE OF MONETARY AND FINANCIAL CONDITIONS: THE MONETARY POLICY STANCE

The monetary policy

Since the early-1970s, the monetary policy in Germany and France have been highly synchronised. In 1972, most of the EEC countries agreed to maintain stable exchange rates by preventing exchange rate fluctuations of more than 2.25%. In March 1979, this system was replaced by the European Monetary System. In this context, central banks started to target explicitly inflation and changed the operational target from solely monetary aggregates to make interest rates the main instrument of monetary policy. ([9]) These changes helped bring down inflation swiftly in many EU economies, to around 2% in the cases of France and Germany. The synchronisation of national monetary policies culminated with the adoption of the euro and the common monetary policy in 1998.

Therefore, the introduction of the common currency in practice did not bring major changes. Price stability is the primary objective assigned by the Maastricht Treaty to the European Central Bank (ECB) and the Eurosystem. Inflation in the euro area averaged around 2.2% over 2000 to 2007, with France (1.9%) and Germany (1.7%) slightly below. Until the outbreak of the crisis in 2008, monetary policy was conducted in the "standard" way by the ECB: the latter set interest rates at a level compatible with no excess reserves and the inter-bank euro money market distributing the liquidity according to the demand of individual banks.

Graph 3.1: **ECB policy rates and the Eurosystem balance sheet size**



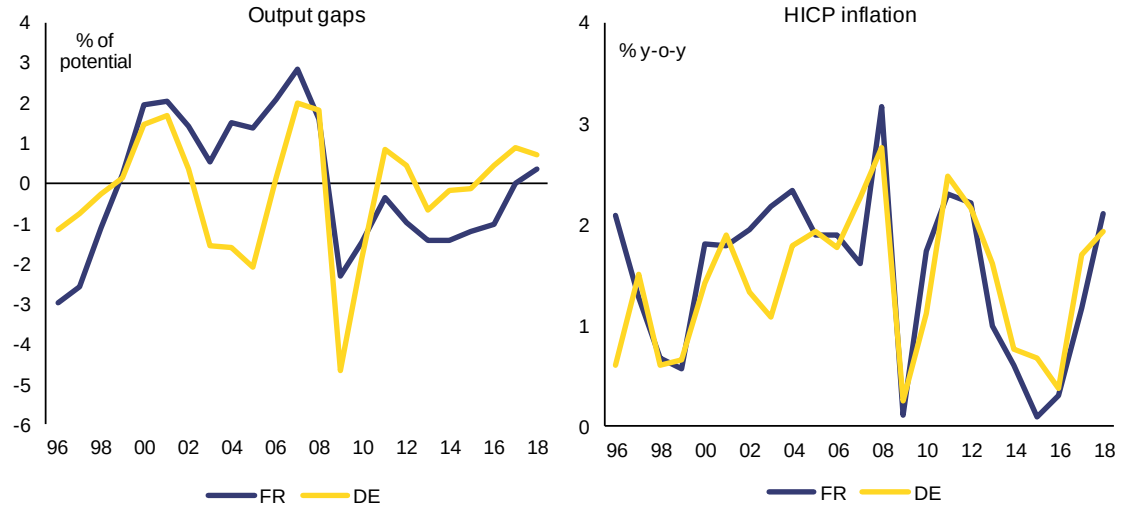
Source: European Central Bank.

The outbreak of the economic and financial crisis in 2008 led the ECB to adopt a number of unconventional measures. The onset of the 2008 global financial crisis and the subsequent euro-area sovereign debt crisis brought about first a collapse in money market functioning and subsequently the risk of deflation. The ECB responded at different moment in times both using at maximum its traditional tools and by introducing a set of non-standard measures. ([10]) In particular, the ECB cut its main refinancing operations (MRO) rate from 4.25% to its current level of 0% (Graph 3.1), while the deposit facility rate moved to negative territory since June 2014, currently standing at -0.40%. Furthermore, the ECB has considerably expanded its monetary policy toolbox. In particular, to ensure sufficient liquidity provision to euro area banks, the ECB introduced the fixed-rate-full-

([9]) Until the 1980s central banks followed the monetarist approach and targeted monetary aggregates out of the conviction that in the long-run inflation was determined by the trend growth rate of money relative to that of output and the velocity of circulation. However, financial deregulation and innovation blurred the link between money and prices (Mishkin (2000) and central banks started to focus on inflation directly using short-term interest rates as the main operational target.

([10]) See the section "Monetary Policy" forthcoming in the Quarterly Review of the euro area by A. Jevčák and Hartmann, P. and F. Smets (2018), 'The first twenty years of the European Central Bank: monetary policy', ECB Working Paper, No. 2219.

Graph 3.2: **Output gaps and inflation since 1996**



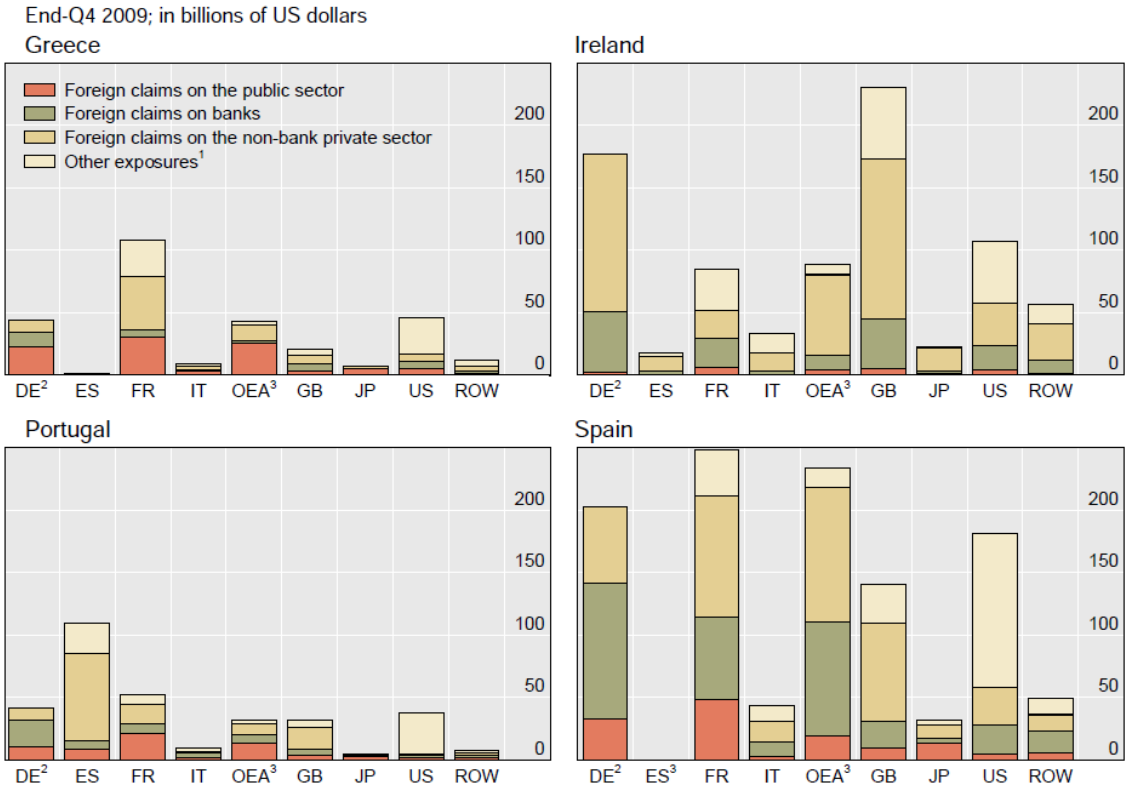
Source: Ameco, European Commission.

allotment procedure for its main refinancing operations, broadened the collateral framework and extended the maturity of its liquidity-provision operations to up to four years in the case of the so-called TLTROs (targeted longer-term refinancing operations). To support monetary policy transmission, mitigate deflationary risks and ensure the return of inflation to the ECB's medium-term price stability objective, the ECB furthermore launched in March 2015 a sizeable purchase programme covering private and public sector assets, the so-called Outright Monetary Transactions (OMT) program. The large amount of excess reserves in the banking system resulting from the full allotment procedure and the asset purchases pushed the unsecured overnight rate Eonia closer to the deposit facility rate (DFR), making the DFR the de-facto policy rate over the recent years. At the same time, the Governing Council used date- and state-based forward guidance to reinforce its accommodative policy stance and provide markets with the necessary clarity regarding the future monetary policy to be expected. As a result of the accommodative monetary policy, private sector financing costs fell to record low levels in both countries, therefore significantly contributing to the economic recovery.

The observed small non-systematic inflation differentials and cyclical conditions suggest that the ECB common monetary policy stance has not entailed any systematic bias for any of the two economies. Differences in inflation before and after the crisis partly mirror the different cyclical conditions in the two countries. Before the crisis, output in France was consistently above potential output (Graph 3.2), inducing some inflationary pressures. At the same time, over this period the German economy was more affected by the 2001 recession. The situation reversed after the crisis. Following the 2009 contraction, Germany recovered more swiftly than France and managed to close its negative output gap more quickly, returning to positive territory in 2016. By contrast, only in 2018 was the negative output gap in France closed and became slightly positive. While a simple Taylor rule simulation would suggest that, since the crisis, the ECB interest rate suited the French economy better than the German economy, this is unlikely to be valid in times of interest rates at the zero lower bound and non-standard monetary policy measures (Box 3.1).

Unconventional monetary policy measures do not seem to have entailed any significant asymmetric impact between France and Germany. Liquidity-providing measures have been used mostly by smaller second and third-tier peripheral banks, which are typically located in Italy and Spain. In this regard, at the beginning of the debt crisis, French and German banks both hold large exposures to financial systems in Spain, Portugal, Ireland or Greece (Graph 3.3) and,

Graph 3.3: **Exposure to Greece, Ireland, Portugal and Spain, by nationality of banks**



DE = Germany; ES = Spain; FR = France; IT = Italy; OEA = other euro area; GB = United Kingdom; JP = Japan; US = United States; ROW = rest of the world.

[1] Derivative contracts, guarantees and credit commitments. [2] International claims obtained from the BIS consolidated banking statistics (immediate borrower basis). Other exposures are not available for banks headquartered in Germany. [3] Claims of other euro area banks on the residents of each vis-à-vis country do not include the claims of banks headquartered in the respective country, as these are not foreign claims. Similarly, the claims of Spanish banks on residents of Spain are not reported, since they are not foreign claims.

Source: Avdjiev et al. (2010).

accordingly, both French and German banks benefited from measures that contributed to stabilise peripheral banks. In turn, the OMT program did not seem to have any materially different impact in France or Germany,([11]) whereas its announcement was followed by a swift reduction of Spanish and Italian bond yields.

A similar message emerges from a synthetic measure of financing conditions for non-financial corporations. As measured by the Commission index of the cost of borrowing for non-financial corporations (Graph 3.4), there has been a notable decline for both France and Germany since 2010. This reduction was driven by reductions in all components of financing costs, in particular by reductions in the costs of credit provided by both banks and bond emissions in financial markets. Such decline appears to have come to a halt in 2017. Since then borrowing costs have been moving sideways while being relatively lower in France, which can be the result of the different cyclical position of the two economies and of the different efficiency in the two banking systems in transmitting monetary policy impulses. ([12])

([11]) Altavilla et al. (2016).

([12]) The very different size, structure and role of the banking sectors in the two countries are not further analysed here, given that they are unlikely to explain the differences in growth performance in view of the lower borrowing costs and higher investment in France.

Box 3.1: **A simple Taylor rule simulation**

A rough way to assess to what extent the observed, non-systematic inflation and output gap differentials might have an impact on the 'ideal' country-specific monetary policy stance is to check what interest rate a Taylor rule would have prescribed for each country individually and compare it with the actual ECB rate. The Taylor rule aims to relate the central bank's optimal target rate to the underlying economic conditions, summarised by inflation and the output gap. According to such a rule, higher inflation or a large positive output gap—associated to future inflationary pressures—would call for interest rate increases to cool down the economy and vice versa: low inflation or a negative output gap would require a low interest rate to stimulate credit, growth and inflation. Here we will consider a simple version of the rule. [(1)] The target interest rate is

$$n_t = 0.4 + 1.05\pi_t + 0.4g_t$$

where π_t is current inflation, a proxy for inflation expectations, and g_t the output gap, measuring the cycle. The parameters are chosen to roughly fit ECB policy rates over the period 1999-2018 for the euro-area average inflation and output gap. In other words, our counterfactual interest rate can be interpreted as the choice of the central bank had it been able to choose a different interest rate for each country under the assumption that the ECB reaction function remained stable across time and countries.

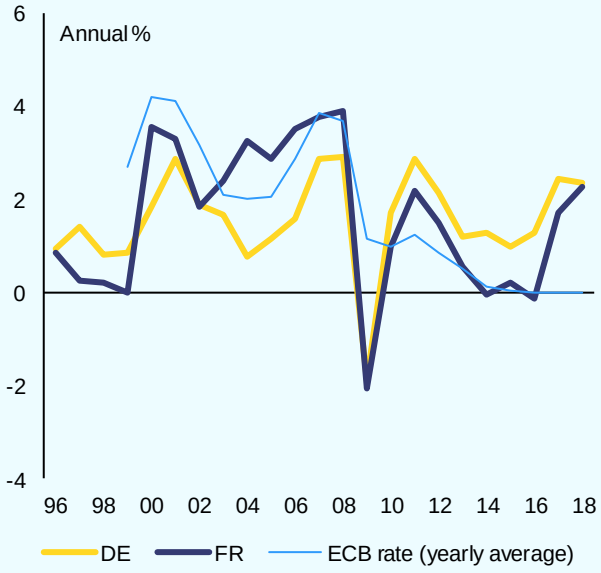
It is worth noting that, while the Taylor rule is a widely used benchmark to assess monetary policy, it is a very rough measure and a number of caveats apply. First, it is very likely that the ECB's reaction function has changed with the crisis and the flattening of the Phillips curves. Second, the comparison of ECB policy rates with country-specific Taylor-based rates does not account for other the non-standard monetary policies that have been implemented over recent years, such as asset purchases and forward guidance. Third, it cannot be excluded that country-specific rules would have been different from the rule geared towards the euro area as a whole. Still, a comparison based on the same similar Taylor rule for the two countries can give some limited insights on how monetary policy suited the conditions of the two countries.

(1) Bernanke (2015) is a crash-course on the Taylor rule and a call not to interpret its prescriptions too literally. Here we follow Nechio (2011), who performs this exercise for the core and the periphery of the euro area. Malkin and Nechio (2012) further compare the euro area with broad US regions, concluding that discrepancies are larger within the euro area.

(Continued on the next page)

Box (continued)

Graph 1: **Taylor rule prescriptions versus actual ECB rate**



The thin line is the actual ECB target rate (the annual average of the minimum bid rate/main refinancing rate). The coloured lines are the rates the Taylor rule would have prescribed to each of these economies, Germany and France in regard of their inflation rates and output gap.
Source: European Central Bank, Ameco, European Commission, own calculations.

Graph 1 shows that, over the whole period since 1999, the ECB interest rate has not been systematically better suited to any of the two economies. However, over the post-crisis period the counterfactual Taylor rule prescription would imply higher ECB policy rates for Germany, and partly tighter monetary policy for France, in particular since 2016. On the other hand, with policy rates constrained by the zero-lower bound nominal interest rates, the ECB introduced a number of unconventional monetary policies, implying a policy stance significantly more accommodative than depicted. Arguably, the Taylor rule is an oversimplification that does not account for many other factors, like uncertainty that may influence inflation expectations. Consequently, the Taylor rule prescription under the current conditions may offer a misleading picture. Furthermore, a structural break in the monetary-policy reaction function might have taken place, for example in response to a flattening Phillips curve relationship, which could imply lower Taylor rates than prescribed by the constant model used above. [2]

[2] See Peter Bofinger's interesting *differing opinion* in German Council of Economic Experts (2017, p. 224): it is unlikely that the stance is today too loose for Germany because there are currently no signs of overheating of the German economy. The slowdown experienced in the first months of 2019 point in the same direction.

This development did not apply to all institutional sectors of the economy. In particular, while in the run-up to the crisis the higher inflation in France brought about negative real interest rates on long-term government bonds, the increase in public debt in France after the outbreak of the crisis and the reassessment of risk led to somewhat higher nominal long-term yields than in Germany (by around 50 basis points on average since 2012. See Section 3.2 and Graph 3.9). Higher nominal long-term yields, coupled with lower inflation led also to higher long-term interest rates in real terms in France.

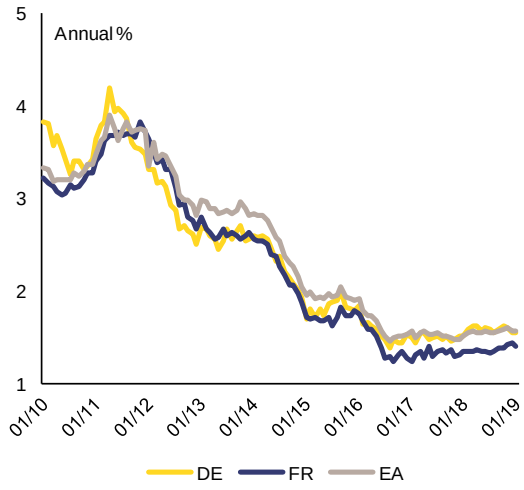
Overall assessment of the monetary policy stance

The ECB's monetary policy is oriented towards the euro area as a whole. [13] Hence, by

[13] For the evolution of the thinking on this matter, see O. Issing (2005) "One size fits all! A single monetary policy for the euro area", Speech at the

definition, its monetary policy is not aimed at addressing regional disparities and inevitably, its stance may, at times be more adapted to some regions than to others, without implying any significant bias. In this context, differences in monetary policy stances at the national level are due to idiosyncratic economic conditions, including output gaps and inflation, and financial structures prevailing across Member States.

Graph 3.4: **Cost of borrowing composite index for non-financial corporations**



(1) The index includes interest rates on new business volumes for short-, medium-, and long-term loans (ECB) as well as corporate bond yields (Bloomberg/Datastream).
(2) Components are weighted according to their share in overall non-financial corporations financing (outstanding amounts).
Source: European Central Bank, Bloomberg/Datastream, and European Commission.

Monetary policy conditions and its transmission channels do not seem to have played any material role to explain the observed divergent trends in GDP per capita. The single monetary policy stance implemented by the ECB is not systematically better adapted to either Germany or France, and there is no reason to believe that this may change in the future. As the French and German economies add up to a considerable share of the euro area, their optimal monetary policy is not expected to differ significantly, on average, from the actual one, especially in view of the limited size of inflation differentials between the two countries. In turn, the recent differences in financing conditions appear to have countered the differences in the respective monetary conditions.

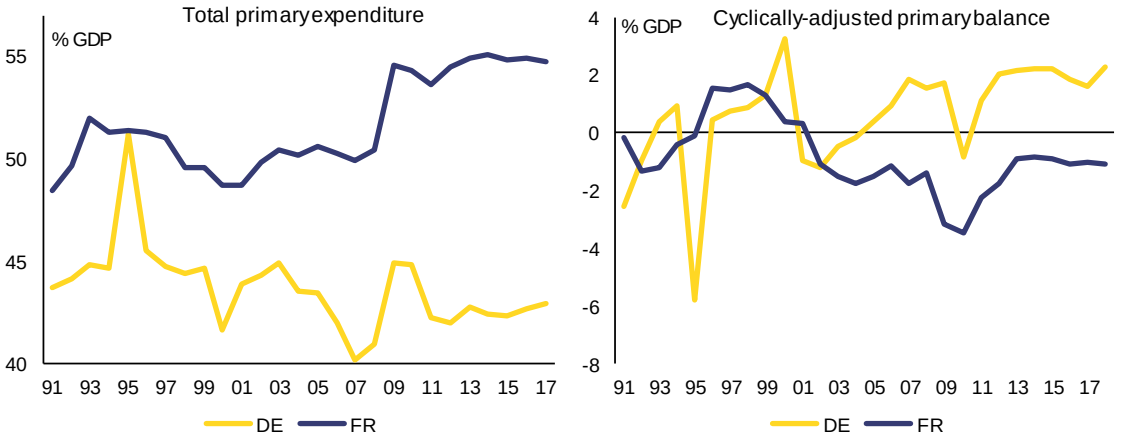
International Research Forum, Frankfurt am Main, 20 May 2005, available at https://www.ecb.europa.eu/press/key/date/2005/html/sp050520.en.html and L. Bini Smaghi (2011), "One size fits all?" Speech at the 16th Annual Conference of the German-British Forum „The European Central Bank in a global perspective – Central banking and the challenge of rising inflation", London, 26 May 2011, available at https://www.ecb.europa.eu/press/key/date/2011/html/sp110526_1.en.html

3.2. THE FISCAL POLICY STANCES

Over the period 1996-2018, the fiscal stance in France can be deemed as neutral on average. The change in the cyclically-adjusted primary balance (CAPB) of the general government is the proxy used for discretionary fiscal measures to assess the fiscal stance. In the case of France, periods of some fiscal tightening were followed by others of fiscal loosening that largely offset previous improvements in the CAPB. The increases registered in the CAPB between 1996 and 1998 gave rise to protracted deteriorations thereof that lasted until 2010 on average (Graph 3.5). In 2009, the fiscal stance was markedly expansionary. Given the deterioration of public finances, a three-year period of fiscal tightening started in 2011. The deterioration of cyclically-adjusted primary balances since the outbreak of the crisis was mainly driven by the increase in primary expenditure, which on average displayed an upward trend up until 2014, as of when some containment is observed and making for a broadly neutral fiscal stance thereafter.

In contrast, the fiscal stance in Germany can be considered, on average, as contractionary over the same period. Compared to France, the difference shows up between 1996 and 2007. In the case of Germany, barring 2001 and 2002, the fiscal stance was clearly contractionary over those years. With the outbreak of the economic and financial crisis, a fiscal loosening was observed between 2008 and 2010. Since then, a similar pattern to France is detected, with fiscal tightening until 2013, followed by a broadly neutral fiscal stance until 2015. The fiscal tightening observed in 2016 and 2017 was offset, however, in 2018. As in the case of France, the dynamics of the CAPBs was largely driven by primary expenditure developments. In this case, primary expenditure declined by around 5 percentage points of GDP

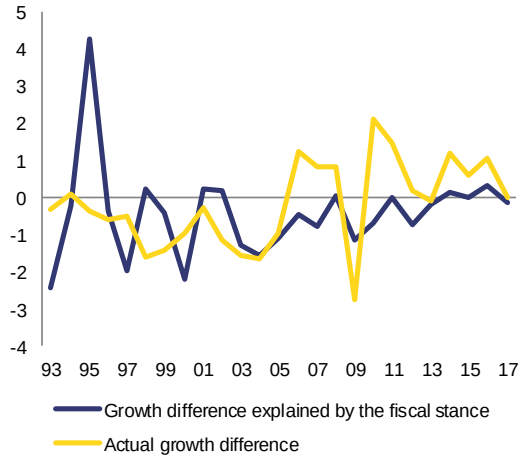
Graph 3.5: **Primary expenditure ratios and cyclically adjusted primary balances**



Source: Ameco, European Commission.

between 2003 and 2007. The outbreak of the crisis brought about a broadly equivalent increase in two years (Graph 3.5). However, primary expenditure declined again in 2011 and has remained broadly stable since then, between 42% and 43% of GDP and compared to around 54.5% of GDP in France.

Graph 3.6: **Growth differential between Germany and France**



The lines are gauged as growth in Germany minus growth in France.
Source: Ameco, European Commission, own calculations.

The different fiscal stance, however, does not explain the observed growth differentials, especially since 2004. In terms of macroeconomic performance, the more expansionary fiscal stance in France (worsening the CAPB) until 2004 goes in parallel with a faster GDP growth (both in real and real per-capita terms) than in Germany. However, since 2005, real GDP growth (including in per capita terms) in Germany outpaces that in France, especially after the higher alignment of the respective fiscal stances following the outbreak of the economic crisis. In fact, the correlation coefficient between the differences in per-capita GDP growth rates between France and Germany and the differences in the respective changes in the CAPB is -0.38 for the whole period 1996-2018. Graph 3.6 shows the observed difference between growth rates in Germany and France and what could be expected only by differences in the respective fiscal stances. As for the latter, the blue line in the chart has been gauged taking the change in the cyclically adjusted primary revenues and expenditures as proxies for the fiscal shocks. A plausible range of fiscal multipliers for the two countries([14]) has been used to calculate the effects of these fiscal shocks on growth. This calculated fiscal-driven growth impulse is compared with the actual growth difference (yellow line). As Graph 3.6 shows, the stronger fiscal impulse in France might explain only a limited share of the faster GDP growth observed until 2004. As of 2005, the observed difference in growth rates seems rather unrelated to the differences in the fiscal stance.

([14]) Kilponen et al. (2015). In this case, the one and two-year tax multipliers used for Germany have been -0.1 and -0.15; -0.2 and -0.4 for France. In turn, the one and two-year expenditure multipliers used for Germany have been 0.6 and 0.4 and 1.1 and 0.8 for France. These values are also consistent with the multipliers gauged in Baum and Koester (2011) and Cléaud et al. (2013).

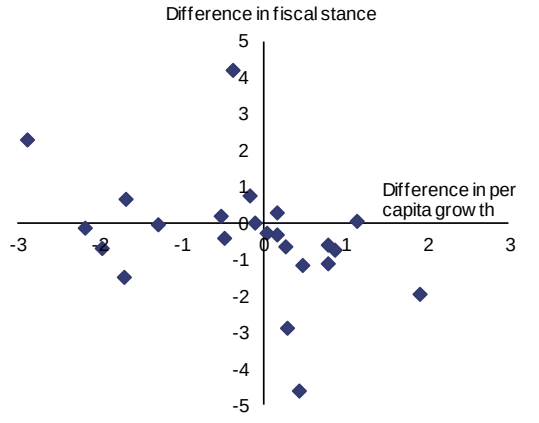
Table 3.1: **Estimated impact on growth differentials of differences in the fiscal stance**

Dependent Variable: Y_DIF Method: OLS Sample (adjusted): 1993 2018				
Variable	**Coef.**	**Std. Error**	**t-Statistic**	**Prob.**
CAPB_DIF	-0.15	0.12	-1.27	0.22
CAPB_DIF(-1)	-0.01	0.11	-0.04	0.96
DIF_IL	0.21	0.17	1.20	0.24
C	0.30	0.23	1.28	0.21
No obs.	26			
R-squared	0.11			
Adjusted R-squared	-0.01			
S.E. of regression	1.13			
Sum squared resid	28.16			
Log likelihood	-37.93			
F-statistic	0.92			
Prob(F-statistic)	0.45			
Durbin-Watson stat	1.28			

Source: Ameco, European Commission, own calculations.

A simple regression between growth and fiscal stance differentials, after controlling for real interest rates confirms this view (Table 3.1**).** While the estimated coefficients for the fiscal stance differential display the expected sign, these are not significant at conventional levels. Moreover, granger causality tests fail to detect any direction of causality. Accordingly, the respective fiscal stances do not seem to have played any significant role in explaining growth differentials. In the same vein, differences in growth of GDP per capita between the two countries appear largely unrelated to the observed differences in the fiscal stance (Graph 3.7).

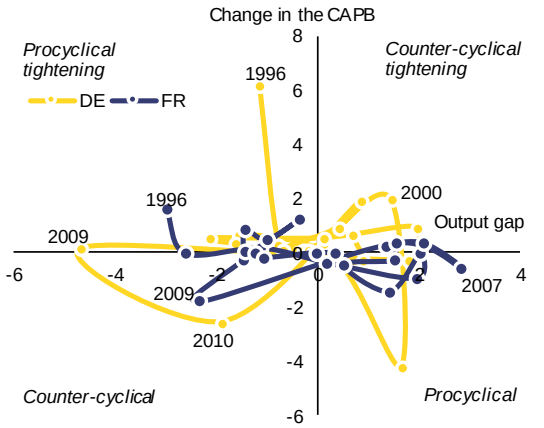
Graph 3.7: **Relationship between differences in growth of GDP per head (France-Germany) and differences in their fiscal stance**



Source: Ameco, European Commission.

Compared to the estimated output gap, the fiscal stance has been broadly pro-cyclical in France and Germany since the mid-nineties, although this pro-cyclicality has been more pronounced in France (Graph 3.8). The correlation between the output gap and the change in the cyclically-adjusted primary balance is -0.1 in the case of Germany and -0.3 in France. Specifically, the counter-cyclical fiscal stance in Germany could be observed in 1999-2000, 2006-2007, 2010-2012 and 2018, whereas in the case of France fiscal policy has only been countercyclical in 2005-2006, 2008-2010 and 2016. The more pronounced pro-cyclical fiscal policy could have contributed to the relative deterioration of French price competitiveness. The more expansionary fiscal policy in France led to relatively high cyclically-adjusted primary deficits, which partly explain the positive interest rate spreads after the outbreak of the crisis (Graph 3.9). Thus, higher interest rates could have been just one among other factors behind France's worse performance in GDP per head over the last 12 years. However, as mentioned in Section 3.1, borrowing cost for non-financial corporates have not displayed systematic differences over the last decade. More recently, borrowing costs have been somewhat lower in the case of France since 2017.

Graph 3.8: **Fiscal stance and its relation with the cycle**

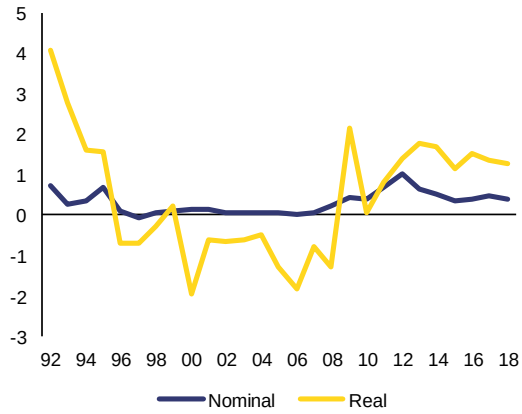


Source: Ameco, European Commission.

Automatic stabilisers contributed to smooth cyclical fluctuations in Germany and France. The automatic stabilisers are the budgetary arrangements directly linked to economic activity and help dampen cyclical fluctuations at unchanged policies. The smoothing role of automatic stabilisers stems from the combination of tax revenues closely linked to the economic cycle (typically income and indirect taxes) and the largely acyclical behaviour of most expenditure

items. Hence, in economic downturns, tax revenues decrease while government spending slightly increases (notably due to the unemployment insurance), thereby supporting income and demand and deteriorating budget balances. By contrast, in expansions, tax revenues increase whereas expenditure does the opposite, if anything. This weighs on income and demand, while improving budget balances.

Graph 3.9: **Nominal and real long-term interest rate differentials (France-Germany)**



Source: Ameco, European Commission.

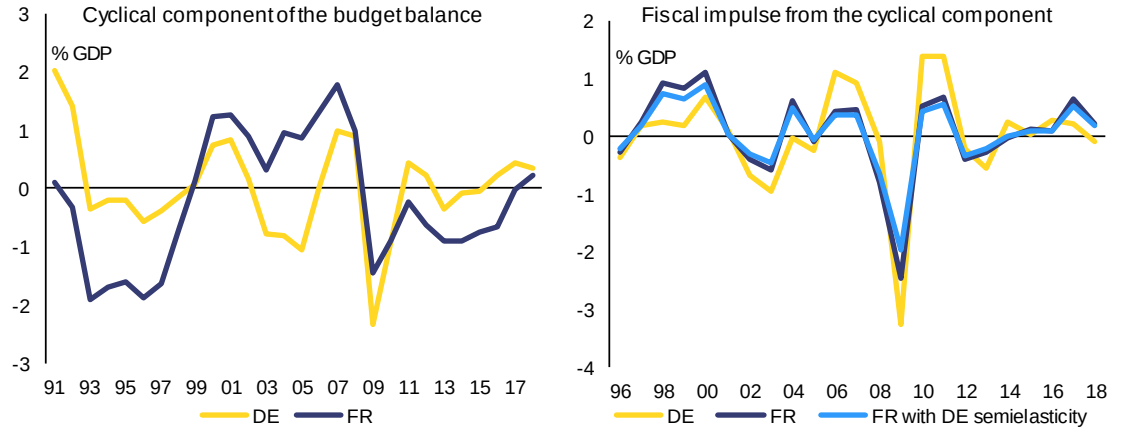
The automatic stabilisers can be assessed through different approaches. The three main approaches to assess the size of automatic stabilisers are the microeconomic, macro-economic and statistical approach (see Mohl et al., 2019, for further details). The microeconomic approach measures the direct stabilisation role of the tax and benefit system in smoothing households' disposable income (i.e. income after taxes and benefits) and consumption using a micro-simulation model. The macroeconomic approach consists in measuring the stabilisation effect of total fiscal policy with a general equilibrium model, thereby allowing for behavioural responses and macro-economic feedback effects. Finally, the statistical approach gauges this automatic stabilisation effect by means of the estimated output gap semi-elasticities of the government budget balance. This last approach is the method used for fiscal surveillance.

According to the micro-economic approach, automatic stabilisers are larger in Germany than in France. Mohl et al. (2019) estimate that around 35% of the shocks to market income are absorbed by the tax-benefit system in France, whereas in the case of Germany this stabilisation capacity rises to somewhat less than 40%. Their capacity to stabilise consumption is very similar in both countries, at some 70%, being only slightly higher in Germany. In particular, the consumption stabilisation capacity, mainly stemming from social transfers affecting those with the lowest incomes, is almost the same in the two countries at around 40%. However, the tax system seems to play a slightly higher role in stabilising consumption for those at the last income quintile in Germany. These results seem at odds with the larger share of revenues and expenditure in GDP in France. In fact, this approach can underestimate the stabilisation capacity of these countries in that these estimations do not include the stabilisation effect of old-age benefits (including pensions), VAT and corporate income tax. It cannot be excluded that the stabilisation would have been more pronounced in the case of France if these transfers and taxes had been included as well.

The estimated semi-elasticities of the general government balance to the output gap unveil a higher stabilising capacity in France. This larger capacity to automatically stabilise macroeconomic shocks is mainly linked to the higher revenue and expenditure-to-GDP ratios in France. Specifically, the semi-elasticity of the budget balance to the output gap is estimated at 0.63 in the case of France and at 0.504 in the case of Germany. In this regard, the left-hand panel of Graph 3.10 shows that the absolute size of the cyclical component of the budget balance is higher in France: more negative than in Germany between 1991 and 1999 and as of 2011, whereas this cyclical component was positive and larger between 2000 and 2007.

The larger size of automatic stabilisers in France has not entailed any material impact on medium-term growth trends. The fiscal impulse stemming from the cyclical component can be proxied by the change thereof. On average, between 1998 and 2006 automatic stabilisers have been a drag on growth more in France than in Germany (see right-hand panel of Graph 3.10). However, as of 2007, the opposite is observed, precisely due to the fact that growth trends start to diverge clearly between the two countries as of 2004. However, in order to assess the magnitude of the fiscal impulse due to the different size of automatic stabilisers, Graph 3.10 also shows what

Graph 3.10: **Automatic stabilisers in Germany and France**



Source: Ameco, European Commission.

the change in the cyclical component in France would have been if the budgetary semi-elasticity had been that of Germany. In that case, the proximity between the actual change in the cyclical component and the recalculated one with the German semi-elasticity unveil no significant pattern that could help explain persistent divergences in growth trends. Actually, since 1996, the larger size of automatic stabilisers in France compared with Germany would have only dragged growth by 0.02 of GDP on average. It is worth mentioning, however, that the impulse would have been sizeable in 2009, by 0.5 of GDP, showing a drastic different behaviour in both countries in case of extreme cyclical variations.

To sum up, differences in the fiscal stance in Germany and France do not seem to explain observed growth differentials, especially since 2004. While the on average more procyclical fiscal stance in France could have contributed to a relative deterioration of French price competitiveness, the statistical evidence suggests no material contribution of fiscal stance differentials to the observed divergent trends in growth. In turn, neither does the larger size of automatic stabilisers in France seem to be relevant to explain medium-term growth rate differentials.

3.3. SUMMARY OF THE MAIN FINDINGS ON NOMINAL DIVERGENCES

The monetary-policy stance does not appear to have been better suited to either economy, when assessed against their respective output gaps or inflation performances. If in recent years, the monetary-policy stance seems to have been relatively closer to an optimal level for France, in the past this appears to be less evident.

Lending conditions have fallen in a largely similar way since the crisis and could also not explain any systemic differences in investment or growth. Profitability continues to be weak in the banking sector in a low interest-rate environment, reflecting also respective structural features and some remaining crisis legacies.

Differences in the fiscal policy stance do not seem to have played any significant role either in explaining growth differentials. No significant statistical relationship is found between differences in the respective fiscal stances and growth rates.

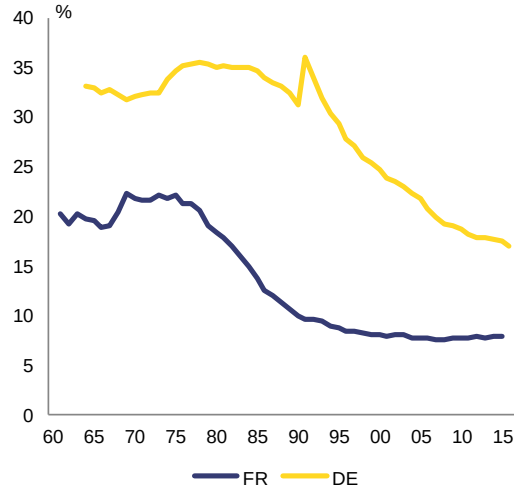
The fiscal stance has been pro-cyclical in both countries on average. However, this feature has been more salient in France since 2005, which is likely to have contributed to a deterioration of French price competitiveness. In turn, while the larger size of automatic stabilisers in France contributed to a smoothening of cyclical fluctuations more than in Germany, this cannot explain medium-term differentials in growth rates.

4. LABOUR MARKET INSTITUTIONS AND OUTCOMES

This chapter discusses differences and similarities between French and German labour-market institutions to understand e.g. how an identical unemployment rate at 7.8% in 2008 could increase and, at 9% in 2018 in France, be almost 3 times higher than in Germany. Specifically, they compare the functioning of collective bargaining (Section 4.1.1), working-time arrangements (Section 4.1.2), employment-protection legislation (Section 4.1.3), industrial action and disputes (Section 4.1.4) and social-security systems (Section 4.1.5), as well as sectoral patterns (Section 4.1.6) in the two countries. The comparisons made in each section highlight the main differences as well as similarities for the labour-market institution at stake. Following an overview of social outcomes (Section 4.2), Section 4.3 summarises the main findings on the labour market and complements them with an overview of some of the challenges remaining when looking ahead.

4.1. LABOUR MARKET INSTITUTIONS

Graph 4.1: **Union density**



(1) The union density or union membership rate is given by the ratio between the employees members of a trade union and all the employees of a country.
(2) Data for 2015 and 2016 have been updated using ILO data, available at: www.ilo.org/ilostat [Industrial Relations].
Source: Visser (2015) and Ilostat.

A diverging response of employment to the 2008 crisis can be partly explained by the differences in the labour-market institutions existing in the two countries. French and German industrial relations have traditionally presented both similarities and divergences. In a nutshell, in France these relations have traditionally been regulated by the State through laws, while in Germany, the system of industrial relations was shaped by a more flexible social dialogue on the basis of higher trade-union membership rates (Graph 4.1), collective bargaining of trade unions and codetermination of works councils at firm level. Over time, union membership decreased in both countries. In Germany, it fell from 34.7 % in 1960 to 17.35 % in 2015 with an acceleration in the drop taking place after 1991; in France, it fell from 19.6 % to 7.9 % over the same period, although most of the drop in union membership took place at the end of the 1970s that is more than a decade before than in Germany. As argued by Dustman *et al.* (2014) and Kügler *et al.* (2018), the drop in the share of workers covered by union agreements along with the increase in the number of firm-level deviations from industry-wide agreements led to an unprecedented decentralisation of the wage-setting process from the industry to the firm level in Germany. In contrast, the economy-wide coverage of wages and work hour regulations applying to all firms in the same industry have mitigated the effects of the decline in the union membership rate on the wage-setting process in France.

The differences between the French and the German labour-market institutions are also reflected in a different approach to reform. Indeed, the more decentralised the wage-setting process, the less institutional changes would require broad consensus along the political spectrum. As a result, while reforms adopted in Germany have been less frequent but characterised by a wider scope, the labour law in France is a field where only a step-by-step approach to reform seems possible:

- Notably, the fact that larger numbers of employees were kept in jobs during the 2008 downturn in Germany is often seen as the result of the structural employment policies put in place since 2003 (Ziemann, 2010). After having gone through the "Hartz reforms" in the mid-2000s ([15]), labour market reforms in

([15]) For recent discussion of the "Hartz reforms" and their (limited) impact on the German labour market, see Burda, M. and Hunt, J. (2011), What Explains the German Labor Market Miracle in the Great

Germany in the last few years included introducing a statutory general minimum wage (2015), facilitating the extension of sectoral collective agreements, (including amendments to labour-court procedures) and tightening the rules on temporary agency work. While the motivation of the "Hartz reforms" was mainly to deregulate institutions and to increase incentives to take up work after the sluggish labour-market performance at the beginning of the 2000s, the latest set of reforms was motivated by protecting workers from unfair situations and to improve the functioning of the collective-bargaining system.

- At the same time, **France** has embarked on a series of reforms since 2008, promoting the introduction of a 'flexicurity system'. In particular, the reforms enacted by the El Khomri law, adopted in July 2016, provide employers with more incentives to hire on open-ended contracts, as they introduced the so-called 'offensive agreements' through company-level agreements that can modify the working conditions and remunerations of employees to maintain or increase employment. The same law also continued the previous series of reforms redefining dismissal procedures (2008 – individual dismissal; 2013 – collective dismissal; 2014 – labour court reform) by enlarging the concept of individual dismissal to include economic reasons. Equally, the El Khomri law paved the way for the reduction in the number of industrial sectors from 700 to 200 and the reform of the Labour Code initially planned by August 2018 and then anticipated in September 2017. This latter redefined the relationship between firm-level agreements and sector-level agreements to enlarge the field of collective bargaining, simplify representative institutions within firms, and redefine *prud'homial indemnities* in terms of seniority of a worker (Box 4.1). All these reforms have been accompanied by a progressive reinforcement of professional transitions. Since 2011, the *professional securing contract* supports workers to get back to work by setting up specific accompanying and training measures and grants. Furthermore, a personal training account was introduced in 2014 to provide training rights directly attached to active people in the private sector all along their career. The personal training account has been encompassed in the personal activity account since January 2017. This personal activity account is accessible to all, including civil servants, unemployed and self-employed. It allows them to have access to all the rights acquired throughout their career in terms of both training and retirement. The 2018 reform of the vocational education and training system has changed the way in which training rights stored in personal training accounts are measured, passing from points to euros.

Recession?, No 8520, CEPR Discussion Papers; as well as Odendahl, C. (2017), "The Hartz myth: A closer look at Germany's labour market reforms", Center for European reform, July 2017.

Box 4.1: **Labour market reforms in France in recent years**

Beyond the El Khomri law, two initiatives were undertaken after the Presidential elections of May 2017. On 6 June 2017, the Prime Minister (Édouard Philippe) and the Minister of Labour (Muriel Pénicaud) transmitted a work programme to social partners. This work programme contained the six main actions to be adopted by the government over the following 18 months in order to renew the French social model. Notably, the French government intended to: (i) ensure the convergence between social and economic performance, thanks to a new reform of the labour law at the end of the summer of 2017; (ii) restore the purchasing power of employees by 1 January 2018, thanks to the removal of the contributions for the sickness and the unemployment insurance, financed through an increase in the general social levy; (iii) strengthen the vocational training system from the beginning of 2018, with specific actions for jobseekers, young people and workers whose jobs are expected to change rapidly; (iv) open the unemployment benefit system to self-employed and workers who have resigned starting from summer 2018; (v) progressively modify the apprenticeship system over the next two years in order to increase the firms' demand for apprentices of less than 25 years; (vi) renew the pension system by making it more transparent and fairer.

Thereafter, on 28 June, the Minister of Labour (Muriel Pénicaud) presented to the Council of Ministers the Enabling Law allowing the French government to take action as regards the first of the 6 points to renew the French social model announced on 6 June, by redefining the relationship between firm-level and sector-level agreements for completing the reorganisation of the Labour Code initiated by the El Khomri law. The final version of the Enabling Law was adopted on 2 August 2017.

Five writs ("*ordonnances*") ([1]) were then adopted by the French Council of Ministers on 22 September and a sixth on 20 December 2017 to ensure consistency of the changes introduced into the labour law with pre-existing legislation. First, they clarify the structure of collective bargaining. Based on existing legislation, they specify which elements are defined by sector-level agreements, such as issues related to employment and working conditions (including minimum wages for each category of workers), while firm-level agreements will continue to regulate working time and play a leading role on pay beyond the minimum wage for each category of workers. The *ordonnances* also streamline collective bargaining, enabling sector-level bargaining to prevail over the law for defining some conditions for using fixed-term and "project contracts". Second, the *ordonnance* revised the rules on dismissal. Compulsory compensation ceilings have been introduced for unlawful dismissals, along with a new mutually-agreed collective resignation procedure (*rupture conventionnelle collective*). Moreover, the timespan for introducing a lawsuit contesting a dismissal (except in cases of harassment and discrimination) has been reduced from two years to one year and the scope of the assessment of economic difficulties has been restricted from the international to the national level. Third, the framework of the social dialogue between employers and employees has been further modified. In line with the reform of 2016, the majority principle for concluding agreements became the rule as of 1 May 2018. A reduction in the number of sectors from 700 to 200 is planned to be achieved by the end of 2019. The validity of sectoral agreements, currently applying to most of the branches and 98 % of employees, is now associated with new conditions. The capacity of concerned companies to adopt agreements without the presence of trade-union delegates was expanded. Three consultative bodies out of the 4 representative institutions within firms which have only consultative powers were merged into a single one (the *'social and economic committee'*).

The effects of these labour law reforms are expected to fully materialise only over time, although their first impact was already visible at the end of 2018. According to the committee in charge of the assessment of the 'ordonnances', on 1 November 2018, 10 500 new social and economic committees were created, 69 firms negotiated a '*rupture conventionnelle collective*' and 47 bargained a new collective performance agreement touching upon subjects such as internal mobility, working time, and remuneration (France Stratégie, 2018a; France Stratégie, 2018b; European Commission, 2018a). As of 31 March 2019, the number of new social and economic committees increased to 23 700, while 120 companies had used 'rupture conventionnelle collective', and 142 collective performance agreements were concluded.

([1]) A writ is a formal written order issued by a body with administrative or judicial jurisdiction.

4.1.1. Wage formation

Collective bargaining

Collective wage bargaining is the responsibility of social partners in both France and Germany. In both countries, only trade unions and employers can conclude collective agreements, without any intervention of the government. ([16]) Typically, those agreements are concluded by employers and unions at industry level.

However, the two countries have a different tradition of how this bargaining is translated into actual wage settings, as collective agreements are usually extended to all firms in the industry in France, but rarely in Germany. In France, social partners frequently apply to the Ministry of Labour for an extension by law of most provisions of a negotiated agreement, which are then granted in virtually all cases. While these extensions are a common practice in France, extensions by law are rarely seen in Germany. ([17]) As a consequence, the coverage rate of collective bargaining is significantly different between France and Germany, which eventually results in different wage setting regimes in the two countries.

In France, collective bargaining is characterised by a very high coverage rate of collective agreements and the presence of a hierarchy between the norms established by law, those set at sector-level and then at firm-level agreement. In France, the coverage rate of collective agreements is estimated to be above 90 % of the workforce. Hence, almost all employees are covered by sectoral wage agreements. Some first attempts of decentralisation of sectoral bargaining started from the early 1980s ('Auroux laws'), but the *principle of favourability* that forbids company agreements from providing less favourable provisions than higher-level agreements (*i.e.* the provisions set by law or by sector-level agreement) was maintained. Recent reforms redefined the scope of sector-level and firm-level agreements, giving more space to collective bargaining at the level of the firm while not inverting the principle of favourability.

By contrast, German firms have a higher degree of flexibility for deviating from a negotiated agreement than their French peers, including from agreements concerning sectoral wages. First, in Germany collective sectoral agreements are binding only when an employer is a member of the corresponding employers' association. ([18]) If a firm decides not to be a member of the relevant employers' association, that firm can either negotiate wages individually or opt for a firm-level agreement with a trade union. As a consequence of this flexibility, in 2016 only 48% of German employees were covered by sectoral collective agreements, 8 % by firm level agreements and 44 % were not covered by any agreement, though half of those 44 % were employed by firms declaring their wages to be in line with collective agreements ([19]) that they did not officially subscribe to. ([20]) Second, since the mid-1990s social partners have increasingly agreed on including flexible elements in collective agreements. ([21]) In 2005, 75 % of establishments covered by collective bargaining made use of one or more opening clauses within the agreements. A small share of these opening clauses addressed basic pay, while most of them were allowing for derogations of other working conditions, such as working time.

([16]) In Germany, this central principle of negotiation autonomy is even guaranteed by the constitution. In France, the preamble to the 1946 Constitution (taken over by the 1958 Constitution) also states that every employee shall participate, through its delegates, in the collective determination of working conditions, and Article L 131-1 of the Labour Code recognises the right of employees to collective bargaining for all their employment and working conditions and their social guarantees.

([17]) For more information about the collective bargaining system, see also Thorsten, S. (2018), "The role of extension in German collective bargaining", in Collective Agreements: Extending Labour Protection, edited by Hayter, S. and J. Visser, ILO.

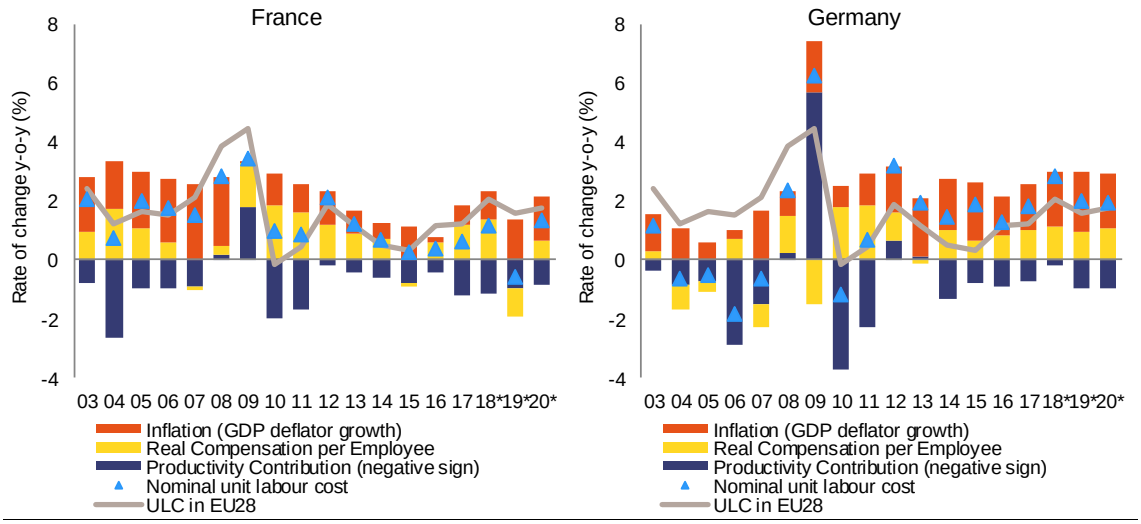
([18]) Theoretically, also employees have to be a member of trade unions negotiating an agreement, although employers would typically extend signed agreements also to employees not members of any trade union.

([19]) Those firms have adjusted their pay to the collectively agreed wages without officially subscribing to the agreement.

([20]) Numbers are calculated by the Hans-Boeckler-Stiftung, based on the IAB Betriebspanel: https://www.boeckler.de/wsi-tarifarchiv_2257.htm

([21]) Dustmann et al (2014) offer a good overview of how the German system allowed for a higher degree of flexibility.

Graph 4.2: **Unit labour cost evolution and decomposition**

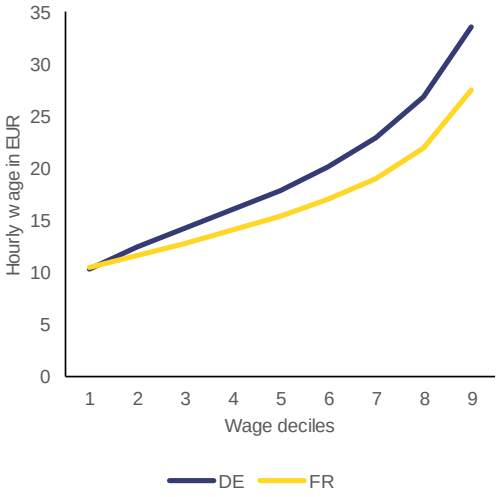


Source: Ameco, European Commission.

The differences in the collective bargaining mechanisms are likely ([22]) to have led to different wage evolutions, thereby contributing to dissimilar unit labour cost and cost-competitiveness dynamics in the two countries, notably before the crisis. As Graph 4.2 shows, in France, unit labour costs have grown at an average rate of 2.0 % per year between 2002 and 2008 and then decelerated at 1.2 % after 2008. By contrast, in Germany, unit labour costs have decreased at an average of 0.1 % per year before 2008 and then increased at 1.9 %.

The different unit labour cost dynamics in France and Germany do not depend on different productivity patterns, but are due to different wage developments. The contribution of productivity to the evolution of the cost of labour has been in line in the two countries both before 2008 (1.1 %) and after 2008 (0.6 % in France; 0.4 % in Germany). The different unit labour cost dynamics in the two countries rather depend on the development of employees' compensations. In nominal terms, these increased at an average rate of 2.9 % per year in France and 1.0 % in Germany up to 2008. They then decelerated at 1.8 % per year in France and accelerated to 2.3 % in Germany after 2008. These divergences remain even when looking at the development of employees' compensations in real terms. Real compensations per employee remained stable in Germany, while they grew at 0.8 % in France before 2008. After the crisis, real employees' compensations broadly kept the same pace of development in France (1.0 %) and started growing in Germany (0.7 %).

Graph 4.3: **Distribution of hourly gross wages, 2014**



Source: Structure of Earnings Survey, Eurostat.

This wage setting framework also has an impact on the wage distribution of the two countries (Graph 4.3). While France has more uniform wages, Germany has higher wages for skilled and highly skilled workers and lower wages for

([22]) For an overview of empirical evidence, see https://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2018_empl_outlook-2018-en.

unskilled workers, leading to a wider distribution. The wage distribution of the two countries have become more similar as Germany introduced a national minimum wage in 2015, yet the relationship appears overall unchanged (see next section).

Minimum wages (level and mechanism) and wage responses to inflation (indexation)

A statutory general minimum wage was introduced in Germany in 2015, while it has been present since 1950 in France. As of 1 January 2017, the minimum wage in France was at EUR 9.76 and at EUR 8.84 in Germany. However, there was no major difference between the two countries when looking at the total cost of labour at the minimum wage, which was at EUR 10.41 in France and at EUR 10.56 in Germany, after taking into account social-security contributions and labour-cost reductions (Table 4.1) ([23]).

Table 4.1: **Minimum wage and cost of labour**

EUR	France	Germany
Hourly minimum wage	9.76	8.84
Social contributions	1.34	1.72
Hourly cost of labour	10.41	10.56

Data as of 1 July 2017.
Source: DG Trésor.

The main differences are due to the frequency of minimum-wage revisions, the presence of an automatic indexation mechanism, the role of the committee overseeing minimum-wage developments, and the government's decision margin.

- As for the frequency of minimum-wage revisions and the presence of an automatic indexation mechanism, the French minimum wage is automatically indexed to inflation and real-wage growth of certain labour categories ([24]) every year. The German minimum wage, instead, is revised every two years (while exceptionally an interim revision was announced in advance not only for 2019 but also for 2020) and the revision – theoretically - does not follow any automatic indexation rule. It is decided on past trends and based on an economic reading of a broad set of macroeconomic variables. ([25])

- Given the absence of an automatic rule for the minimum-wage indexation, the role of the committee overseeing minimum-wage developments is stronger in Germany than in France. In Germany, this committee is composed by representatives of social partners, who have the power to decide by how much to change the statutory minimum wage. Experts on the subject are also members of this committee, but with an advisory role only, as they take no part in the decision to change the value of the minimum wage. By contrast, in France, a committee of independent experts (mainly economists) is in charge of publishing an annual report discusses the opportunity to raise the minimum wage above the minimum revaluation rate. Social partners are consulted, but are not formally part of the committee.

- Lastly, while in Germany the government can only express its agreement or disagreement with the indexation proposed by social partners, in France the government can decide to adopt ad-hoc increases in the level of the minimum wage. The decision of the government is not subject to any condition and can be taken even in case of a negative opinion issued by the committee of experts.

Noting that it is still early days, there is little evidence of spill-overs of the German minimum wage (or its increases) to other wage groups so far, while the indexation of the French minimum wage has been found to translate into overall wage increases. In France, as the

([23]) For a more comprehensive summary, see European Commission (2016b).

([24]) Only the average hourly real wage of employees and clerks (*salaire horaire moyen des ouvriers et des employés*) is taken into account for the automatic indexation of the minimum wage. Its annual growth rate is multiplied by a coefficient equal to 0.5 for avoiding an excessively fast minimum wage development.

([25]) Practically, social partners agreed on a working rule that quasi-automatically tie future increases of the minimum wage to past increases in the negotiated wages. As overall wage dynamics have exceeded that of negotiated wages since 2014, and as negotiated wages have reacted only to a small extent to increases in inflation, this quasi-indexation may have had so far a mitigating effect on minimum wage dynamics, in a context of increasing labour market tightness.

minimum wage is often used as a starting point in collective agreements, minimum-wage increases may raise other wage levels up to the eighth decile of the wage distribution. ([26]) These spillovers effects are larger on the lowest decile and decrease over the wage distribution, thereby leading to a reduction of wage dispersion across individuals. In Germany, the recent introduction of the minimum wage does not yet allow to robustly assess the presence of possible spillovers.

4.1.2. Working time

In Germany, the impact on unemployment of the 2008-2009 recession was partly mitigated by the widespread diffusion of working-time accounts translating into a large(r) number of workers who experienced a decline in worked hours without losing their job. As shown by Burda and Hunt (2011), employment losses during the 2008-09 crisis were much smaller than during the previous four recessions (1973-75, 1979-82, 1991-93, 2001-2005). For example, between 1973 and 1975, employment fell for 11 quarters and by 4.3 percent, while in 2008-09 employment decreased only for two quarters and by 0.5 percent. This significantly smaller drop in employment was possible thanks to a widespread diffusion of working-time accounts, which complemented other methods of reducing hours per worker including the traditional government short-time work scheme ("Kurzarbeit").

Indeed, working-time standards are based on European regulations both in Germany and France. In France, the labour code sets a working week of 35 hours and leaves the possibility to firms to bargain arrangements that are more flexible. For example, firms can define the standard working time in hours per year or calculate executives' working times in terms of working days per year, rather than working hours per week. In Germany, the distribution of working hours is decided by the employer, with worker representatives having codetermination rights when works councils are in place at firm level. Collective bargaining over working time takes place mainly at sectoral-level, with sectoral level agreements defining monthly or weekly working time, number of holidays and hours of shift or night work. Opening clauses are usually present in this kind of collective agreements to leave firms with some flexibility for adapting sector-level agreements to firms' specific conditions.

The two countries are less similar concerning the regulation of overtime work. In Germany, overtime is not regulated by law. In principle, employers are not entitled to ask employees to work extra hours unless for urgent extraordinary business needs. While having to comply with the Working Time Act, however, the German legal system leaves to social partners the possibility to sign collective-bargaining agreements through which works council and management, under specific conditions, can extend working time, set a common definition for overtime work, and settle the form of compensation (in terms of time off or additional remuneration). In France, the law establishes that every hour worked beyond the legally established working time of 35 hours per week counts as overtime. The law also sets the form of compensation in terms of additional remuneration, with an extra 25% for the first eight overtime hours and 50% for every additional overtime hour. The law equally determines the maximum amount of overtime hours, in terms of hours per year (220 hours) and per week (44 hours in total, over a period of 12 consecutive weeks and 48 hours per week). Collective agreements, signed at sector or firm level, have a limited power to amend these legal provisions. For example, after the law of 8 August 2016, the conditions for overtime hours pay increases can be modified by collective agreement, reaching a minimum of 10 %. Also the maximum amount of overtime hours per year can be increased to 46 if an industry or company agreement provides so, or after authorisation by the labour inspection.

Moreover, while in both countries, working-time flexibility agreements can be signed at

([26]) Arpaia, A. and K. Van Herck (2017), "Wage distribution spill-overs from minimum wage increases in France," Analytical Web Note 1/2017, DG Employment, Social Affairs and Inclusion. See also Aeberhardt, R. *et al.* (2016), "Spillover effect of the Minimum Wage in France: An Unconditional Quantile Regression," Working Papers 2016-05, Center for Research in Economics and Statistics; Fougère, D., Gautier, E. and S. Roux, "The effect of minimum wage on wage bargaining at the industry level: Evidence from France", VoxEu blog, 28 May 2016 available at https://voxeu.org/article/effect-minimum-wage-wage-bargaining-industry-level-evidence-france

firm-level, during the last crisis, a larger share of firms adopted working-time flexibility agreements in Germany than in France thanks to an easier legal framework accompanying these schemes in Germany. Special flexibility arrangements exist in both countries, to face production shortfalls. Notably, working-time accounts allow for a accumulation of overtime hours in an individual account, which can be used to have additional free time when the workload decreases. Besides, short-time accounts, such as the 'Kurzarbeit' in Germany, enable a further adjustment of working time during short-lived and severe production shortfalls. Moreover, flexibility agreements are more used in Germany than France because of the less stringent conditions necessary for their adoption and the smaller role played by social partners for their implementation. In turn, the widespread usage of flexibility agreements allowed the 2008 crisis to have a negligible impact on employment in Germany. The fall in the economic activity was mostly absorbed by a reduction in working time (-3.4 % in hours worked per head between 2008 and 2009), which took the shape of a decrease in overtime hours (25 % of the total reduction in working time), short time working schemes (29 %), working time accounts (21 %), and a temporary cut in working time by other kinds of collective agreement (25 %) (Fréhaut, 2012a). In France, instead, the 2008 crisis had a larger negative impact on employment. The fall in economic activity was mainly cushioned by a decrease in temporary contracts, accompanied by a reduction in overtime hours (54% of the total reduction in working time observed between 2008 and 2009) and an increased use of part-time jobs (18%) and short-time accounts (28%) (Ananian et al., 2012). Working-time accounts, hence, played a minor role in mitigating the 2008 crisis in France. In 2010, 51% of German employees had access to a working time account vs 12% in France (Delpech et al., 2012; Burda and Hunt, 2011). Part of this difference arose due to the complexity of the French short time working scheme, which made it hard for employers in France to predict the amount remaining to be paid by them (Fréhaut, 2012b).

The part-time employment rate is higher in Germany than France, although part-time employment has steadily increased over time in both countries. ([27]) While France and Germany post broadly similar actual average working times per worker, this similarity hides a higher proportion of part-time wage-earning jobs in Germany (Costes *et al.*, 2015). In 2017, indeed, the part-time employment rate was at 26.9% in Germany, 8.8 pps higher than in France, although a smaller proportion of part-time workers describe it as an involuntary choice (in 2017 42% of part-time employment was involuntary in France, while this share was only 10.6% in Germany). In both countries, this form of employment is generally more widespread among women and parents with young children. The definition of part-time work is slightly different in the two countries. In France, part-time work is defined as working time below 35 hours per week. The applicable working time is then determined through collective agreement, although part-time working contracts require a minimum of 24 hours per week by law. ([28]) In Germany, part-time contracts do not require a minimum number of hours per week and are generally defined as having a shorter regular weekly working time with regard to comparable full-time contracts.

Similar rules apply to fixed-term contracts and temporary-agency work, although these rules are more flexible in Germany than in France for both kinds of contracts. The maximum duration established by law is shorter in France than in Germany, both for fixed-term contracts and temporary-agency work. In France, fixed-term contracts can last for a maximum period of 18 months in principle, but in practice they are used for a time span of 9 up to 24 months. Besides, fixed-term contracts can be renewed only twice and the same rules apply to temporary-agency

([27]) The role played by the gender dimension of part time employment is out of the scope of the note, although the gender gap in part time employment in DE is twice the one in FR.

([28]) The minimum of 24 hours' work per week can be waived under certain circumstances. Notably, for any contracts entered into on or after 1 July 2014, employees must be offered at least 24 hours' work per week, unless stated otherwise in the relevant Collective Bargaining Agreement or in the case of a written request from an employee that can be justified by his/her personal commitments or if he/she wishes to work elsewhere at the same time. For more detail: https://www.employmentlawworldview.com/france-new-laws-on-part-time-contracts

Table 4.2: **The OECD indicators on Employment Protection Legislation (2013)**

	Protection of permanent workers against individual and collective dismissals	Protection of permanent workers against (individual) dismissal	Specific requirements for collective dismissal	Regulation on temporary forms of employment
France	2.82	2.60	3.38	3.75
Germany	2.84	2.53	3.63	1.75

Scale from 0 (least restrictions) to 6 (most restrictions), last year available.
Source: OECD.

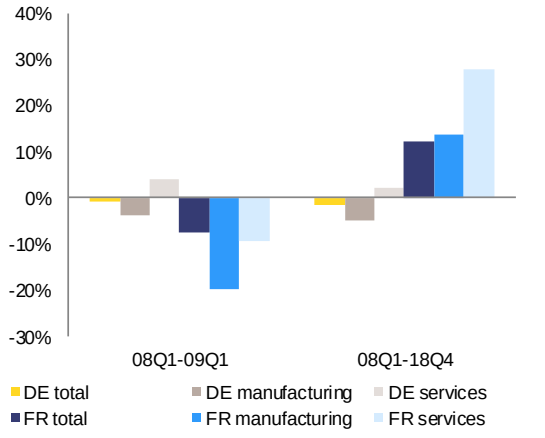
work , with the exception of sectors concerned by "contrats d'usage" and seasonal contracts for which highly flexible rules apply, feeding into observed segmentation. In Germany, fixed-term contracts without objective limitation reasons can last for up to two years. Within this period the contract may be extended not more than three times. There are no legal provisions on the duration of fixed-term contracts justified by objective reasons. The duration depends on the objective reason for fixing the term. Successive fixed-term contracts justified by objective reasons are possible, but there is a misuse control by the labour courts.

Notwithstanding the fact that fixed-term contracts are relatively less flexible in France than in Germany, they were used as a tool to cushion the negative consequences of the 2008 crisis on employment. During the 2008 crisis, temporary employment dropped by 7.6% in France and only by 0.7% in Germany (Graph 4.4). This drop was stronger in the manufacturing sector, where temporary employment fell by 19.8% in France (and by 3.6% in Germany) between the 2008-Q1 and 2009-Q1. In the services sector, the drop in temporary employment was less severe, although it decreased by 9.3% in France, while it increased by 3.9% in Germany. In France, hence, temporary employment has been used as shock absorber during the 2008 crisis. Since then, temporary employment has rebounded in France, especially in the services sector where temporary employment has increased by 46.4% between 2008Q1 and 2018Q3.

4.1.3. Employment protection legislation

While employment protection legislation (EPL) is applicable to any worker in France, it only applies if the worker is employed in an establishment with more than 10 employees in Germany. Other employment relationships can be terminated by the employer (and employee) without any justifying reason. Moreover, both countries provide trial periods during which EPL is not applied. While for Germany this is always 6 months, it varies between 2 and 4 months in France (two months for blue-collar and white-collar workers, three months for supervisors and technicians, and four months for managers).

Graph 4.4: **Temporary employment in manufacturing and market services**

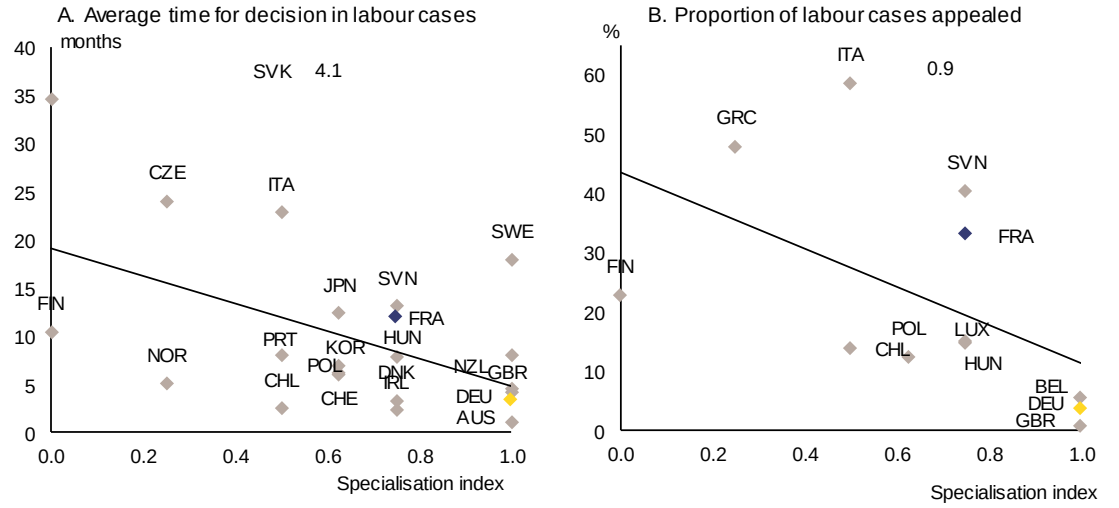


Source: Eurostat.

The level of legally granted employment protection for individual and collective dismissals is relatively comparable for permanent employment contracts, whereas there is a significant gap for fixed-term contracts. France and Germany rank among the OECD (and EU) countries with strong(est) regulations of dismissal for open-ended contracts in an international comparison. However, there are some important differences.

When looking at the set of measures developed by the OECD to gauge the level of employment protection across countries (Table 4.2 **for**

Graph 4.5: **Court specialisation and outcomes**



Source: OECD, OECD Employment Outlook 2013.

details), the French EPL for temporary forms of employment is much higher (index of 3.75 in France vs 1.75 in Germany). This category comprises two parts, fixed-term contracts and work-agency employment with the difference mostly due to a much stricter regulation of fixed term contracts and, to a smaller extent, by the regulation of temporary agency-work.

The difference in the EPL indicator for fixed-term contracts is likely to explain a substantial part of the flexibility-gap between the two labour-market regimes. The significant difference regarding the regulation of fixed-term contracts is due to the maximum duration of successive contracts being relatively short and the valid reasons for these contracts being rather limited in France. As Germany and France are both countries with relatively rigid regulations on permanent contracts, hiring of temporary workers and termination of fixed-term contracts represent an overwhelming share of gross worker flows. In France in particular, 78% of hires and 71% of separations in 2011 were due to the start or the end of a fixed-term contract, and these figures appear broadly stable across age classes and time, judging from the degree of duality of the French labour market remaining high over time . ([29])

Work-agency employment – the other employment form that the OECD deems to be of temporary nature – plays a less important role. It is based on a specific type of contractual relationship where workers are hired by an agency and temporarily assigned for work into a user firm. In the literature, work-agency employment is often seen as representing a stepping stone into stable, regular employment. ([30]) At the same time, it can be a useful instrument of flexibility in the labour market. On the other hand, work-agency employment might be used in some cases as a cheap way to by-pass employment protection on regular employment. In France, work-agency employment is subject to the same rigid restrictions as for fixed-term contracts, thereby limiting its potential scope of use to enhance flexiblity. In the German case, there have been no general restrictions for the use of work-agency employment until April 2017, with the exception of the construction sector. Consequently, the use of temporary workers is relatively widespread in the

([29]) Paraire, X. (2012), "Les mouvements de main-d'oeuvre en 2011 : Une rotation élevée dans le tertiaire", Dares Analyses-Dares Indicateurs, No. 2012-071. For the evolution over time of the 2011 statistics, see Milin, K. (2018), "CDD, CDI : comment évoluent les embauches et les ruptures depuis 25 ans ?", Dares Analyses, No. 026, Juin 2018.

([30]) Jahn, E. and M. Rosholm (2012), "IsTemporary Agency Employment a Stepping Stone for Immigrants?", Economics Letters, Vol. 118, pp. 225-228. AND Von Simson, K. (2012), "Essays on Labor Market Attachment and Skill Formation", Ph.D. Dissertation, University of Oslo.

German labour market. However, it has to be considered, that the system of temporary agency work follows a different principle in Germany than in France. In France temporary workers are only employed as long as they are actually working in the client company. Whereas temporary workers in Germany are regular employees of the temporary work agencies and enjoy all the rights of employees even after their deployment in companies has ended. In 2015, about 2% of the German employees subject to social security contributions consisted of agency workers and agencies supplied a wide range of workers and professionals covering a broad range of jobs and skills. However, a law that came into force in April 2017 might change the scope of this employment form, as it includes regulations such as a maximum hire term of 18 months, equal pay no later than after nine months and no replacement of striking employees by temporary-agency workers. Considering these most recent reforms, the gap in regulation on work-agency employment is likely to have narrowed substantially.

Another major difference is the legal handling of EPL cases by the courts, which constitutes an important element of termination costs for firms negatively influencing their decision to hire additional workers. While Germany has highly specialised labour courts that deal with EPL cases, France has been reforming the functioning of labour tribunals and labour processes starting from 2014, in order to make labour courts more specialised and trials periods shorter. As shown in Graph 4.5, a lower proportion of cases appealed and faster decisions were made in the German case as of 2013. Moreover, decisions by the German labour courts over the years have established a de facto "price list" for compensation to be paid in case of unlawful dismissals, thereby contributing to more reliable expectations for employers and employees and less appeals to court decisions. Such grid of compensations has been introduced in France thanks to the latest reform of the labour law (Box 4.1). To prevent termination cases going to court, France introduced a formalised scheme of termination by mutual agreement in 2008 (*rupture conventionnelle*), extended to the case of collective dismissals in 2017. The agreement is subject to a cooling-off period, after which the employee is at least entitled to standard severance pay and unemployment benefits. However, neither the agreement nor its official approval prevent the employee from subsequently taking a case to court alleging that the agreement was not made voluntarily, notably in the case of previous conflicts between the employer and the employee.

4.1.4. Industrial action and disputes

In France, the right to strike is guaranteed by the Constitution and it applies to all employees whether or not there is a trade union involved. Though it is an individual right, it has to be exercised collectively. In other words, it is necessary for several employees to decide, together, that they will stop working as a means of achieving work-related demands. One employee alone cannot strike except in the framework of a national strike. Moreover, strikers (in normal strikes) have to raise issues that are related to the terms and conditions of their employment (for instance related to wages, working conditions, or restructuring).

By contrast, while the German constitution secures the right to take industrial action, there is no guaranteed individual right to strike, so political or general strikes are considered to be unlawful. Moreover, there is no law governing the regulation of strikes. Thus, the regulation of industrial conflict has been effectively left to the courts. Case law has been developed by the Federal Labour Court in subsequent rulings. The fundamental principle governing disputes is that industrial action must pursue an aim that can be regulated by collective agreements. Therefore, only unions have the right to call strikes. Moreover, industrial actions are only lawful in the context of collective bargaining. Strikes cannot be called once a collective agreement is in place, as they contain peace clauses that prohibit industrial action while they are in force (so called "Friedenspflicht").

When comparing the two regimes, it appears that the regulation of industrial actions is more stringent in Germany than in France, resulting in significantly more strike days in France. When looking at the number of working days lost per 1000 employees, the German average was estimated at 20 days per year between 2006 to 2015, while only the French private sector

(including SOEs) had to deal with an average of 132 days, so more than six times as many days. ([31])

4.1.5. Social security systems

Unemployment insurance

The unemployment benefit system works similarly in the two countries, although some differences exist in terms of eligibility conditions, replacement rates, and benefit duration.

Concerning eligibility conditions, these are based on the recent employment history of a jobseeker. In particular, jobseekers need to have 12 months of contributory employment in the past 30 months (effective 1 January 2020; formerly 12 months in the past 2 years) in Germany, either part-time or full-time. Eligibility conditions in France are the same for full time workers, part time workers, seasonal workers and temporary workers. Whatever their type of contract, workers are eligible to the unemployment benefit system, if they have worked at least 88 days or 610 hours i) during the last 28 months before the end of the contract for workers that are less than 53 years old, ii) during the last 36 months before the end of the contract for workers that are 53 years or older. Moreover, eligibility were extended to include self-employed and resigning workers under restrictive conditions for the first time in September 2018, while a new reform of the unemployment benefit system is currently under discussion. A reform of the unemployment benefit system has been announced on 18 June 2019. This reform will change some of the parameters of the system. For instance, eligibility conditions will be raised to 6 months of work out of 24 - 36 months for workers that are 53 years or older. The reform will also set up a «bonus-malus» system (experience rating-like) on social contributions and modify the rules for calculating unemployment benefits, so that to be hired or hiring on short-term contracts will no longer be advantageous either for the employee or the employer.

Net replacement rates are higher in France than Germany. According to OECD data ([32]), in 2018 in Germany benefits correspond to 59 % of previous in-work income after 1 year of unemployment. In France, these benefits could amount up to 68 %. After 5 years, the replacement rate decreases up to 23 % in Germany; up to 34 % in France. The benefits granted to part-time, temporary and seasonal workers are granted using the same replacement rates as for full-time workers and then reduced in proportion to the hours worked.

In both countries the duration of the unemployment benefit depends on the age and the duration of contributory employment of a worker. The duration of the unemployment benefit system is slightly longer in France than in Germany, as unemployment benefits are payable for a period of 6 up to 24 months in Germany, while this time window ranges between 4 and 36 months in France. ([33])

Pension systems

In the two countries, the pension system is based on the same principles. It is constituted by three pillars; the standardised, state-run pension system (1st pillar), a complementary system to which recipients and employers can contribute (2nd pillar), and voluntary accounts privately funded by an individual (3rd pillar). Equally, age thresholds determine when pension rights can be claimed by a worker.

However, the age threshold is lower in France than in Germany. In Germany, the pension eligibility age is between 63 and 67 years and the reference age is at 67 years. In France, the pension eligibility age is at 62, while the reference age is between 62 and 67 years. As a result, the average exit age on the labour market is lower in France than in Germany, being 60 years in France and 62 years in Germany.

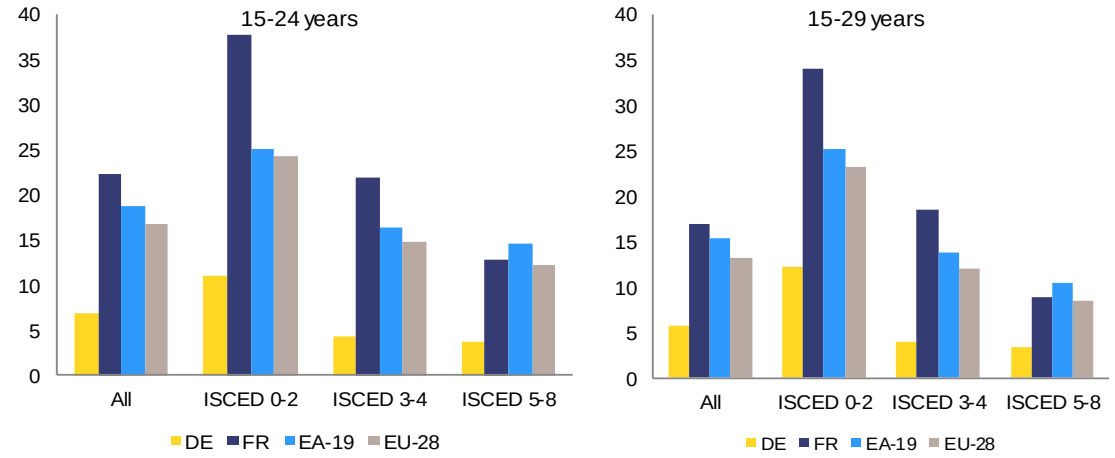
Also, the pension system is more generous in France than in Germany. In 2013, pension spending in France was equal to 13.8 % of GDP, more than 3 pps above the value for Germany (10.1 %). This is both due to a replacement rate

([31]) Source: Hans Boeckler Stiftung – WSI Tarifarchiv: https://www.boeckler.de/wsi-tarifarchiv_64142.htm

([32]) https://data.oecd.org/benwage/benefits-in-unemployment-share-of-previous-income.htm

([33]) For a comprehensive overview, see European Commission (2018e)

Graph 4.6: **Youth unemployment rate by age and education level**



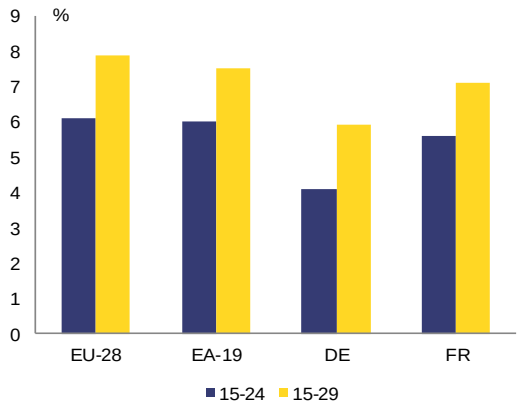
The International Standard Classification of Education (ISCED) is a statistical framework for organising information on education maintained by the United Nations Educational, Scientific and Cultural Organization (UNESCO). An ISCED level between 0 and 2 corresponds to less than primary, primary and lower secondary education; between 3 and 4 to upper secondary education and post-secondary non-tertiary education; between 5 and 8 to tertiary education.
Source: Labour Force Survey, Eurostat.

that is more generous in France ([34]) and to a longer life expectancy. The difference between pension spending in France and Germany reached 4 pps of GDP in 2016 (Didier *et al*, 2018). A reform of the pension system in France is currently under discussion. It is meant to unify the rules of the different regimes and to create a universal regime applying to all categories of workers starting from 2025.

Youth unemployment, active labour market policies, vocational education and training

Youth unemployment is higher in France than in Germany, especially for low-skilled workers. ([35]) In 2017, the unemployment rate for young people aged between 15 and 24 years was equal to 22.3 % in France and 6.8 % in Germany, respectively 5.5 pps above and 10 pps below the EU average at 16.8% (Graph 4.6). These figures were higher for workers having the lowest levels of skills. Notably, youth unemployment rates were equal to 37.8% in France and to 11% in Germany for workers having up to lower secondary education (ISCED 0-2) only. Smaller differences exist between the two countries when looking at youth not in education, employment, or training (NEET) as seen in Graph 4.7. Both countries present a smaller percentage of NEETs than in the European Union overall, with higher figures for France (5.6%) than Germany (4.1%). Neither youth unemployment rates nor NEET figures are strongly influenced by the definition of youth, that is by the age category taken into account ranging either between 15 and 24 years or between 15 and 29 years.

Graph 4.7: **Youth not in education, employment or training**



Source: Labour Force Survey, Eurostat.

One interesting difference relates to the focus of active labour market policies for the youth -

([34]) In 2014, the net replacement rate was 68% of the pre-retirement earnings in France and 50% in Germany.

([35]) More discussion of unemployment and long-term unemployment in France and Germany is provided in a separate note of this project.

while France focuses more on job creation, Germany invests more in training. Public expenditures on labour market policies are among the highest in the EU, at 0.27 % of GDP in Germany and at 0.22 % in France, while the EU27 average amounts to 0.19 %. However, the two systems each have a slightly different focus. About 55 % of German expenditures are devoted to training, while for France it is around 40%. Direct job-creation measures make up for 30% of expenditures in France, but only 13% in Germany, where instead most of the expenditures aim at creating incentives for taking up a job or becoming self-employed (Haget and Montel, 2016; Aouriri and Tournoux, 2017). Since 2018, the cut in subsidised employment contracts, the reform of vocational training and apprenticeship and the Investment Plan in skills have initiated a readjustment between direct job creation measures and public investment for training in France. Notably, between 2016 and 2018, subsidised employment contracts went from 460 000 to 90 000 (and from 155 000 to 17 000 for young people only). At the same time, the law « for the freedom to choose its professional path » of 5 September 2018 has initiated an increase in both, the offer and the demand for apprenticeship, by encouraging the use of apprenticeship for both employers and young people, so that 21 000 more contracts have been signed in 2018 compared to 2017. Moreover, through the Investment Plan in Skills, almost EUR 7 billion will be dedicated to train 1 million young people not in employment, education or training (NEETs) between 2018 and 2022.

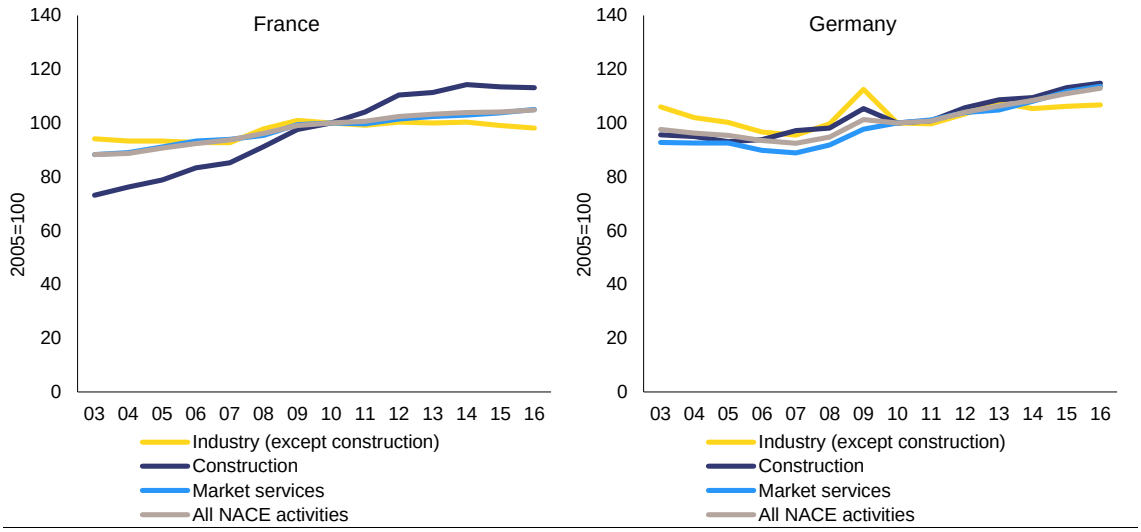
Also, youth unemployment can be linked to the different approach and governance of the vocational education and training systems. Two main differences concern the vocational education and training system in France and Germany. First, the combined approach on which this system is based in Germany with theoretical teaching always coupled with training embedded in a real-life work environment. This "dual system" of vocational education and training is the result of the close cooperation between firms (mainly of small and medium size) and public vocational schools, and as regulated by law. By contrast, in France, this link between theory and practice is not always ensured; the possibility to match the theoretical teaching often depends on the students' ability to find a training corresponding to the subjects taught ex-catedra. The second difference is the strict alliance between the Federal Government, the federal states (Länder) and companies to ensure that the training provided is recognised nation-wide and documented with certificates issued by the chamber of industry and commerce or the chamber of crafts and trades. In France, the law « for the freedom to choose its professional path » adopted on 5 September 2018 has entirely changed the functioning and governance of the French vocational training system, making it closer to the German system. Regions have lost their competence in the field of apprenticeship: training centres will now be financed by the former collection organisms (OPCA renamed OPCO), which are linked to professional branches. Therefore, professions have now a direct role in the definition of apprenticeship curriculums. The central State has a direct role in the administration of OPCOs, while regions have begun to collaborate with OPCOs in the definition of the vocational training strategy in their area. Companies can now more easily create their own training centres to meet their needs in skills, while the new regulating agency, “France Compétences”, will ensure the quality of certification and the match between training offer and demand..

4.1.6. Sectoral differences

Sectoral challenges remain important for the labour-market institutions of the two countries, especially in terms of unit labour cost dynamics. The evolution of unit labour costs by sector is used as proxy to evaluate the existence of sectoral challenges in Germany compared with France. ([36]) Notably, in Germany, unit labour costs remained overall quite stable. After 2008, unit labour costs have been increasing in the construction and market services sectors slightly more rapidly than in the industrial and manufacturing sectors. In France, instead, unit labour costs in the construction sector have increased more rapidly than in the other sectors, so that a balanced evolution of unit labour costs in the overall

([36]) For further analysis on wage dynamics in France, see for example Ragot, X.(2017), "How to further strengthen the European Semester?", In-depth analysis provided in the context of Economic Dialogue with the President of the Eurogroup, available at: http://www.europarl.europa.eu/RegData/etudes/IDAN/2017/602113/IPOL_IDA(2017)602113_EN.pdf

Graph 4.8: **Unit labour cost by sector**

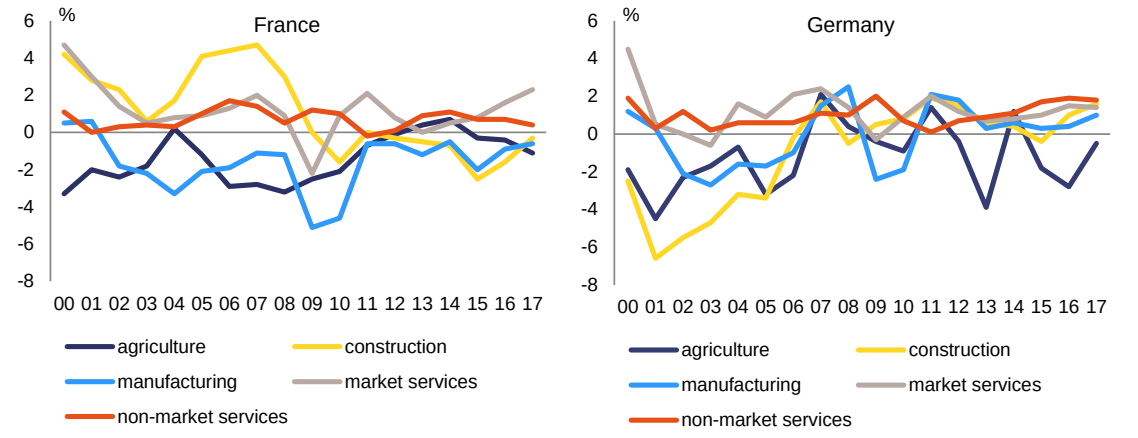


Source: Eurostat, own calculations.

economy remains a challenge, reflecting also a more rigid system of collective bargaining and wage formation. In addition, the 2008 crisis broke the increasing trend of unit labour costs in the industrial and manufacturing sectors, but not for market services. In addition, since 2012, a risk of disconnection between the dynamics of unit labour costs in the market services and construction sectors with respect to the manufacturing and industrial sector has been rising in the two countries.

As regards employment dynamics by sector, most pronounced changes can be identified for the construction and manufacturing sectors in France as well as for the agricultural sector in Germany. Employment in agriculture has been on a decreasing trend for a number of years in Germany. As a result, in 2017 the growth rate of employment was positive for all sectors but agriculture. Conversely, in France employment in agriculture has been on an increasing trend since 2006 and weathered well the 2008 crisis. The latter hit more strongly the construction and manufacturing sectors, so that in 2017, the growth rate of employment was still negative therein. Employment growth in all sectors of the economy remains hence a challenge for both France and Germany. In addition, over the most recent years, the evolution of the services sector has accelerated for market-based activities and decelerated for non-market-based activities. This diverging trend

Graph 4.9: **Employment by sector (yearly growth rate)**



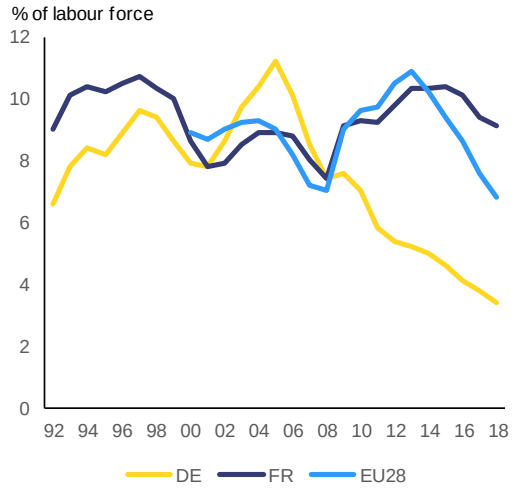
Source: Ameco, European Commission.

is visible in both countries and may be a factor intensifying the decrease of employment in the more traditional sectors, such as agriculture in Germany and manufacturing in France.

4.2. SOCIAL AND REGIONAL OUTCOMES

4.2.1. Distribution of market income

Graph 4.10: **Unemployment rates**



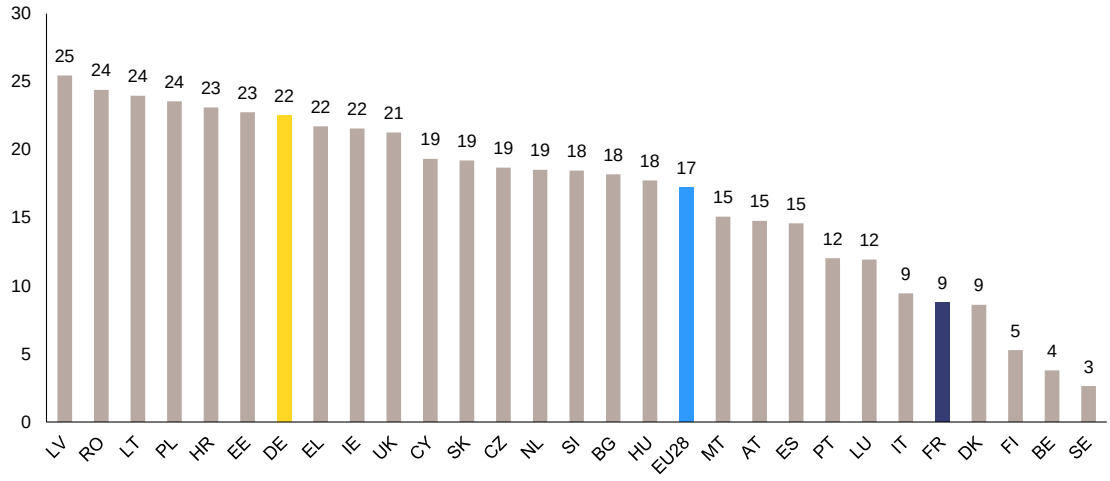
Source: Labour Force Survey, Eurostat.

Labour market developments are key determinants of the distribution of market income. This section reviews differences in unemployment rates, part-time and full-time employment, share of low-wage earners and in-work poverty.

The unemployment gap between France and Germany has widened significantly since the outbreak of the economic and financial crisis. The French unemployment rate developed in parallel with that of Germany in the beginning of the 1990s. Thereafter it decreased almost steadily, falling below the German in 2002 (also as a result of the impact of the crisis in Germany in the early 2000s). However, an ongoing wage moderation and the labour-market reforms adopted in Germany in that period (including the "Hartz reforms"), along with other factors explained in Section 4.1, have contributed to a sustained decline in German unemployment since then. By contrast, the economic and financial crisis that broke out in 2008 reverted the previous years' positive trend in French unemployment. As a consequence, the unemployment rate in France was, at 9% of the labour force, 5.7 pps higher than in Germany in 2018 (Graph 4.10).

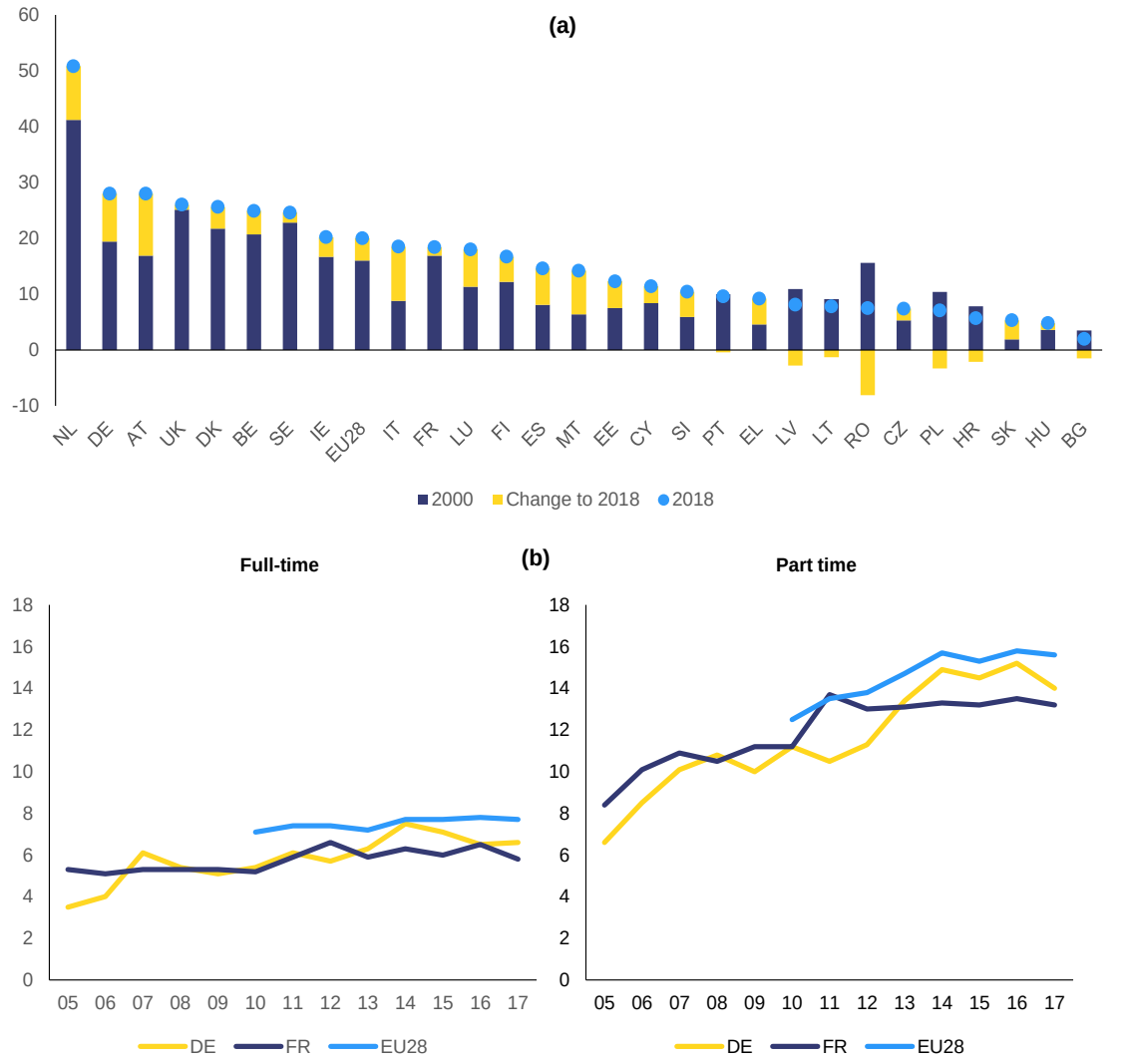
Labour-market incomes are considerably more unequal in Germany, partly due to a higher dispersion of hourly wages. Labour-market institutions are key for the distribution of labour-market income. As explained in Section 5.1, differences in these institutions are reflected in income disparities. As discussed there, the wage-setting framework in Germany contributed to a wider wage distribution than in France. In

Graph 4.11: **Share of workers who earn low hourly wages in the EU, 2014**



Low-wage earners are defined as those employees (excluding apprentices) earning two-thirds or less of the national median gross hourly earnings in that particular country. The SES is done every four years; the latest data available is for 2014.
Source: Structure of Earnings Survey, Eurostat.

Graph 4.12: **(a) Share of part-time employees among all employees; (b) In-work poverty by working time**



(a) To be updated after 2018 annual data will have been published on 27/04/2019.
Source: (a) Labour Force Survey, Eurostat; (b) EU-SILC, Eurostat.

particular, low hourly wages have been much more common in Germany, while the share is particularly low in France (Graph 4.11).

A high share of part-time work also contributes to higher inequality of labour-market incomes in Germany. While in 2000 the share of part-time in employment was similar in France and in Germany, later the share of part-time work increased only marginally in France, where the share is now below the EU average, whilst the increase was considerable in Germany, in particular in the beginning of 2000s (panel a of Graph 4.12). Similar considerations can be derived when looking at temporary employment, with the difference that France features a higher percentage of temporary out of total employees (in 2017, 17.9% in France and 12.9% in Germany).

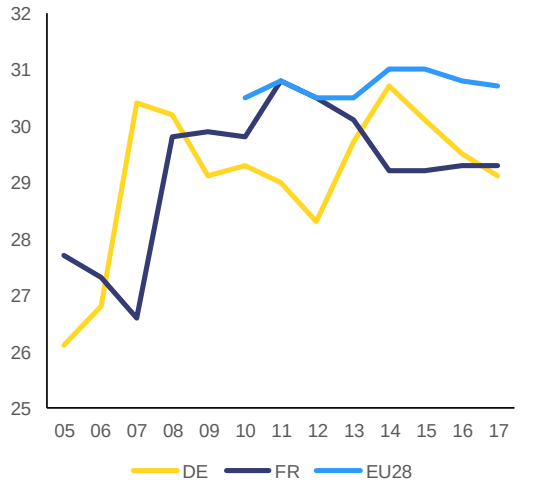
Together, a relatively high share of low hourly wages and part-time employment results in a higher in-work poverty rate in Germany. The share of workers who are at risk of poverty increased in the last decade in both France and Germany. However, while in France the increase amounted to about 2 pps. and the in-work poverty rate remained below the EU average, in Germany it increased by more than twice as much, reaching

the EU average. By working time, the in-work poverty rate of part-time workers increased more strongly in Germany (panel b of Graph 4.12).

4.2.2. Disposable income inequality and poverty

Apart from market incomes, taxes, transfers and subsidies can play a crucial role to assuage market-income inequality and mitigate poverty. Although crucial, market income is only one of the elements behind the overall income distribution and social outcomes thereof. The evolution of unemployment is key to explain differences in income distribution and poverty rates between Germany and France. In addition, tax and public-transfer schemes can also have a considerable impact in shaping the income distribution.

Graph 4.13: **Gini coefficients for total disposable household income including pensions**

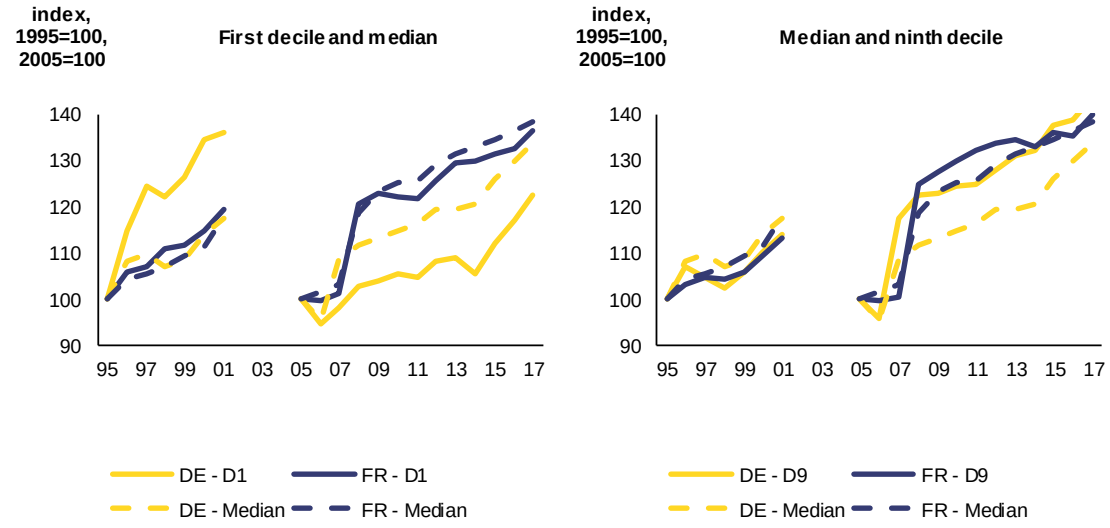


Source: EU-SILC, Eurostat.

While Germany became more unequal in the decade preceding the 2008 crisis, in the case of France, an increase in overall income inequality can be observed during the years following the crisis, mainly related to the increase in unemployment after 2008. After a strong increase in the early 2000s, income inequality in Germany has remained rather stable, according to national data sources such as the microcensus. Measured as Gini indicators counted from internationally comparable EU-SILC data, Germany and France have had similar levels of income inequality, below the EU average. For Germany, EU-SILC suggests that a peak in income inequality had been reached in 2014, just before the introduction of the statutory general minimum wage that was followed by a reduction in income inequality. However, this decline is not confirmed by national data sources. The total rate of households at risk of poverty in Germany has persistently exceeded that in France since 2006 (while in Germany it has oscillated around 16%, in France it has remained close to 13%).

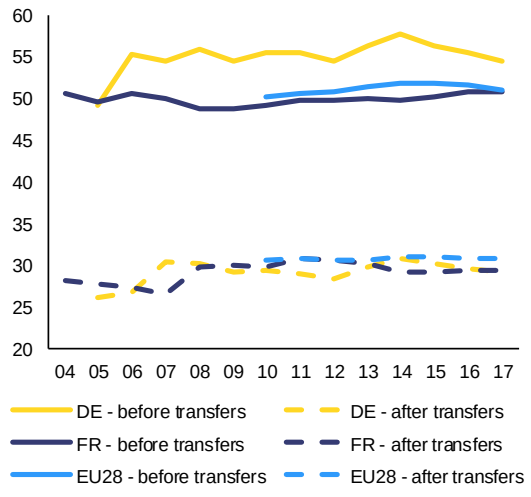
Even if the unemployment rate in Germany declined to well below the French one, income inequality before transfers remains higher in Germany. Including pensions among social transfers, in 2017, the inequality of disposable income before transfers was higher in Germany than in France, with Gini levels of about 55 and 51 in the two countries (Graph 4.14). France is slightly below the EU average, while Germany is among the countries with the highest Gini before transfers – nevertheless, with a slightly declining trend since 2014. After transfers, disposable income inequality was in both countries at Gini levels of about 29, slightly below the EU average. Pensions play an important role in the redistributive system in France. Indeed, if pensions were excluded from social transfers, the Gini coefficients before social transfers would have been even somewhat higher for France, at 35.0 in Germany and 35.7 in France in 2017 – reflecting a reduction in inequality in Germany from the peak reached in 2014.

Graph 4.15: **Disposable income at the first and the ninth decile and at the median income**



Due to discontinuity of European Community Household Panel, 2002-2003, data missing for these years and break in series.
Source: European Community Household Panel, EU-SILC, Eurostat.

Graph 4.14: **Gini of disposable income inequality, before and after transfers**



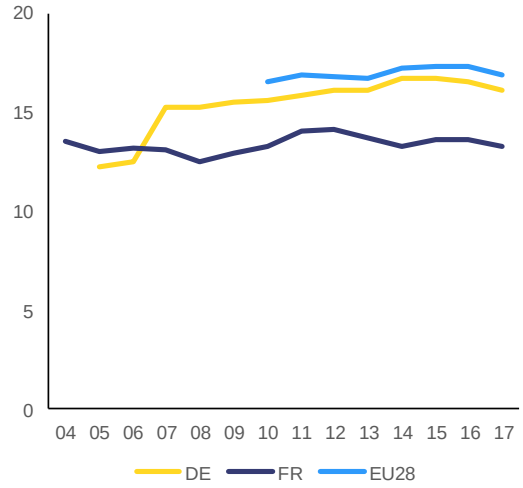
(1) Figure shows Gini coefficients of equivalised disposable income before social transfers, including pensions in social transfers.
(2) Transfers include pensions.
(3) Break for France in 2008.
Source: EU-SILC, Eurostat.

Aggregate measures of disposable-income inequality are slow moving indicators, and in Germany mask important changes. While in France low, median and high-disposable incomes increased similarly since 1995, in Germany there were considerable divergences (Graph 4.15). In Germany, low incomes increased more than median incomes in the late 1990s, while in the 2000s they lagged considerably behind. In addition, while in the 2000s high-income earners in Germany kept the pace with income increases in France, there emerged a considerable gap for median income earners, with the median German ones growing considerably less than the median French disposable income.

The steady decline in unemployment in Germany was accompanied by a more limited decline in the risk of poverty after 2014. Despite the sizeable reduction in unemployment, the total rate of households at risk of poverty ([37]) in Germany has persistently exceeded that in France since 2006 (Graph 4.16) and no convergence is observed.

([37]) At-risk-of-poverty rate is measured as the share of the population with equivalised disposable income, after taxes and social transfers, below 60% of the national median equivalised disposable income. The median equivalised disposable income is the total income available for spending or saving, divided by the number of household members weighted by their age.

Graph 4.16: **At-risk-of-poverty rates (below 60% of mean equivalised income after social transfers)**



Source: Eurostat, EU-SILC.

The tax-benefit system in France plays a more important role in correcting at-risk of poverty situations. Irrespective of the levels of at-risk-of-poverty rates in the two countries, the reduction of at-risk-of-poverty rates in France by social transfers and benefits outweighs that of Germany (Graph 4.19). The social transfer-benefit system reduces the total at-risk-of-poverty rate by 7.6 and 5.9 points in France and Germany, respectively.

The overall higher impact of the tax-benefit system in reducing the relative poverty is mainly explained by larger social expenditure in France. While the share of social spending in total public spending is very similar in both countries, ([38]) the level of public expenditure as percentage of GDP in France significantly outweighs that in Germany. The higher impact of social public spending on relative poverty reduction in France is consistent with the findings in Chen et al (2018). ([39]) The labour-market reforms in this regard could also help explain part of the increase in the at-risk-of-poverty rate observed in 2006 and 2007 in Germany, including those aged between 18 and 24, and the subsequent overall upward trend despite the sizeable reduction in unemployment. While relative poverty increased more in Germany, key measures of absolute poverty developed similarly in the two countries. Severe material deprivation has declined in both countries by a similar extent (Graph 4.22).

([38]) See also Section 4.1 above.

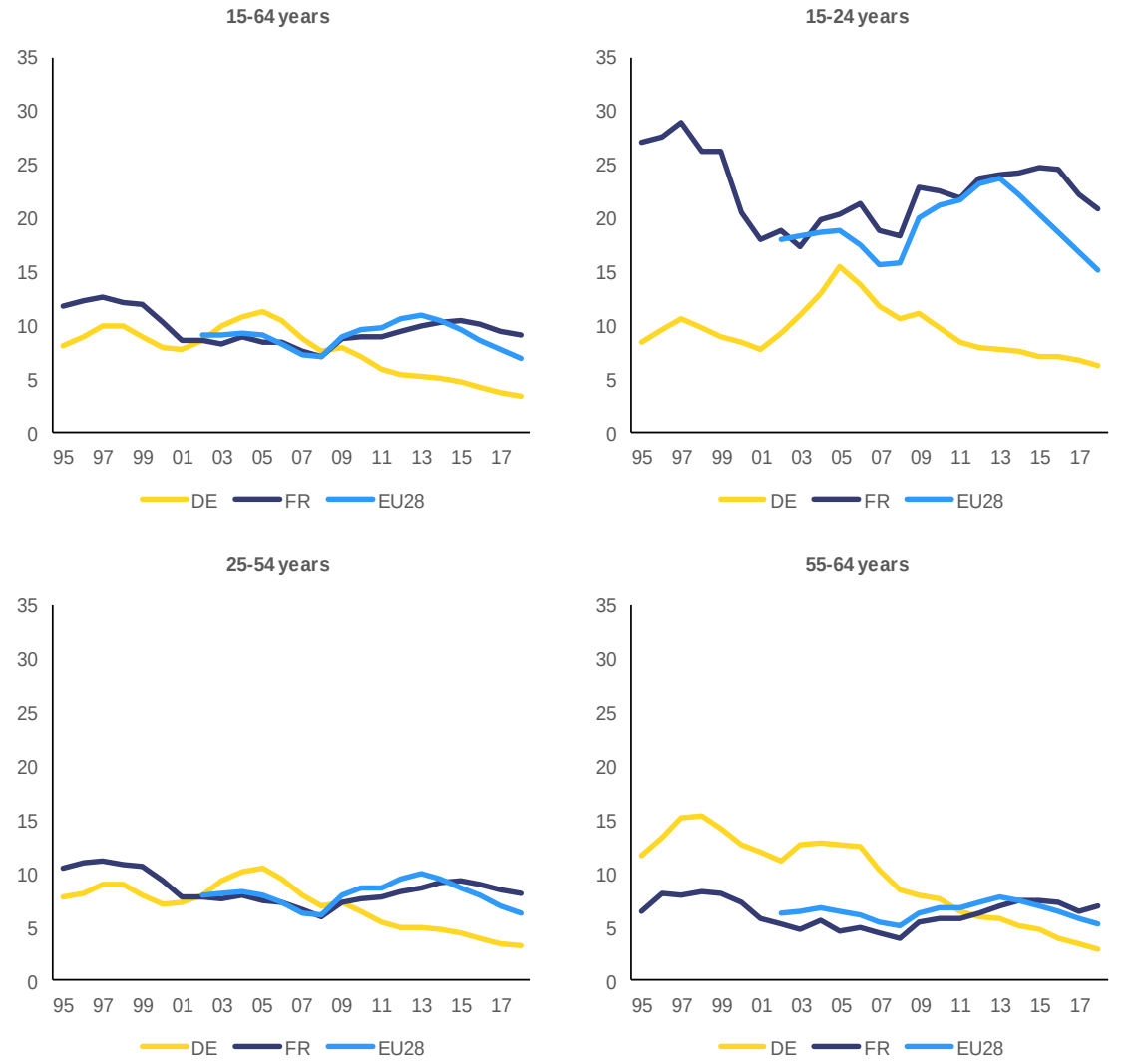
([39]) Chen et al. (2018) also find evidence of a positive relationship between long-term unemployment and the level of poverty. However, they also find that higher labour market flexibility tends to increase absolute poverty. These two findings appear somewhat contradictory though in that long-term unemployment tends to be negatively correlated with labour market flexibility.

4.2.3. Intergenerational income differences

Social implications in terms of inequality are also different across generations and cohorts between Germany and France. Disparities in unemployment rates for young and middle age workers have accentuated since 2008. Youth and middle age unemployment was higher in France until the early 2000s (Graph 4.17). The gap declined significantly for young workers in the early years of the century. However, the gap started to widen again after the outbreak of the crisis due to the increase in youth unemployment in France, whereas it kept declining in Germany. For older workers (those aged between 55 and 64), the divergent trends are even more salient. While the unemployment rate of French older workers used to be less than half of their German counterparts until 2006, the latter has steadily declined since then to fall below the French rate in 2012. In this regard, recent reforms of pension and pre-retirement schemes in France have increased the retirement age and tightened the conditions for early-retirement since the beginning of 2004, thereby leading workers to remain longer on the labour market even if they are unemployed. For example, at the end of 2017, 66.3% of 50-64 year-olds are active, employed or unemployed, that is +1.1 pp. over one year (DARES, 2018).

The better unemployment performance of Germany since 2007 has not always translated in better social outcomes across all age groups. Between 2005 and 2007 income inequality, as measured by Gini coefficients, rose in all age groups in Germany despite the decline in unemployment rates (Graph 4.18), which might be due, at least in part, to the labour-market reforms implemented between 2003 and 2005. Since 2007, however, no systematic trend is observed for the total and those older than 55, as income inequality has remained roughly stable. This contrasts with the steady decline in unemployment rates also observed for older workers. However, the young between 18 and 24 of age, and to a lesser extent

Graph 4.17: **Unemployment rates, by age groups**



Source: Labour Force Survey, Eurostat.

those aged between 25 and 54, seem to have benefited from the aftermath of the labour-market reforms in that a significant decline in Gini coefficients is observed between 2007 and 2012.

In France, the increase in income inequality has gone hand in hand with the pick-up in unemployment. A significant increase is observed in 2008 for all age groups. Following the improvement of the economic setting as of 2013 income inequality dwindled for those younger than 54, whereas it rose slightly for those between 55 and 64 years of age and remained broadly stable for the elderly.

Graph 4.18: **Gini coefficients by age group for total disposable household income including pensions**

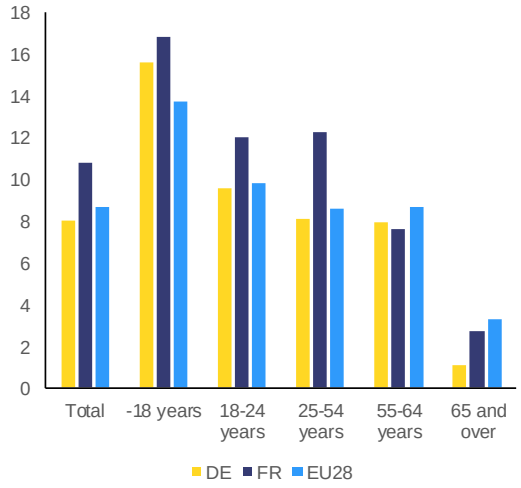
Ad-hoc extraction request.
Source: EU-SILC, Eurostat.

The share of middle-aged and elderly at risk of poverty in France is lower than in Germany, whereas the opposite is true for the young (Graph 4.20**).** The at-risk-of-poverty rate among the young aged below 18 in France is about 4 percentage points higher than in Germany. This gap has widened in recent years, which may be related, at least in part, to a more advanced

demographic ageing in Germany. This has resulted in relatively smaller cohorts at younger age, and consequently a relatively smaller number of children to care for. ([40]) Moreover, the widening gap between the respective unemployment rates also seems to have played a role. A similar picture emerges for those aged between 18 and 24: they tend to display higher at-risk-of-poverty rates in France, which is also linked to the higher youth unemployment rate (Graph 4.17) and to the fact that in most cases they are not entitled to the main social benefit, the *Revenu de Solidarité Active* (RSA). At the same time, the labour market reforms in Germany implemented in 2003–05 made unemployment benefits less generous for the young and enhanced active labour market policies also for this age group. Demographic ageing and smaller younger cohorts meant for young adults less competition on the labour market, contributing to easier school to work transitions (in addition, school-to-work transitions have traditionally been easier in Germany, helped by the traditionally well-working dual education/apprenticeship system). All this resulted in an especially good labour market performance for the young in recent years, which led to broadly stable at-risk-of-poverty rate for individuals aged 18–24, which contrasts to the overall increase for the other age groups. However, for those older than 25, at-risk-of-poverty rates have been persistently higher in Germany, even if the unemployment rate is lower for this group. It becomes especially sizeable for older workers (between 55 and 64 years old), where at-risk-of-poverty rates have widened markedly since 2004 and remain at some 9 percentage points higher in Germany. This also reflects that the Hartz reforms closed early retirement pathways by restricting duration of unemployment benefits, forcing older workers to stay on the labour market longer – while those nevertheless leaving employment facing strong reductions of income. Interestingly, this trend has gone hand in hand with a sizeable decline in the German unemployment rate among the older workers, whereas the opposite has been witnessed in France, also due to the increase in the legal retirement age. As a result, the German unemployment rate of older workers has fallen well below the French one.

The gap between at-risk of poverty rates for people older than 25 is possibly linked to more generous work and housing welfare benefits existing in France. Those benefits protect the income of inactive or unemployed people and guarantee a minimum income for working people. Indeed, while young workers face similar poverty risks in the two countries, prime age and older workers have a higher poverty risk in Germany (Graph 4.21). A similar picture emerges for the at-risk of poverty rate of the elderly. Higher at-risk of poverty rates are observed in Germany since 2007, with the gap even widening in recent years to reach 9.2 points in 2017. In the case of France, however, the risk of relative poverty has shown a steady decline since the outbreak of the crisis, which reflects that their incomes were better protected than those still at working age and the high minimum benefit for elderly people (which is planned to increase between 2018-2020).

Graph 4.19: **Reduction in at-risk of poverty rates by benefits and transfers (pension not considered as transfers here)**



Source: EU-SILC, Eurostat.

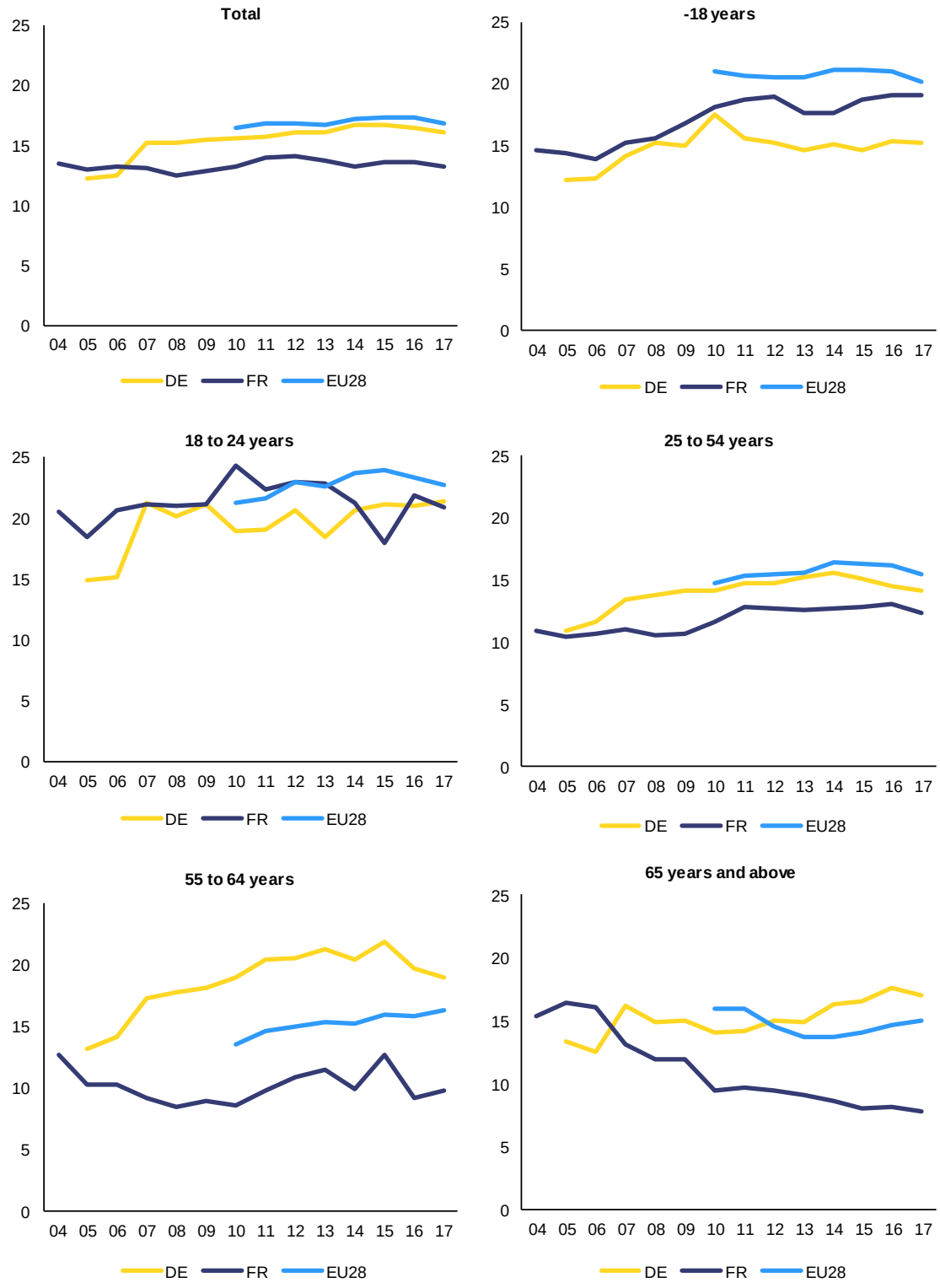
The reduction of at-risk-of-poverty rates in France by social transfers and benefits outweighs that in Germany in all age groups considered (Graph 4.19). The social transfer-benefit system reduces the total at-risk-of-poverty

([40]) At-risk of poverty situation for the young aged below 18 highly depends on the family situation. About one-third of the children who live in a single-parent family are at-risk of poverty in both countries (33.2% in Germany, 32.6% in France, compared to 35.3% in the EU, in 2017), which is more than two times than the at-risk of poverty rate in the whole population. (Source: Eurostat [ilc_li03])

rate by 10.8 and 8.0 points in France and Germany, respectively. While the larger corrections in the two countries take place within the youngest cohorts, namely those below 18 years of age, the larger discrepancies are observed for those aged 25-54. ([41]) Accordingly, the higher youth at-risk-of-poverty rate in France seems more linked to higher youth unemployment and high poverty risk for single parenting families. Severe material deprivation by age group shows similar patterns to those observed with the at-risk of poverty rate (Graph 4.22). While Germany fares markedly better in severe material deprivation of the young below 25 and somewhat better for the prime working age population, for elder workers (aged 55-64) it is worse than in France. Severe material deprivation for the elderly (aged 65 or more) is similarly low in the two countries.

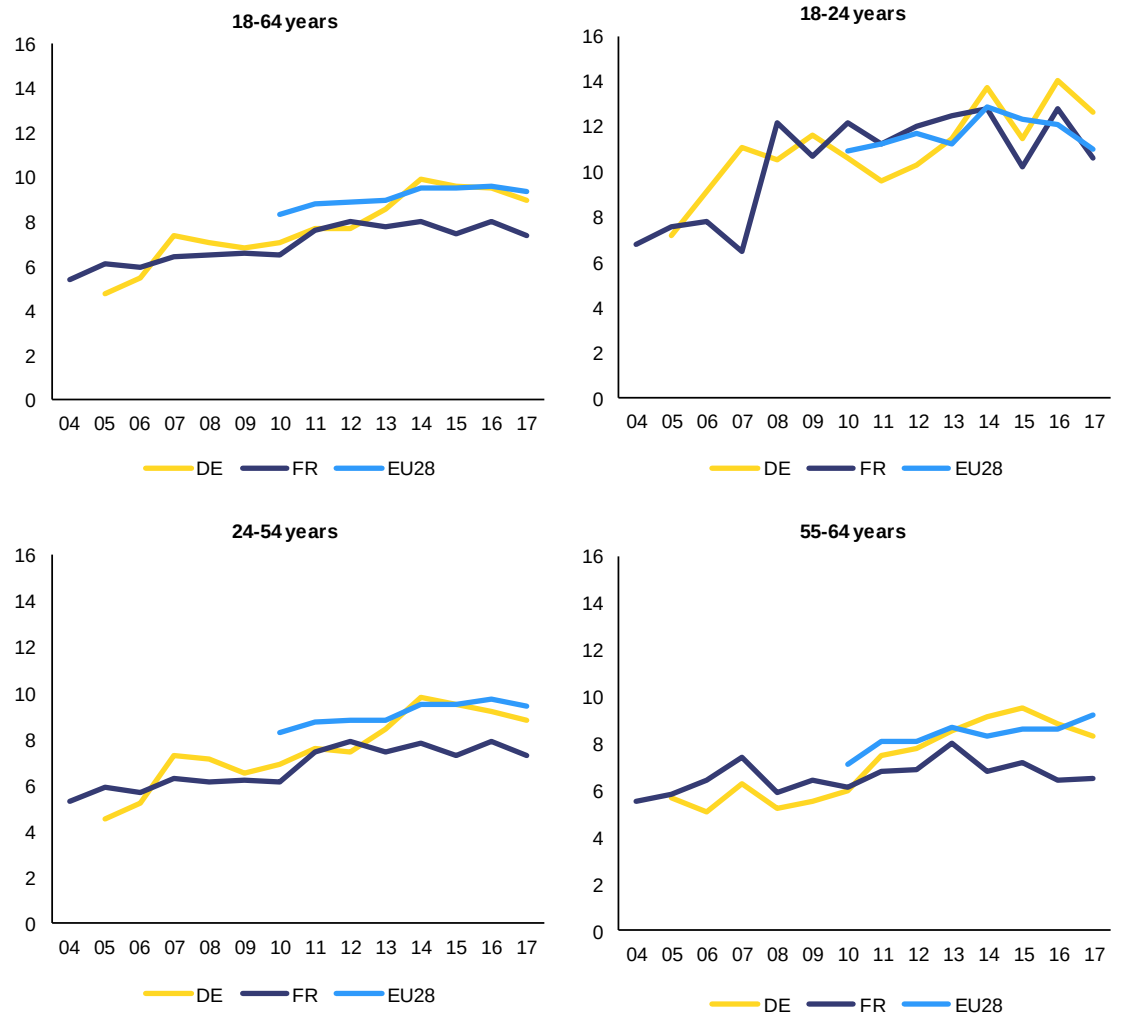
([41]) A word of caution is required to interpret data on the reduction in at-risk-of-poverty rates by benefits and transfers. The higher reduction in at-risk-of-poverty rates in certain age groups might just reflect initial at-risk-of-poverty rates (i.e. before socials transfers and benefits) higher for those age groups, rather than social transfer-and-benefit systems targeting more specific groups or populations.

Graph 4.20: **At-risk-of-poverty rates, by age group**



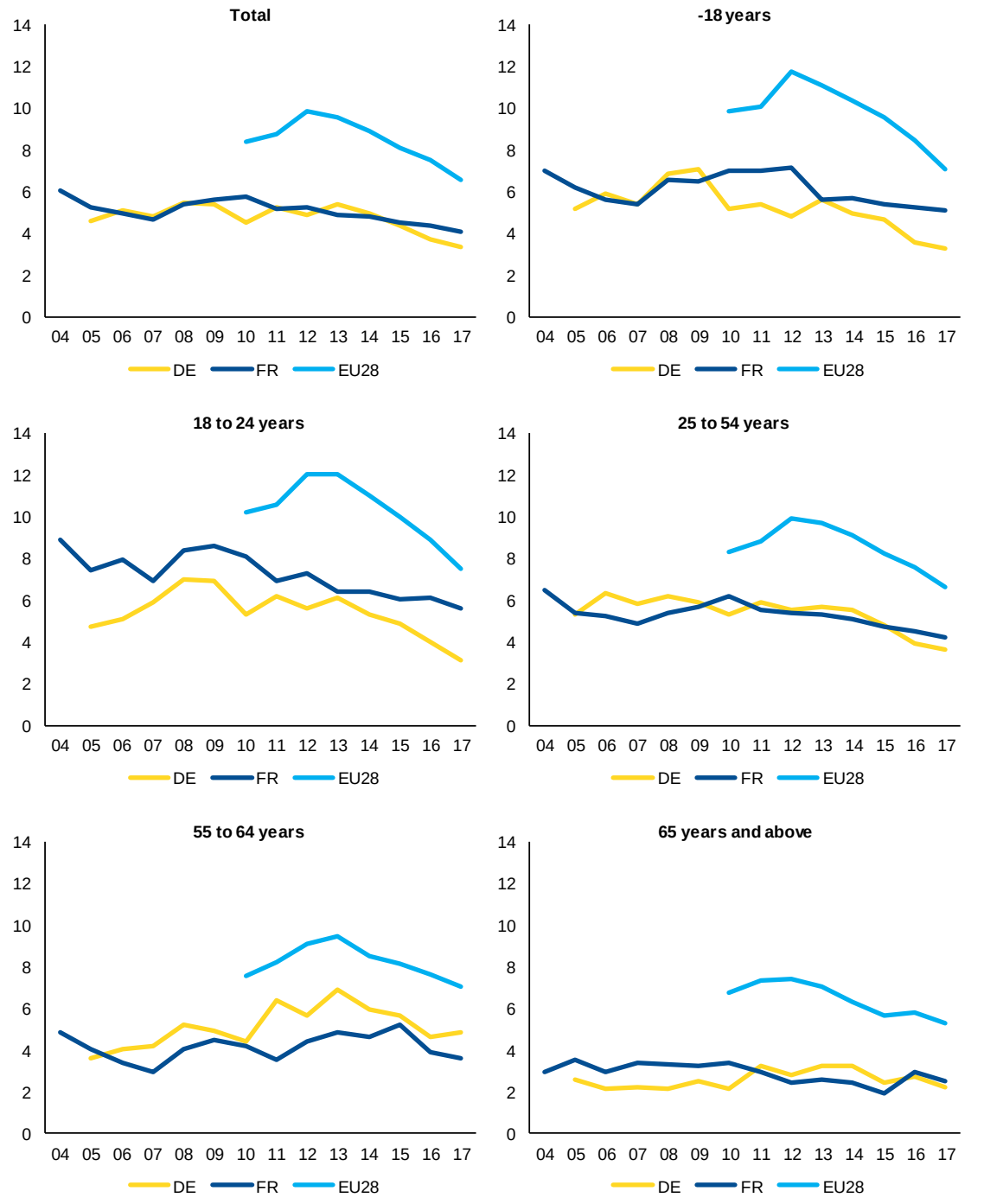
Source: EU-SILC, Eurostat.

Graph 4.21: **In-work poverty: share of workers who are at risk of poverty, by age group**



Source: EU-SILC, Eurostat.

Graph 4.22: **Severe material deprivation, by age group**



Source: EU-SILC, Eurostat.

4.2.4. Regional income disparities

An additional dimension of income inequality is the one concerning different parts of a country, so that regional disparities may be assessed in parallel to inequality considerations at individual level (Rodríguez-Pose, 2018; Rosés and Wolf, 2018). What follows sheds light on the evolution over time of the distribution of GDP and income per capita measured at regional level([42]). It also shows how the evolution of regional disparities is accompanied by differences in GDP-per-capita growth rates, employment outcomes, and the role of the local administration at regional level.

Table 4.3: **Evolution of Gini coefficients by NUTS 2 regions**

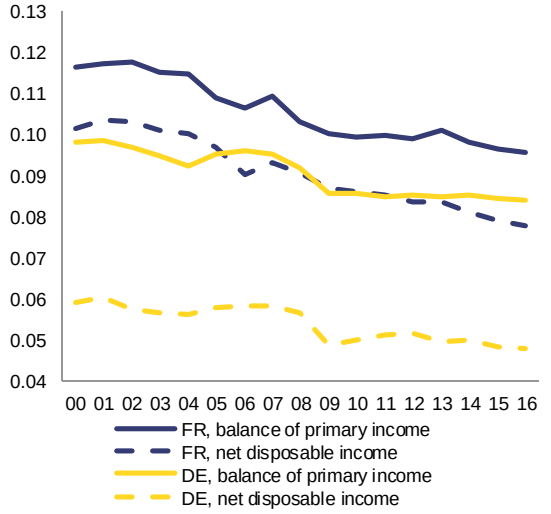
Gini	2000	2004	2007	2012	2016
Balance of primary income, EUR per inhabitant					
DE	0.0980	0.0925	0.0951	0.0853	0.0842
FR	0.1165	0.1150	0.1095	0.0989	0.0956
Net disposable income, EUR per inhabitant					
DE	0.0591	0.0560	0.0581	0.0514	0.0476
FR	0.1016	0.1003	0.0933	0.0834	0.0778
Difference					
DE	-0.0390	-0.0366	-0.0370	-0.0339	-0.0366
FR	-0.0149	-0.0147	-0.0162	-0.0155	-0.0179

See graph above for NUTS definition.
Source: Eurostat, own calculations.

Inequality among regions is lower in Germany and has steadily decreased over time in both countries. Graph 4.23 and Table 4.3 shows the value of the Gini coefficient for regions in France and Germany between 2000 and 2015, in terms of primary and disposable income. Gini coefficients have a lower value in Germany, both when using primary income (that is income before taxes and subsidies) and disposable income (that is income after taking into account taxes and subsidies). Although decreasing in both countries, the difference between Gini coefficients calculated on primary and disposable income is larger in Germany than in France, which is noteworthy given that Germany, overall, displayed higher income inequality and at-risk-of-poverty rates. This indicates that taxes and subsidies play a more important role in equalising regional disparities in Germany than in France, possibly reflecting the stronger role played in Germany by subnational governments (Graph 4.24).

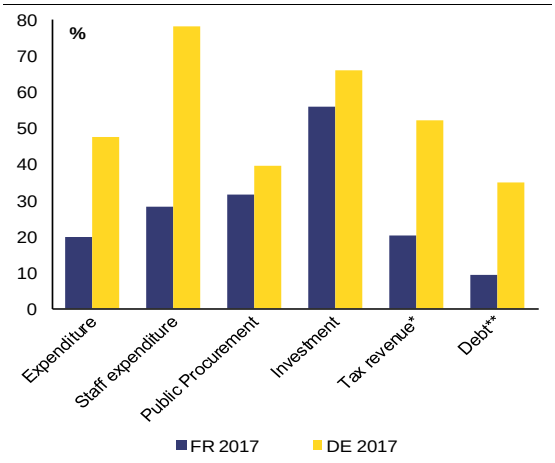
([42]) Some words of caution are needed when applying to data the results of literature showing that regional disparities may be assessed in parallel to inequality considerations at individual level. For example, the definition of a regional aggregate may be less homogeneous than the one at individual level, making comparisons between two regional entities more difficult to interpret than a comparison between two different individuals.

Graph 4.23: **Evolution of Gini coefficients by NUTS 2 regions**



The NUTS classification (nomenclature of territorial units for statistics) is a hierarchical system for dividing up the economic territory of the EU at three different levels (NUTS 1, 2 and 3 respectively, moving from larger to smaller territorial units). Notably, NUTS 1 are major socio-economic regions, NUTS 2 are basic regions for the application of regional policies, and NUTS 3 are small regions for specific diagnoses.
Source: Eurostat, own calculations.

Graph 4.24: **Subnational government role in public finances**



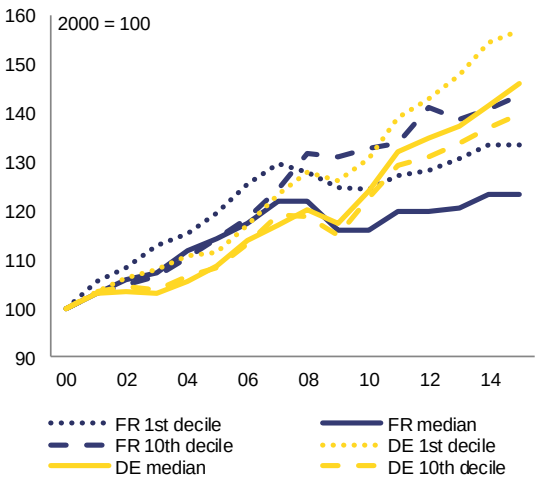
Source: OECD, OECD Regional Outlook 2016, own calculations.

The decrease in regional income inequalities has been accompanied by a similar evolution of

the GDP-per-capita distribution in the two countries up to 2008. Since then, the poorest regions in Germany started to develop relatively faster. Regional disparities in terms of GDP per capita are below the OECD average in both France and Germany. However, changes in these disparities have taken opposite directions over time, in particular after the last financial crisis. Graph 4.25 shows the evolution of the first and the last decile, as well as the median of the regional GDP per capita distribution. Between 2000 and 2008, GDP per capita has increased in a quite homogenous way in most of the regions under analysis. In both France and Germany, regions belonging to the first decile of the distribution were developing faster than the others, with poorest regions in France growing even faster than in Germany. At the same time, GDP per capita of regions belonging to the tenth decile of the distribution were growing hand in hand with the median. After 2008, the development of the regions falling into the first decile of the distribution outpaced the rest of German regions. A widening gap opened up between France and Germany for the median regions. The richest regions in France had a more sustained development than in Germany up to 2013 with a peak in their GDP per capita in 2016. This remarkable concentration of GDP per capita distribution to the richest regions in 2016 in France reflects the evolution of GDP per capita concentrated to two regions (*Île de France* and *Hauts-de-Seine*), which significantly outperformed that of all others. As a result, in 2016, the tenth decile of the GDP per capital regional distribution was made by these two regions alone. The other regions being part of the tenth decile up to 2015 became instead part of the ninth decile of the distribution in 2016.

These indicators do not capture significant variations in purchasing power due to regional differences in housing costs. This is particularly felt in the larger cities where affordability of housing can become an important factor to consider. Although the so-called housing cost overburden rate, i.e. the proportion of the population spending more than 40% of disposable income on housing costs, is declining in both countries, it remains well above the EU average in Germany (standing at 14.5% compared to 10.4% for the EU in 2017). Whilst the housing cost overburden rate was less than half of the EU-average in France, house-price developments differ markedly across the country and have been more pronounced in the larger cities, notably in Paris. Even if house-price increases do not appear to cause any macro- or financial-stability risks in either of the countries at present, they could point to persistent gaps in housing supply and may constitute an obstacle for mobility of labour across sectors and regions, especially at the lower end of the wage scale.

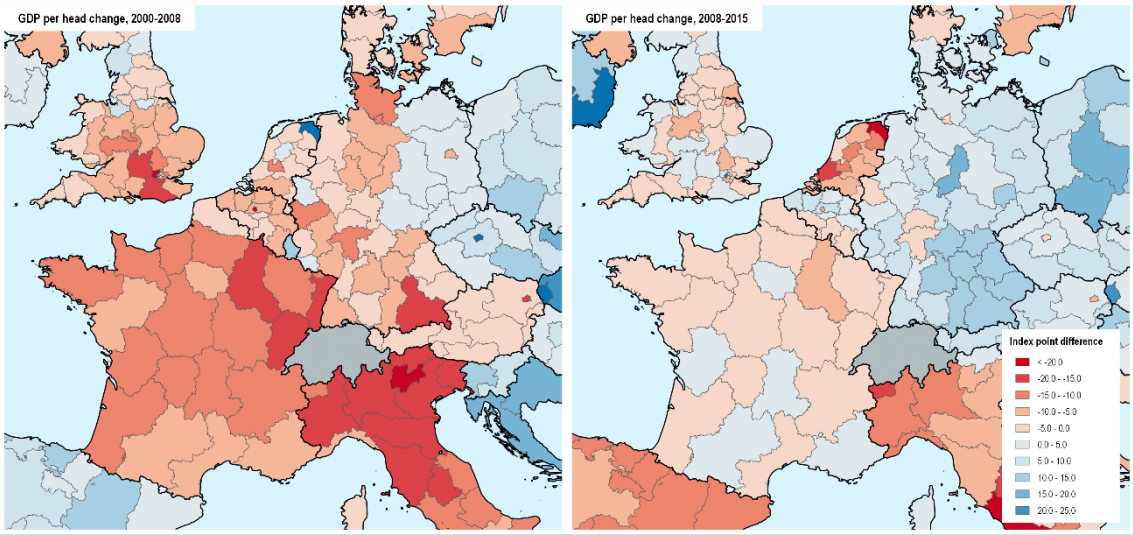
Graph 4.25: **Evolution of the GDP per capita distribution**



By NUTS3 regions.
Source: Eurostat, own calculations.

The evolution of the GDP-per-capita distribution occurs with different labour productivity trends in the two countries. Similarly to what can be observed in terms of GDP per capita at national level, the last financial crisis had a stronger impact in France than Germany as far as regional GDP-per-capita dynamics are concerned. Between 2008 and 2013, the gap between the 20% of the richest and poorest regions has decreased in Germany, while it has increased in France. As a result, in 2015, almost all German regions had a level of GDP per capita above the EU average, while, in France, only five regions were in the line with the EU average (Graph 4.26).

Graph 4.26: **Changes in GDP per capita, 2000-2015**



Source: European Commission (2018b), Seventh report on economic, social and territorial cohesion.

Such changes in the GDP-per-capita distribution mirror a catch-up process for the poorest German regions after the 2008 crisis French regions struggle to contribute to productivity growth, except for the most developed one (Ile de France), while a catching-up dynamic can be observed in Germany for most regions (Graph 4.27). In turn, the lower contribution to national labour productivity growth transformed into a lower ability to contribute to the national GDP growth for most of the French regions, while the highest contribution to national GDP growth stemmed from catching-up regions in Germany (Graph 4.28).

The catch-up process for the least developed German regions in recent years was largely driven by two main factors; (i) their geographical proximity to more dynamic regions in eastern Europe and (ii) the different regional structure of the two economies. As for the first factor, between 2008 and 2015, GDP per head increased relative to the EU average in all the regions in the central and eastern Member States. Proximity and trade links to catching up eastern EU economies may have spilled over in the form of higher GDP-per-capita growth in German regions. As for the second factor, an alternative explanation to such differences in the catch-up process is constituted by the different regional structure in the two countries. The Regional Competitiveness Index ([43]) points to the existence of a broader constellation of competitive regions in Germany versus the Paris' isolated island of

([43]) The Regional Competitiveness Index (RCI) is designed to capture the different dimensions of competitiveness for NUTS 2 regions and is the first measure to provide an EU-wide perspective on this. The 2016 edition follows the two previous ones published in 2010 and 2013 (Annoni and Kozovska, 2010; Dijkstra, Annoni and Kozovska, 2011; Annoni and Dijkstra, 2017). All three of them are built on the same approach as the Global Competitiveness Index of the World Economic Forum (GCI-WEF). The 2016 index is based on 74 mostly regional indicators covering the 2012-2014 period though with a number of indicators for 2015 and 2016. The index is based on a definition of regional competitiveness from the perspective of both firms and residents (Dijkstra et al., 2011):

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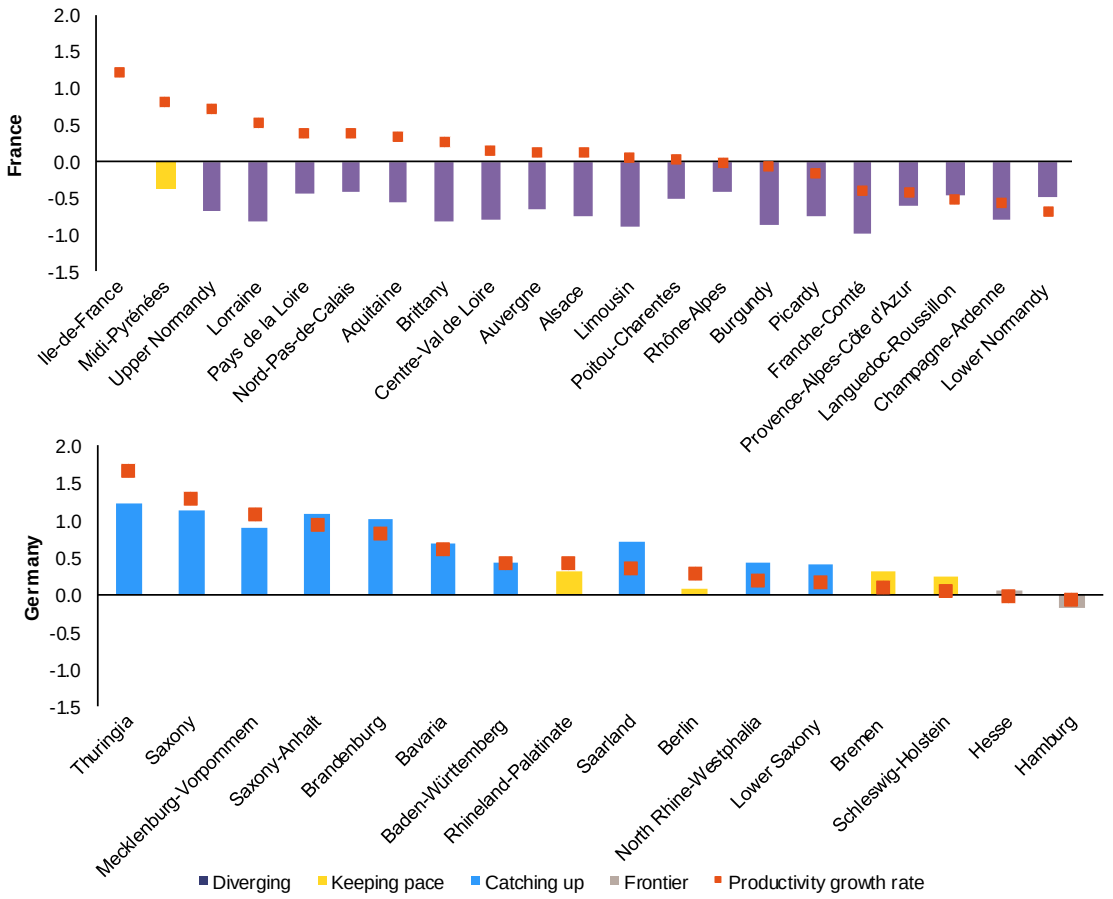
Graph 4.27: **Labour productivity growth, 2000-16**

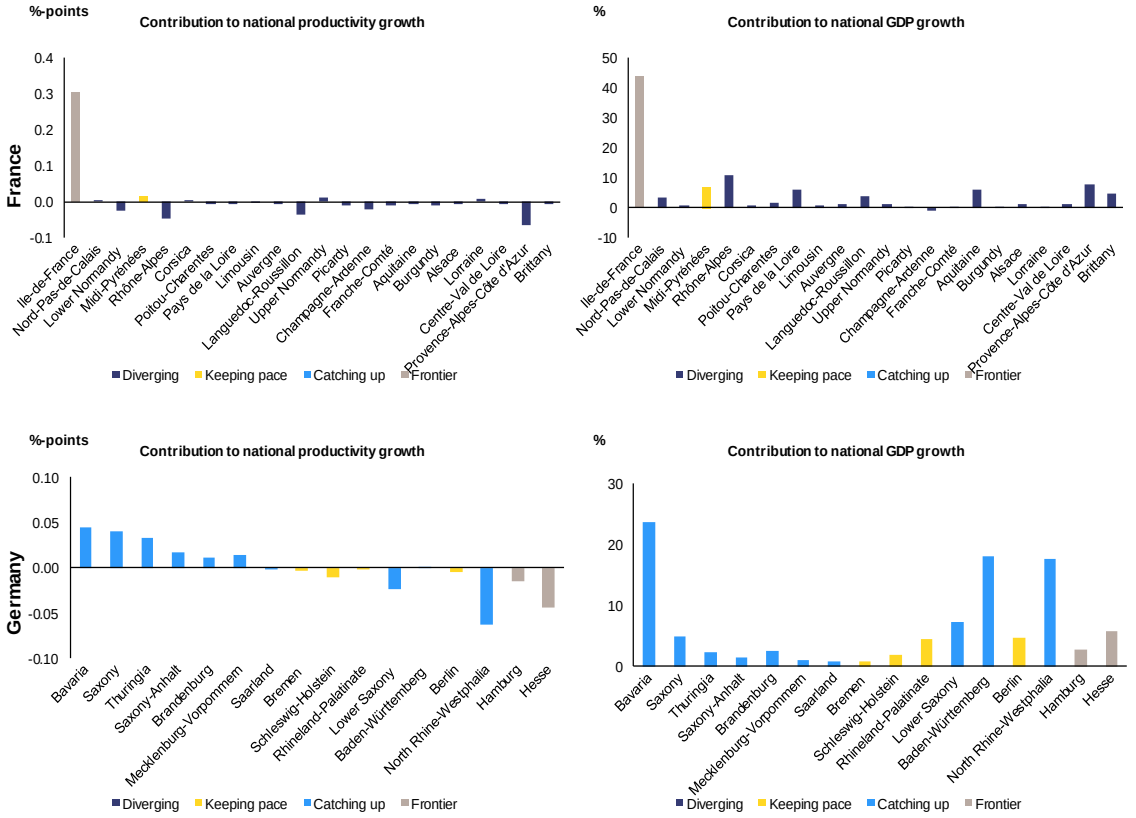


Source: OECD, OECD Regional Outlook 2016, own calculations.

competitiveness in France (Graph 4.29). The regional structure of Germany, characterised by metropolitan aggregates dislocated over the whole territory, but interconnected, may have represented an advantage for the reduction of regional disparities and the overall development of the country (Henderson, 2000; Frick and Rodríguez-Pose, 2018) while, in France, the growth of the metropole of Paris is still outpacing all other, more recently created, metropolitan areas (Dherbécourt and Le Hir, 2016). ([44])

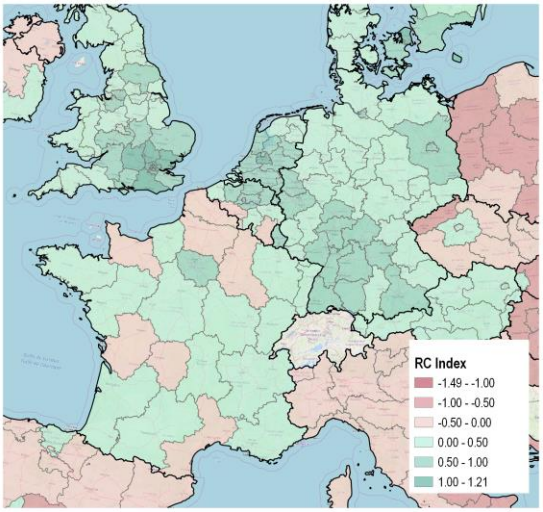
([44]) Recent literature puts into question the "Williamson hypothesis" on the existence of an inverted U-shaped relationship between regional agglomeration and GDP growth (Brülhart and Sbergami, 2009). The growth of the services sector has transformed metropolitan cities into growth engines (Combes, 2000; Díez Minguela and Sanchís Llopis, 2018; Rosés, Sanchís Llopis, Díez Minguela, 2015), in turn reshaping the inverted U-shaped relationship found in previous literature into an N-shaped relationship between regional disparities and development (Lessmann and Seidel, 2017).

Graph 4.28: **Catching-up trends among regions, 2000-2013**



The contribution of a region is defined as the difference between the national annual average labour productivity growth rate and the annual average labour productivity growth rate for all regions but the one indicated.
Source: OECD, OECD Regional Outlook 2016.

Graph 4.29: **Regional Competitiveness Index, 2016**



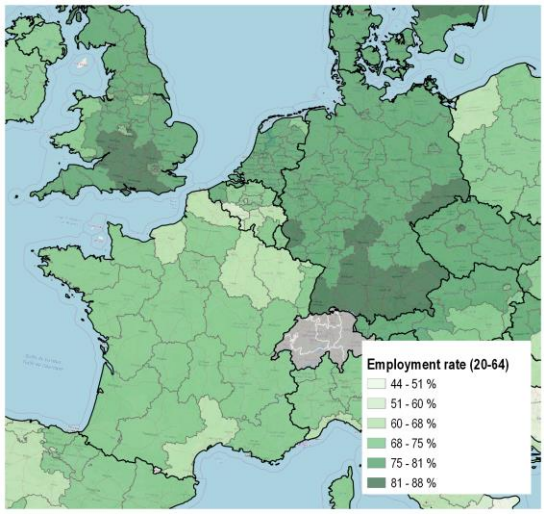
Source: European Commission (2018b), Seventh report on economic, social and territorial cohesion.

Different policy challenges hence exist at regional level in the two countries. In France, the ratio between number of person employed and number of residents remains rather low (Graph 4.30) and the share of young people (15-24) neither in employment nor in education or training (the NEET rate) is above 10% in many French regions. Key challenges here are to strengthen labour-market opportunities and labour-productivity growth, including to increase regional resilience ([45]) from the risks of job losses,

([45]) The 'Regional Resilience Indicator' is based on GDP, employment and productivity and relies on two components. The first one, called 'slow burning process', measures the capacity of a region to cope with a crisis. It is based on the mean over the period 2000-2008, and trends over the periods before the crisis (2000-2008) and after the crisis (2009-2015). The trend over the pre-crisis period is assumed to be the long-run growth trend that a region would have reasonably experienced in case of no crisis. The trend over the post-crisis period is a proxy of the long-run growth trend after the shock. The second component, referred to as 'shock wave' or 'dynamic process', is based on the immediate reaction to an

stagnating wages and shrinking market shares. ([46]) Given that regions that are innovative and have a large share of high-skilled jobs and a highly educated workforce are less likely to be hit hard by job losses, the objective should be to increase in all regions their potential accessibility ([47]), innovation performance, entrepreneurship, knowledge transfer and continuous upgrading of the skills of the labour force to let lagging behind regions move into more technologically advanced and job creating sectors. German regions appear instead as having a stronger innovation performance. The Regional Innovation Scoreboard ([48]) confirms the wide diversity of regions in terms of innovation performance, so highlighting the fact that innovation has also a regional dimension. Several German regions leading in innovation – whereas none is doing so in France. Moreover, if being more connected and accessible is an indication of the degree of economic opportunities offered by a place, a high value of potential accessibility can be observed for the majority of German regions and only the Northeast of France. Still, while on average indicators picture a positive image of the regional development in Germany, disparities exist and policy challenges remain. As specific support mechanisms for East Germany will be phased out in 2019, regional policy will have an opportunity to re-assess the best ways of addressing such challenges.

Graph 4.30: **Regional employment rates (20-64), 2016**



Source: European Commission (2018b), Seventh report on economic, social and territorial cohesion.

4.3. SUMMARY OF THE MAIN LABOUR-MARKET FEATURES AND CHALLENGES

Historical differences help explain the similarities and divergences in today's industrial relations of the two countries. In France, these relations have traditionally been more adversarial and mediated by the State through laws; in Germany, social dialogue has been developed on the basis of trade-union membership rates, *collective bargaining of trade unions* and codetermination of works councils at firm level. In turn, these industrial relations have contributed to shape their respective reform process, which in Germany is characterised by a legally very stable system that at the same time allows for a high degree of flexibility including within-company flexibility, while in France it is characterised by a more discretionary and legally driven step-by-step approach.

unexpected shock, represented by the measured peak of the crisis between 2009 and 2010 compared to 2008 (pre-crisis reference year), and on the capacity to recover, represented by the relative change between 2008 and 2015. The indicator ranges between 0 and 1, where 0 corresponds to 'less resilient' and 1 to 'more resilient'.

([46]) These risks could also be linked to globalisation and technological change leading to: (1) a large share of employment in low-tech manufacturing, (2) rapidly increasing unit labour costs in manufacturing over the past decade which may compromise competitiveness and reduce market share, (3) a large share of working-age population with low educational attainment, and (4) a decline in employment in industry between 2000 and 2014.

([47]) Potential accessibility is an indication of the degree of economic opportunities offered to a place. Higher values indicate more opportunities. This indicator is often considered as an important factor in economic development. It depends on the level of services offered by roads and on the amount of people those roads offer access to.

([48]) The 2017 edition of the Regional Innovation Scoreboard (RIS) classifies regions into four innovation performance groups: Innovation Leaders (53 regions), Strong Innovators (60 regions), Moderate Innovators (85 regions), and Modest Innovators (22 regions). The RIS for 2017 is based on data for 18 of the 27 indicators used in the European Innovation Scoreboard for the same year; 220 regions across 22 EU Member States and Norway, with Cyprus, Estonia, Latvia, Lithuania, Luxembourg, and Malta are covered at country level.

The main differences in today's labour-market institutions concern the organisation and flexibility of collective bargaining, the influence of collective bargaining on wages and working time, and the coverage of employment protection legislation:

- First, collective bargaining at firm level is more flexible in Germany than in France. This is reflected in a number of factors. In particular, the involvement of employees in company-related decisions is stronger, enabling them a higher level of ownership. Furthermore, the extension of collective agreements is rarely required by social partners in Germany so that firms can decide whether they want to be part of sector-level agreements. In addition, the statutory general minimum wage is, at least so far, less binding in Germany, as it is set to a relatively lower level (48% of median wage, compared to 62% in France).

- Second, higher working-time flexibility allows firms to recur to changes in employees' working time and wage to a larger extent in Germany, thereby avoiding larger fluctuations in employment.

- Third, the level of employment protection in France and Germany is relatively similar for individual and collective dismissals for the traditional permanent employment contract, while it is stronger in France for fixed-term contracts. Finally, the duration of unemployment benefits is considerably shorter in Germany than in France. In addition, smaller differences can be observed in the pension system, while the focus and governance of the vocational education and training system seems to offer a more effective answer to youth unemployment in Germany than in France, even if its effectiveness seems to have declined over time.

These differences in institutions have resulted in fundamentally different social outcomes for France and Germany in the past 10 years. Labour-market incomes are considerably more unequal in Germany than in France. The wage-setting framework in Germany contributed to a wider wage distribution than in France, with Gini levels of about 55 and 50, respectively. In particular, low hourly wages and part-time work are much more common in Germany, while their shares are particularly low in France.

At the same time, in-work poverty rates are significantly lower in France. Though the share of workers who are at risk of poverty increased in the last decade in both France and Germany, the increase in France amounted to about 2 pps. and the in-work poverty rate remained below the EU average, while in Germany it increased by more than twice as much, reaching the EU average. The steady decline in unemployment in Germany has not led to any decline in the at-risk-of-poverty-rate. Despite the sizeable reduction in unemployment, the total rate of households at risk of poverty in Germany has persistently exceeded that in France since 2006. The labour-market reforms in this regard could also help explain the increase in the at-risk-of-poverty rate observed in 2006 and 2007 in Germany, including those aged between 18 and 24, and the subsequent overall upward trend, despite the sizeable reduction in unemployment. While relative poverty increased more in Germany, key indicators of absolute poverty developed similarly in the two countries. Severe material deprivation has declined in both countries by a similar extent.

France is spending much more on social expenditure than Germany. While the share of social spending in total public spending is similar in both countries, the level of public expenditure as percentage of GDP in France outweighs that in Germany. Irrespective of the levels of inequality in the two countries, the reduction of at-risk-of-poverty rates in France by social transfers and benefits is larger. The social transfer-benefit system reduces the total at-risk-of-poverty rate by 7.6 and 5.9 percentage points in France and Germany, respectively.

The German labour market is better at integrating the young and the old. The at-risk-of-poverty rate among the young aged below 18 in France is almost 5 percentage points higher than in Germany. This can, for the most part, be explained by the dual system of vocational education and training and the labour-market reforms in Germany implemented in 2003–05, which made unemployment benefits less generous for the young and enhanced active labour market policies, especially for this age group. Moreover,

demographic ageing and smaller younger cohorts meant for young adults less competition in the labour market, contributing to easier school-to-work transitions (noting that school-to-work transitions have traditionally been easier in Germany, helped by the traditionally well-working dual education/apprenticeship system.). This trend has gone hand in hand with a sizeable decline in the German unemployment rate among the older workers, whereas the opposite has been witnessed in France. As a result, the German unemployment rate of older workers has fallen well below the French one.

Altogether, this shows that the higher labour-market flexibility in Germany, which enabled the fall in unemployment, comes at a price of more market-income inequality and in-work-poverty. However, the tax-benefit system in Germany is able to alleviate these adverse social outcomes to some extent and at a lower level of public expenditure than in France. After all, the higher unemployment in France implies that a much higher number of people is without any market income and have to fully rely on social support.

After a worsening of social indicators in Germany in the early 2000s, the situation is now improving. From 2014, thanks to good labour-market outcomes and possibly also to the introduction of the statutory general minimum wage in Germany, social indicators such as at-risk of poverty, in-work poverty, the Gini indicator of inequality, have started to improve.

Looking ahead, demographic trends will raise challenges for the labour market institutions of the two countries, but markedly more so in Germany. Demographic projections suggest that the German labour market may face more important challenges over the medium-term than the French one, as the size of the German population is on a decreasing trend due to a lower fertility rate. ([49]) Although migration trends have been favourable to Germany over the most recent years, the country faces the challenge to conserve the present level of well-being in a rapidly ageing society as well as to ensure the integration of newly-arrived migrants. Indeed, potential employment and working-age population will decrease by 20% by 2060. Both labour-force participation rate and labour-force skills will need to improve so as to cushion the impact of demographic trends on the employment-to-population ratio. More investment in human resources could help to preserve and to raise productivity and living standards (OECD, 2018b). It remains to be seen to what extent the capacity to keep a larger share of its labour force in employment since the crisis will help to preserve, or even improve, Germany's human capital ahead.

In both countries, policy challenges exist also at regional level. As specific support mechanisms for East Germany will be phased out in 2019, which constitutes an opportunity to re-assess regional policies capacity in addressing a number of challenges. Taking also into account demographic trends, these include providing more equal access to jobs and the supply of workers, affordable land prices (above all within cities), high quality health and education services, and good energy, transport, and communication networks. In France, regional labour-market disparities seem stronger than in Germany and appear linked also to the absence of more dynamic regions besides Paris. These disparities are linked to existing inequalities in terms of labour-market opportunities and different labour-productivity growth at regional level.

([49]) In 2017, the total fertility rate is equal to 1.57 in Germany and to 1.90 in France. Being below the level of 2.1, fertility in Germany in particular is farther away from the level that ensures the stability of the current population size over time. On the basis of the current fertility rate, population size is hence projected to shrink over time in Germany and to remain stable in France.

5. DIFFERENCES IN ECONOMIC STRUCTURES

This chapter discusses differences and similarities in the economic structures between France and Germany to understand if, or how, this could affect their respective income developments. Section 5.1 looks at the public sector's expenditure, taxation and debt. This part also discusses the use and efficiency of state-owned enterprises. Turning to the private sector, Section 5.2 reviews the main determinants of productivity, the performance in terms of research and innovation, and the business environment and corporate dynamics. Lastly, Section 5.3 concludes on the impact of structural differences.

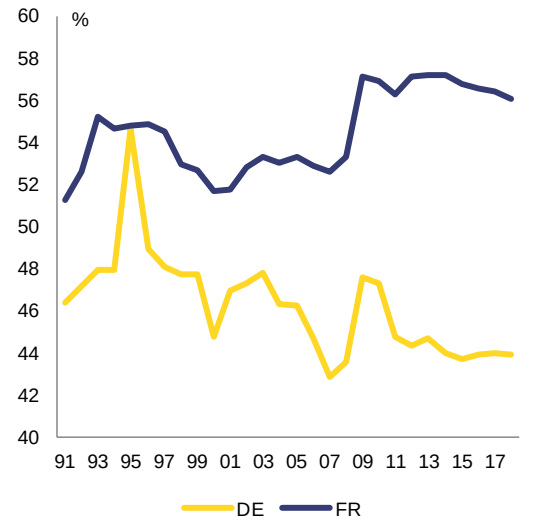
5.1. THE PUBLIC SECTOR

5.1.1. Public expenditure

The public sector in France is the largest in the EU while it is below the euro-area average in Germany. Public expenditure in France represented 56.0% of GDP in 2018, almost 10 pps. higher than the EU average. Actually, public expenditure has been above 50% of GDP since the early eighties (Graph 5.1). By contrast, public expenditure in Germany, at 43.9% of GDP, is below the euro area average. Between 1991 and 2018, public expenditure in Germany fell by 2.5% of GDP. The pick-up observed in 1995 was purely transitory and related to the German reunification and the one-time takeover of the debt by the "Treuhandanstalt" in charge of restructuring the company sector of former East Germany. Nevertheless, higher public expenditure in France does not necessarily imply larger inefficiencies when compared to Germany.

Trends in public expenditure have diverged between France and Germany. Between 1990 and 2004, the gap between public expenditure ratios in France and Germany remained at around 5 pps. However, the ratios started to diverge as of 2004 and the gap peaked at 13.1 pps. in 2015 (Graph 5.1). While public expenditure in France displayed some decline over the second half of the nineties and remained broadly stable until 2007, it rose sharply again in 2009 and 2010 and peaked at 57.2% of GDP in 2013, which represents an increase by around 4 pps. of GDP after the outbreak of the economic and financial crisis. Regardless of temporary changes in its relative position, such a high level of public expenditure has been one of the defining features of French public finances and one of its main challenges. In Germany, in contrast, public expenditure entered a clear downward trend between 2004 and 2007 that was reverted with the outbreak of the crisis. However, the increase in public expenditure observed in 2009 and 2010 was temporary and the expenditure ratio now remains slightly below 44% of GDP. Both primary expenditure and interest payments on government debt contributed to the overall decline in public expenditure since 1991, by 0.8 and 1.7% of GDP, respectively.

Graph 5.1: **Evolution of public expenditure ratios**



Source: Ameco, European Commission.

The costs of German reunification were significant, but manageable and comparable to the budgetary burden following the financial crisis in 2008/2009. In the period following reunification from 1991 to 1995 government debt increased by around 15% of GDP, which is similar to the debt increase following the financial crisis in the period from 2008 to 2010. The costs for building up the infrastructure in the former Eastern German regions following reunification can be estimated at around EUR 300 billion and were partly financed through the introduction of a solidarity surcharge on the income tax. Social transfers to the Eastern German regions were significant over the years, but as the social security systems are primarily funded as a pay-as-you-go system and not covered by capital these costs were

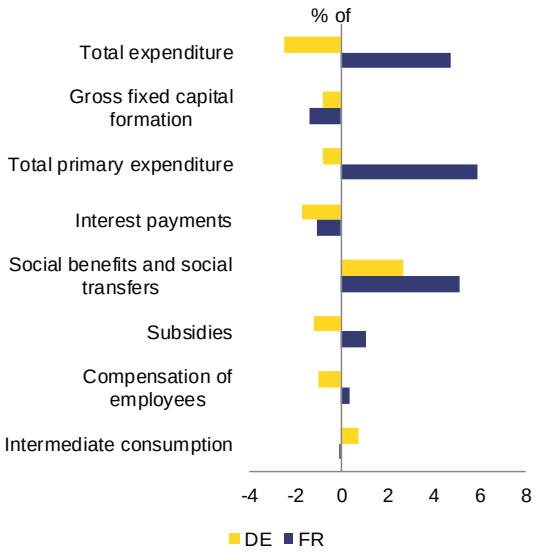
mainly financed by social security contributions with limited impact on public debt.

Social benefits led to the increase in total and primary public expenditure in France. Despite cyclical up- and downturns, overall social expenditure (the sum of social transfers 'in kind' and social benefits other than in kind) has depicted an upward trend since the early 1980's. Between 1980 and 2018, this aggregate increased by 7.3 pps. of GDP, compared with an increase by 9.6 pps. of GDP of total government expenditure. The link between the dynamics of total government expenditure and social expenditure strengthened: since 1991, this aggregate rose by 5.1 percentage points of GDP, whereas total and primary government expenditure increased by 4.8 and 5.9 points, respectively (Graph 5.2). Subsidies and compensation of employees also increased since 1991, but only by around 1% and 0.6% of GDP, respectively. In particular, the increase in subsidies was mainly due to the introduction of the tax credit to promote employment and competitiveness (*Crédit d'Impôt pour la Competitivité et l'Emploi*, CICE) as of 2014. By contrast, interest payments and public investment, and to a lesser extent intermediate consumption, declined over that period.

Social expenditure in Germany also increased its share in public outlays. The increase by 2.7 pps. of GDP observed in social expenditure since 1991 is quite remarkable when compared to the rest of the items (Graph 5.2). While intermediate consumption increased by slightly less than 1 pp. of GDP, the remaining items, including public investment, declined almost homogenously.

A marginal decline in the French expenditure-to-GDP ratio has been observed between 2015 and 2018. However, such reduction has been largely explained by the decline in interest payments (by 0.5 pp. since 2014), thanks to low interest rates, and by the retrenchment in public investment (0.3 pp. since 2014), whereas subsidies rose. However, as far as interest payments are concerned, this trend is projected to halt following the gradual interest-rate and inflation normalisation. In turn, public investment is also expected to gain momentum after some years of retrenchment and with the implementation of the ambitious Great Investment Plan put forward by the new government.

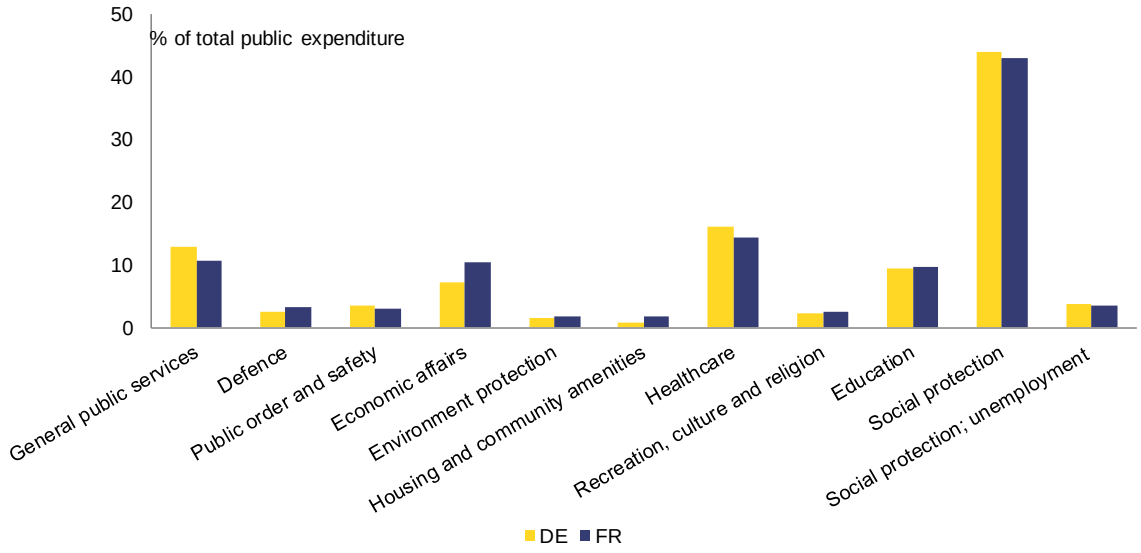
Graph 5.2: **Increase in public expenditure items between 1991 and 2018**



Source: Ameco, European Commission.

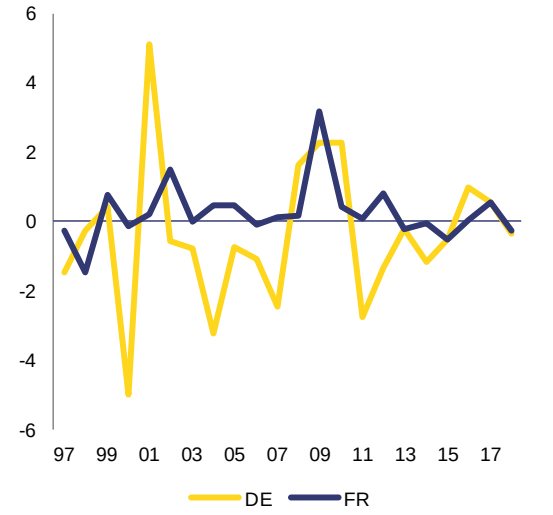
Public expenditure in Germany developed in a more volatile way than public revenues. In the period between 1991 and 2018, public expenditure oscillated between 42.8% and 54.7% of GDP whereas revenues stayed between 42.6% and 46.0% of GDP. The more pronounced expenditure surge to 54.7% in 1995 is a one-time outlier and linked to reunification-related costs. It could thus be argued that this year should be excluded, when comparing between countries how public finances operate, in which case the German expenditure ratio fluctuated between 42.8% and 48.9% of GDP. Higher public expenditure occurred during more difficult times in the economic cycle whereas revenues developed rather stable in terms of percentage of GDP. This is in part related to the functioning of automatic stabilisers, but also shows a somewhat counter-cyclical fiscal policy where also the budget balance is more dependent on the evolution of expenditure than revenues. Since 2011 though public expenditure has remained rather stable between 43.9% and 44.7% of GDP without any sizeable peaks as in the past, contributing to a continuous improvement of the budget balance since then.

Graph 5.3: **Public expenditure by COFOG category in 2017**



Source: Ameco database, European Commission.

Graph 5.4: **Gap between real public expenditure growth and potential GDP growth**



Source: Ameco, European Commission.

When adjusted for the effect of the economic cycle, expenditure trends, however, unveil an expansionary fiscal stance on the expenditure side in both countries. The cyclically-adjusted primary expenditure-to-GDP ratio actually increased between 2013 and 2018 by 0.4 pp. in France and by 0.9 pp. in Germany. This suggests that discretionary fiscal policy on the expenditure side continued to be expansionary, although more so in the case of Germany.

Contrary to Germany, public expenditure in France has increased broadly in line with potential GDP or above in most years since the late nineties (Graph 5.4**).** This unveils structural difficulties to reduce public expenditure despite large deficits in France. These difficulties, however, do not seem to be present to the same extent in Germany. Since the late 1990's sharp pick-ups in French public expenditure are usually followed by some deceleration but not pronounced enough to fall below the potential growth rate of the economy. Consequently, significant increases in the expenditure-to-GDP ratio in France tend to become entrenched, whereas in Germany similar episodes are transitory, as they tend to be offset in the following years by expenditure growth below potential.

The functional classification of public expenditure unveils a broadly similar composition in the two countries (Graph 5.3**).** At some 40% of total public expenditure, the largest item in both countries is by far expenditure on social protection([50]), with a similar proportion. Despite the markedly higher unemployment rate in France (9.1% of total labour force against 3.4% in Germany in 2018), the two countries devote a similar proportion of their public expenditure to

([50]) This includes expenditure on pensions, unemployment, social housing as well as social protection and social exclusion.

unemployment. Healthcare expenditure is the second largest item, followed by general public services, education expenditure and economic affairs. Only on economic affairs([51]) does France spend a clearly higher share of its public expenditure, whereas the opposite is true for general public services and healthcare. The share of education expenditure is again very similar. Therefore, differences in public expenditure allocated to the different areas are related to the overall amount of resources devoted to public policies rather than to specific policy choices. In all areas, public expenditure as a percentage of GDP is higher in France than in Germany.

The role of spending reviews in containing expenditure

Spending reviews in France are part of a long-standing tradition but with limited results in terms of expenditure savings. The use of spending reviews in their current form is relatively recent in France as it was only introduced in the framework of the article 22 of the 2014-2019 pluriannual programming for public finances (*Loi de programmation des finances publiques pour les années 2014 à 2019*, LPFP). Current spending reviews in France are, however, the result of a long process of rationalisation and evaluation of fiscal policy that began in the 1960s. Their impact remained limited and the procedure was no longer in use by 1972. Further efforts to improve budgetary performance, enhance public spending efficiency and achieve expenditure savings were put in place in 2001 and 2007. In October 2012, the initiative Modernisation of public action (*Modernisation de l'action publique*, MAP) was launched. It consisted in evaluating public policies and implementing modernisation and simplification programmes at a ministerial level. This new wave of spending reviews, starting in 2015, was closely linked to the annual budgetary calendar in order to increase their efficiency([52]).

Spending reviews in France, as on previous occasions, yielded only a limited amount of savings so far. While they identified a small fraction (less than 2%) of the overall planned expenditure savings of EUR 50 billion over the period 2015-2017, only some EUR 700 million translated into actual savings. This was partly because more than 50% of the spending reviewed concerned local authorities, which are autonomous in managing their budgets.

Spending reviews are a relative recent phenomenon in Germany. In 2015, spending reviews were used for the first time to monitor the effectiveness of public finances in some few selected policy fields (BMF, 2017d). Up to now, spending reviews have not been used to analyse the whole budget or the main expenditure positions but rather punctually in certain policy areas of interest. The first cycle of spending reviews in 2015/2016 had a very specific focus on funding programmes in the transport area. The second cycle 2016/2017 concentrated on funding programmes in the area of energy and climate as well as housing, including six ministries. The third cycle 2017/2018 analysed the purchase of standardised mass products over six ministries and in a different area looked into humanitarian aid including crisis prevention and reaction, stabilisation and development cooperation. The latest and fourth cycle 2018/2019 dealt for the first time with the income side and examined the receivable management in certain areas of the federal public administration ([53]).

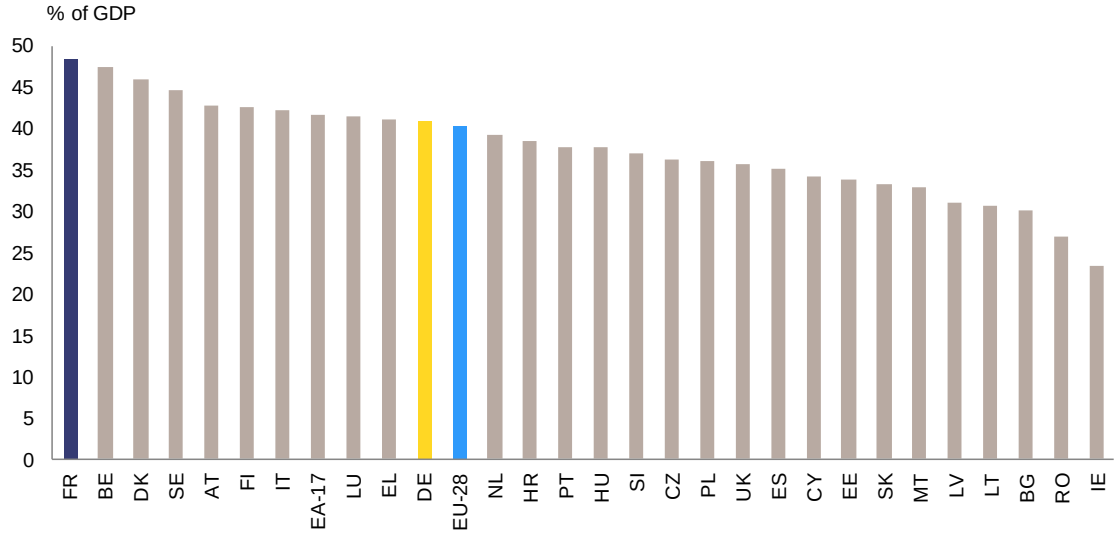
Traditionally, the German budget process is more tuned towards setting spending limits and a strict control thereof. The German budget

([51]) Expenditure on economic affairs include expenditure on transport, expenditure on general economic, commercial and labour affairs, research and development related to economic affairs, fuel and energy, expenditure on agriculture, forestry, fishing, mining, manufacturing, construction and other industries and expenditure not elsewhere classified. In some cases, there is considerable variation in this item over time as the amounts recorded may be influenced by operations of an extraordinary nature, such as disposal of non-financial non-produced assets recorded as negative expenditure, capital injections recorded as capital transfers, notably benefiting financial institutions and other categories of capital expenditures such as guarantee calls.

([52]) According to an OECD Report dedicated to the different evaluation methods of public policies, spending reviews are more likely to be implemented when they are included in the annual budgetary procedure and are conducted annually.

([53]) Spending reviews im Bundeshaushalt, retrieved from: https://www.bundesfinanzministerium.de/Web/DE/Themen/Oeffentliche_Finanzen/Bundeshaushalt/Spending_Reviews/spending-reviews_2017.html

Graph 5.5: **Tax burden in the EU in 2018**



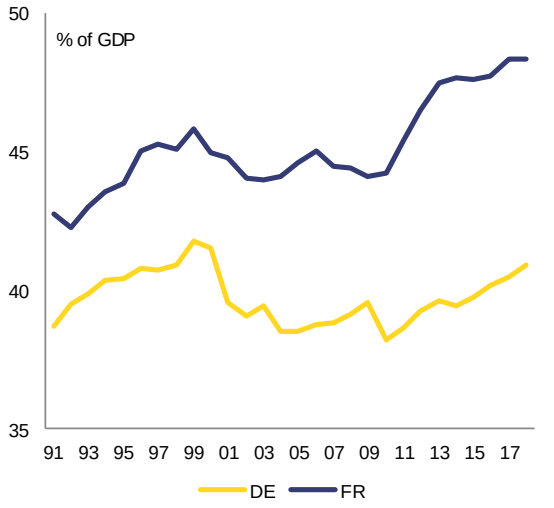
Source: Ameco, European Commission.

planning is more focused on the input side, setting limits on how much can be spent for a certain task or programme (OECD, 2015). Normally, the principal policy priorities are formulated in the coalition agreement of the government setting the framework for the legislative period. The amounts attributed to the different policy fields are a way of setting priorities and show their respective significance. Mostly, the allocated funds remain stable during the government's term. However, the effectiveness or efficiency of public expenditure are of less importance compared to the originally planned budget not being exceeded. Spending reviews are thus a complementary tool to put the attention also on the output side by evaluating the effectiveness and efficiency of money spent and monitoring priority setting.

5.1.2. Taxation

The higher public expenditure implies a higher tax burden in France. The tax burden in France amounted to 48.3% of GDP in 2018, compared to 41.0% in Germany (Graph 5.5). The overall effective average tax rate in France, at 33.4% in 2018, is the highest in the EU; Germany stands in the third place at 28.9%. The tax burden gap in France with respect to Germany has widened in the recent years. While in Germany the tax burden([54]) declined in the first years of the last decade, in France it remained barely changed until 2010 and increased sharply thereafter, thereby widening the gap with Germany since 2010 (Graph 5.6). The higher tax burden in France inevitably weighs more on production factors.

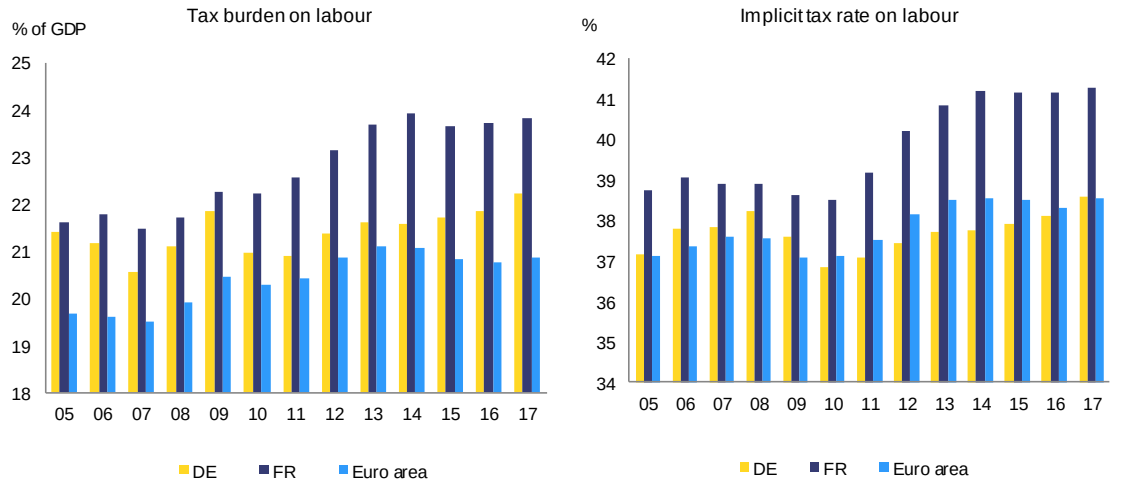
Graph 5.6: **Evolution of the tax burden**



Source: Ameco, European Commission.

([54]) The tax burden is measured as the ratio of the sum of total taxes plus social contributions over GDP.

Graph 5.7: **Taxes on labour**



Figures in the charts are not corrected by the CICE effect, which is a tax credit recorded as a subsidy in ESA2010 terms.
Source: European Commission, Taxation Trends in the European Union 2018.

Taxes on labour

In France taxes on labour are generally higher than in Germany with the exception of low-wage earners. In France, taxes on labour as a percentage of GDP and the implicit tax rate on labour were 1.6 pps. and 2.7 pps,, respectively, higher than in Germany in 2017, which weighs more on job creation. Moreover, in the case of France taxes on labour borne by employers were 6.6 pps. higher than in Germany. However, the tax wedge for low-wage earners is actually higher in Germany, which might entail a more negative impact on consumption than in France for these workers.

Taxes on labour in France stand well above the euro area. While taxes on labour in France were already above the euro-area average, this gap widened significantly since the outbreak of the crisis (Graph 5.7), with the implicit tax on labour rising by some 2 percentage points. In 2017, taxes on labour amounted to 23.8% of GDP, which implied an implicit tax on labour at 41.3% (the fifth highest in the EU). In particular, taxes on labour borne by employers amounted to 13.2% of GDP (the highest share in the EU).([55]) The tax wedge, at 43.7% in 2015, is thus one of the highest in the EU.

The French government introduced a number of measures to reduce the tax wedge on labour. Between 2012 and 2015 the French government introduced the CICE and the Responsibility and Solidarity Pact (RSP) to reduce the tax wedge in order to promote employment, investment and exports. More specifically, the CICE is a tax credit equivalent to a reduction in social-security contributions, gauged on the payroll corresponding to the wages below 2.5 times of the minimum wage. Its amount is deducted from companies' corporate or income tax liability. The introduction of these mechanisms, including a hiring subsidy, contributed to reducing the tax wedge between 2012 and 2016: by around 1 pps., on the average wage and by more than 6 pps. for workers earning 50% of the average wage, which fostered employment growth, especially at lower income levels. In this latter case, the tax wedge for workers earning 50% of the average wage and with no children was 27.9% in 2017. However, these measures also contributed to slowing productivity growth since 2013 as they mainly promoted hiring less qualified workers. In turn, despite their recent decline, employers' social-security contributions remain relatively high in France. At the average wage, France has the highest employers' social security contributions in the EU as a share of total labour costs paid by the employer, which on the one hand explains the relatively high tax wedge and, on the other hand, leads to a high tax burden on companies.

([55]) European Commission (2018), Taxation Trends in the European Union, 2018 edition.

In Germany, the tax wedge for low-income workers is still among the highest in the EU and disincentives for second earners persist. The overall tax burden on labour, at 22.2% of GDP in 2017, stands above the euro-area average. This gap narrowed strongly between 2004 and 2014, although it has widened since then. The tax burden on labour implied an implicit tax rate of 38.6% in 2017 (the tenth highest in the EU). Taxes on labour borne by the employers amounted to 6.6% of GDP (the fourteenth highest in the EU). In 2015, the tax wedge amounted to 45.3%, among the highest in the EU-28, reducing take-home pay and consumption opportunities.([56]) In the case of workers earning 50% of the average wage and with no children, the tax wedge was 42.4% in 2017. To ensure that the subsistence level remains tax-free and to offset the impact of fiscal drag, the minimum personal income tax allowance and child allowances have been increased and income tax brackets have been adjusted. These measures tend to benefit low and middle-income groups because they are affected by fiscal drag relatively more than high-income groups. However, their impact on the tax wedge, overall, will be limited.

Corporate and capital taxes

The high level of taxes weighing on companies in France represents an obstacle to private investment and hampers companies' growth (European Commission, 2017) and weighs on productivity developments. At 38.4% the effective average corporate tax rate in France was the highest in the EU in 2016 (ZEW, 2016). Moreover, other taxes on production also represent a heavier burden than in the main euro-area economies. Other taxes on production amounted to 4.7% of GDP in France in 2018, as opposed to 0.4% of GDP in Germany. Overall, at 7.8% corporate capital costs in France are the highest in the EU28 and have remained broadly constant since 2000.

In addition, the corporate tax system in France leads to the highest debt bias in corporate financing in the EU. Specifically, in 2016, due to the unfavourable tax treatment in France, investments financed by equity needed to earn 5 percentage points more in return than investments financed by debt to yield the same after-tax return (ZEW, 2016).

Capital taxation in France is also high when compared to other Member States. At 11.1% in 2018, France's ratio of taxes on capital-to-GDP was the third highest in the EU, with an implicit tax rate on capital at 52.7% that represents an increase of some 16 pps. since 2003. Moreover, capital taxation in France favours "lower-risk" investment products like housing, life insurance products and deposits over "riskier" investments like shares. A reduced rate of 7.5% applies to life insurance products and implicit rents on the main property are taxed according to rental values, which have not been updated since the 1970s, while real-estate capital gains are not taxed. By contrast, capital gains on securities are taxed according to the progressive personal income tax regime. Furthermore, specific tax regimes such as the full exemption of savings products, the deductibility of interest from the corporate income tax basis or the capital-gain tax create a relative distortion between fixed-income instruments (and especially deposits) and shares. As such, distortions negatively affect productivity growth, investment and financial stability; the tax system also includes a high number of tax rebates and specific schemes to offset these undesired effects aimed to encourage investment in innovation, SMEs and start-ups, thereby making corporate taxation very complex.

The overall income tax burden on corporations in Germany remains high, while the tax system is complex and includes inefficiencies. When accounting for the local trade tax (*Gewerbesteuer*) and the solidarity surcharge, the top statutory tax rate on corporate income reached 29.9% in 2018. This was substantially above the non-weighted EU average of 24.1%. The effective average tax rate is 28.2% compared with a non-weighted average of 21.1% for the EU.

Despite significant reductions in corporate capital costs, the friendliness of the German tax system for private investment still ranks low by

([56]) In a paper focussing on Austria, Belgium, Germany and Italy, Attinasi et al. (2016) show that a budget-neutral reduction of the tax wedge could positively affect private consumption and reduce unemployment, provided the measures taken to ensure budget neutrality do not negatively affect private sector productivity or investment.

EU-wide comparison. Corporate capital costs([57]) in Germany are still high, at 6.5%. The overall mean corporate capital costs fell by around 16% between 2000 and 2016. This was largely driven by significant reductions in the corporate tax rate as part of the corporate tax reforms of 2001 and 2008.([58]) Although this is the highest reduction among the EU-28, corporate capital costs in Germany are still among the highest in the EU-28 (at 6%). Besides the high level of corporate taxation, the tax system is also complex and tax administration costs are high (European Commission, 2016).

In Germany, several corporate taxation provisions may be hampering private investment.([59]) Due to a less favourable tax treatment, investments financed by equity need to earn 2.7 percentage points more in return than investments financed by debt (ZEW, 2017). This debt bias was the seventh highest in the EU in 2016. At shareholder level, the extent of the debt bias is similar. This matters in particular for SMEs, which tend to have domestic shareholders. Lowering the capital costs on equity could strengthen private investment, e.g. by benefitting in particular those companies that usually face stronger borrowing constraints, such as young businesses, and by strengthening the underdeveloped German venture capital market. Other features of the tax system that might distort financing and investment decisions are the inclusion of non-profit elements in the tax base of the local trade tax (*Gewerbesteuer*), limitations on loss carry-forwards, and tax-induced distortions with respect to the choice of legal form.

In addition, several specific provisions reduce the investment-friendliness of the German tax system. For example, adjusting the current depreciation regime could also help to make the tax system more investment-friendly, though only to a limited extent. Although declining-balance depreciation was permitted until 2008, the German system has since opted for straight-line depreciation.([60]) Lowering corporate capital costs by re-introducing the declining-balance depreciation could improve the private investment climate. However, declining-balance depreciation would lower corporate capital costs only slightly, hence limiting positive the impact on private investment (Spengel and Bergner, 2015).

Taxes on consumption

Taxes on consumption, on average, are rather similar in both countries. In 2017, taxes on consumption amounted to 11.6% of GDP in France, compared with 10.1% in Germany. In turn, implicit tax rates on consumption are at 21.9% in France and 20.3% in Germany, with the former being in the fourteenth position and the latter in the eighteenth position of the EU in 2017. In terms of their importance in the overall tax system, taxes on consumption represented almost 25% of total tax revenues in France, while this share amounted to almost 26% in the case of Germany in 2017.

Overall assessment of taxation systems

In both countries, high taxes on production factors, jointly with several inefficiencies, constitute an obstacle to business development. Moreover, while both corporate tax systems entail significant debt biases that may hamper private investment, this bias is almost twice as high in France. Investments financed by equity needed to earn 5 percentage points more in return than investments financed by debt to yield the same after-tax return, which compares to 2.7 percentage points more needed in the case of Germany in 2016. In turn, the higher taxes on labour in France, especially those borne by employers, weigh more on job creation than in Germany. ([61])

([57]) 'Cost of capital' in this context is defined as the minimum pre-tax real rate of return on an investment, given an after-tax real rate of return of an alternative capital market investment.

([58]) In the 2001 reform, the corporate tax rate was reduced by 15.8 pps. to 26.38%, while the 2008 reform introduced a further reduction to 15.83%.

([59]) Ifo Institut (2015), Federal Ministry for Economic Affairs and Energy (2015), Fratzscher et al. (2014), and Spengel and Bergner (2015).

([60]) Declining-balance depreciation was allowed again in the years 2009 and 2010 to cushion the effects of the financial crisis.

([61]) The French government has recently taken a number of measures aimed to simplify the tax system, to reduce taxes on capital and corporations and to lower the debt bias in corporate financing. In particular, capital taxation has been cut and capital gains are now taxed at the flat rate of 30%, while the foreseen decrease tax rate on corporate profits by 8 points until 2022 should help reduce the debt bias in

5.1.3. Implications for public deficits, debt and fiscal sustainability

The high tax burden in France has not sufficed to keep up with the elevated public expenditure since 2005. The difficulties to reduce the high expenditure level have thus translated into persistently large general government deficits (Graph 5.8). Actually, except for 2007, 2008 and 2018, France has always been under the excessive deficit procedure (EDP) laid down in the Stability and Growth Pact since 2003. This is largely due to difficulties to control public expenditure growth. High and protracted general government deficits have put public debt on a steady upward trend that steepened since 2008. Since then, public debt ratios started to clearly diverge due to the also diverging deficits. As a result, public debt rose to 98.4% of GDP in 2018, and it is forecast to peak at 99.0% of GDP in 2019 in France, to start declining thereafter.

The high public debt-to-GDP ratio in France is a major source of vulnerability and reduces the fiscal space to address future shocks. High public debt weighs on growth prospects (Box 5.1) by crowding out productive public expenditure and requiring a high tax burden. Moreover, risks stemming from high public debt are compounded by also high private sector debt. This makes France vulnerable as it might give rise to negative feedback loops to the real economy and the financial sector should a new wave of negative shocks materialise. Furthermore, debt projections show a broadly stable or slightly rising trend mainly driven by the high structural deficits, aggravated by the projected increase in age-related expenditure, which, according to the S1 indicator, lead to high sustainability risks in the medium term, mainly due to the currently high primary deficit and debt ratio. Specifically, based on projections starting from the Commission 2018 Autumn Forecast, the so-called S1 indicator ([62]) for France implies that a cumulative gradual improvement in the French structural primary balance of 5.0 pps. of GDP, relative to the baseline scenario, would be required over 5 years to reduce the debt ratio to 60% of GDP by 2029. However, according to the S2 indicator([63]), in the long term (0.4 pp.) France appears to face low fiscal sustainability risks, given that the negative initial budgetary position is largely offset by the projected decline in age-related expenditure, mainly in pensions.

Higher public expenditure control in Germany has resulted in sounder public finances since 2005. While on average both countries registered large deficits between 1991 and 2005, their trends started to diverge clearly since then. Public expenditure growth below potential, excluding the early years of the crisis, allowed Germany to consolidate its public finances and to put its public debt on a downward trend. Moreover, a relatively more favourable snowball effect, mainly due to lower interest payments in Germany than in France, contributed to the divergent trends in public debt ratios. As a result, the German public debt-to-GDP ratio declined from 80.9% in 2010 to 60.9% in 2018 and it is forecast to fall to below the 60% reference value in the Treaty at the end of 2019.

The lower debt ratio and a structural surplus of at 0.9% of GDP give fiscal policy in Germany a sufficient margin of manoeuvre to counter negative shocks. The S1 and the S2 debt-sustainability indicators, based on updated debt projections, unveil no sustainability risks either in the medium or in the long term. In both cases, risks to debt sustainability are regarded as low. ([64]) Specifically, the medium-term fiscal sustainability

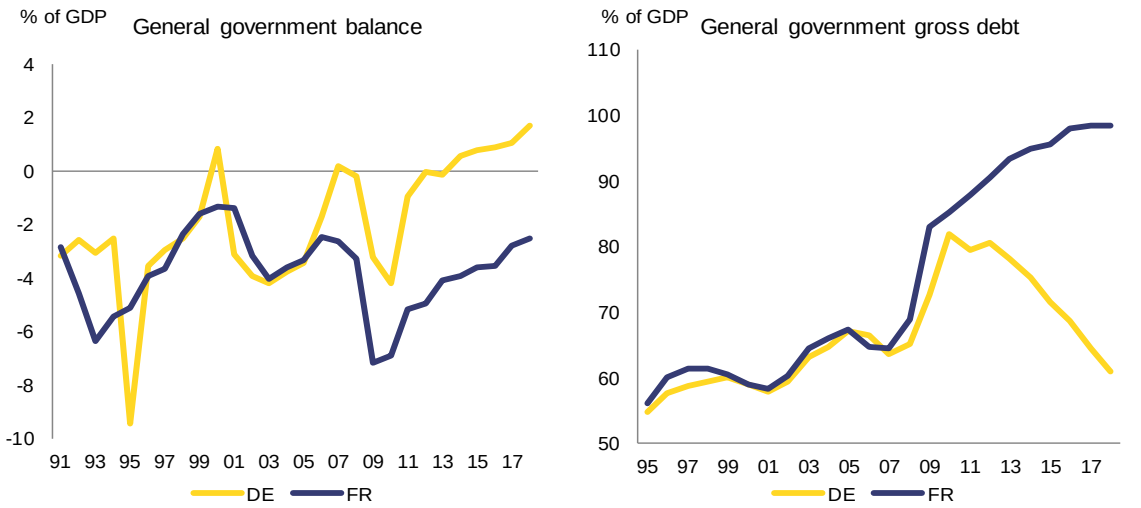
corporate financing. In turn, the recent transformation of the tax credit on competitivenesss and employment (CICE) into an outright cut in social-security contributions and the suppression of more than 20 low-yield taxes represent a positive step to reduce the complexity of the tax-system.

([62]) The S1 sustainability indicator measures the sustainability risks at horizon 2029. Specifically, the value of this indicator gauges the cumulative gradual improvement in the structural primary balance over 5 years, with respect to the baseline scenario, needed to reduce the debt ratio to 60% of GDP by 2029.s

([63]) The S2 indicator is used to assess the fiscal sustainability challenges in the long term under a baseline no-policy change scenario by gauging the necessary improvement of the structural primary balance to stabilise the debt-to-GDP ratio over the long term. See European Commission (2019a) for further details.

([64]) Implicit contingent liabilities represent, however, a higher threat for the sustainability of public finances in Germany. Their higher government's contingent liabilities are mainly linked to State guarantees, but also to contingent liability risks from the banking sector (see European Commission, 2019a).

Graph 5.8: **General government balances and debt**



Source: Ameco, European Commission.

risk indicator S1 is at -1.5 percentage points of GDP, mainly thanks to the favourable initial budgetary position. Equally, the long-term fiscal sustainability risk indicator S2 (at 1.9 percentage points of GDP) benefits from this favourable initial budgetary position, which counterbalances the risks associated with the increasing cost of ageing (contributing 2.9 percentage points of GDP).

The role of fiscal frameworks for deficit and debt developments

Expenditure ceilings have a long history in France, at all levels, albeit not always successful. The establishment of a central government expenditure ceiling in France dates back to 1996. In 2004, and the draft budget law for 2004 provided for a zero growth ceiling in volume (in real terms) of the net expenditure (excluding repayments and rebates) of the general budget, subsequently set in nominal terms in 2011. A "zero value ceiling" (in nominal terms) was created in 2011. Its scope corresponds to that of the volume standard. The ceiling covered expenditure net of excluding interest charges payments and contributions to the pension allocation account. In 2011, the target was to stabilise in nominal terms the expenses included in this perimeter, from the initial finance law of the year N-1 to that of the year N. The multiannual programming law stipulates that part of the appropriations for each spending programme is "set aside", or "frozen". The credits of a programme thus placed in this "precautionary reserve" can be definitively cancelled in order to be able to open new credits on other missions while respecting the expenditure ceilings. While formally State ceilings have been broadly respected since 2011, expenditures slightly exceeded the ceilings between 2008 and 2011, as credits were globally increased by amending finance laws during those years. However, the ceilings have often been circumvented by multiplying "tax expenditures and social niches", including tax credits that are economically equivalent to subsidies. Moreover, there are a number of expenditures that escape constraints set up by the expenditure ceilings. In some cases, these expenditures have escaped the control of the ceilings by transferring them to state-owned agencies that took over the responsibility of their management. These expenditures outside the perimeter of the ceilings have been sizeable in some years.

Expenditure ceilings were also tried outside the government perimeter. Similarly to the state expenditure ceilings, the National Health Insurance Expenditure Objective (*Objectif National de Dépenses d'Assurance Maladie*, ONDAM) was introduced in France in 1996. ONDAM is basically an expenditure ceiling aimed for city and hospital care provided in private or public institutions, but also in health centres, set each year by the Social Security Financing Act (LFSS). Since its implementation in 1997, the Ondam has been systematically exceeded until 2010. Since that

Box 5.1: **Long-term growth consequences of public debt?**

There has been a lively academic debate about the existence of threshold levels in the public debt-to-GDP ratio beyond which long-term GDP growth would be hampered. There are a number of channels through which a high ratio of public debt would undermine long-term growth. Firstly, a high debt ratio would call for high taxes to finance it. High tax rates would weigh on private investment and entail high tax distortions. Secondly, high and soaring public debt levels may push long-term sovereign yields up as the likelihood of default increases. The resulting increases in long-term rates would raise the cost of capital and thereby crowd out investment further and would rein in long-term growth. Finally, the incentives to generate inflation increase with the level of the public debt-to-GDP ratio, with high inflation entailing detrimental effects on long-term growth (Kumar and Woo, 2010).

However, the empirical literature is not conclusive about the existence of such threshold effects. Reinhart and Rogoff (2010) argued for the existence of strong negative effects of high public debt on economic growth, especially when the public debt ratio exceeded 90%. However, Herndon et al. (2013) unveiled flaws in the Reinhart–Rogoff analysis. Since then, there have been several attempts to empirically test the existence or not of such thresholds with different papers putting forward dissimilar conclusions. Some papers concurred with the hypothesis that when the debt ratio breached 90% of GDP, negative effects on long-term growth were observed. Cecchetti et al. (2011) found a threshold of 96% of GDP for a panel of 18 OECD countries; Padoan et al. (2012) reported similar effects for a similar group of countries, but for a longer timespan (1960 to 2010); Kumar and Woo (2010) also found nonlinear effects on growth beyond a public debt ratio of 90% of GDP for emerging-market economies; Checherita and Rother (2010) and Baum et al. (2012) obtained similar results for a set of euro-area countries.

By contrast, Caner et al. (2010) and Elmeskov and Sutherland (2012) showed that the thresholds could be lower, depending on the countries considered in the analysis: 77% for a set of 77 countries and 66% for twelve OECD countries, respectively. Baglan and Yoldas (2013) and Égert (2015) also found lower threshold effects, at around 20% of GDP for low-debt countries and a negative linear relationship between debt and growth for high-debt countries. More recently, Lee et al (2017) found evidence supporting a debt-threshold effect around 30% on output growth using post-war cross-country data. On the other hand, Minea and Parent (2012) estimated a higher debt threshold, at 115% of GDP. Finally, Panizza and Presbitero (2012) questioned the hypothesis of causality between high public debt and growth as low growth could indeed explain increases in the public debt-to-GDP ratio.

Without entering the debate of which, if any, threshold of public debt-to-GDP ratio would entail nonlinear, negative long-term growth effects, a high public debt ratio could undermine growth through the channels aforementioned. Other recent evidence that countries with high public debt grow substantially slower include Chudik et al., (2017) and European Commission (2019b). In turn, Beck (2012) and Jordá et al. (2016) show that high-debt countries face higher risks of a "doom loop" between sovereigns and banks in that concerns about a country's fiscal sustainability can devalue bank portfolios, which can require government's assistance to ensure the banks' solvency. In any case, any possible threshold beyond which non-linear effects could be observed would be highly dependent on two factors, namely the level of interest rates and the use of borrowed funds. Regarding the latter, public indebtedness would be less detrimental to growth if borrowed funds are spent on productive investment projects with a positive impact on potential growth.

The significantly higher public debt ratio in France is more likely to weigh on long-term growth than in Germany. In any case, it is worth bearing in mind that, as Blanchard (2019) points out, a high level of public debt would enatil a less adverse impact on growth in a low interest rate environment as in this context public debt may have no material fiscal cost.

date, it has been under-executed, although in some cases the ONDAM was also met by circumventing some expenditure outside the covered perimeter. In 2014, another expenditure ceiling for local and regional expenditure was put in place. This ceiling called Local Expenditure Evolution Target (*Objectif d'évolution de la Dépense Locale*, ODEDEL) is expressed as a percentage of annual change and at constant perimeter.

In 2017, the framework of ceilings has been reinforced at the State level. The 2018-2022 multiannual programming law for public finances foresees two objectives for State expenditure: the overall State expenditure in nominal terms has a defined ceiling for each year of the five years. Moreover, a new ceiling for spending under the direct control of the State has been set up, with an intermediate ceiling that makes it easier for in-year expenditure slippages to be corrected.

In Germany, the "golden rule" proved inefficient to contain government debt. In a reform of its financial constitution in 1967/69 Germany introduced a "golden rule" in order to limit the increase in government debt. This rule stipulates that net borrowing in a given year cannot exceed investment of that year. The idea was that, if deficit is used to invest in future growth, its repayment should be possible via the expected additional returns. However, several shortcomings weakened this rule and contributed to the continuous increase in government debt from around 20% of GDP in 1967 to around 69% of GDP in 2009. These shortcomings include using gross investment instead of net investment, allowing a broad definition of exceptions for times of cyclical perturbations without the obligation of compensation in good times as well as a missing link between budget execution and budget planning. As a consequence of these weaknesses, Germany replaced the "golden rule" by a "debt brake" in 2009 to contain government debt more successfully (BMF, 2009; BMF, 2015).

The "debt brake" is envisaged to be fully operational also at the regional level from 2020 on. With constantly growing government debt and the additional sudden increase during the financial crisis, Germany reconsidered its strategy of long-term public finances and introduced measures to limit the accumulation of new debt. At the same time, the federal government pursued the objective of achieving a balanced budget ("the black zero") and has done so since 2014. The debt brake stipulates that the structural balance must not exceed a deficit of 0.35% of GDP as of 2016 for the federal budget. For the 16 regional budgets the debt brake requires a structurally balanced budget as of 2020. When fully operational this means there will be actually 17 debt brakes in place in Germany. A balanced budget will then be the norm and deficits will become the exceptions which will only be allowed in the case of natural disasters, emergency situations or in times of severe recessions and must include a concrete repayment plan. This shows the methodological change in managing public finances, as in the past yearly deficits were regarded as normal and part of the usual financing instruments. The debt brake expects that the public entities comply with their financial obligations and provides no measures for sanctions. The control of compliance with the debt brake is executed by the Stability Council ([65]) and the respective Court of Auditors of the federal and regional governments (Deutsche Bundesbank, 2011).

Clear distribution of competencies and responsibilities between federal, regional and municipal levels in Germany strengthens accountability. The fiscal framework allocates tasks to the different levels of government for which they have sole responsibility (BMF, 2017b; BMF, 2017c). The federal level is in charge of social security, defence, foreign affairs, energy and transport, whereas the regions manage education, science, culture, the police and justice system. The municipal level takes care of local water systems, waste disposal, childcare as well as local schools, theatres, museums and sport grounds (BMF, 2017a). This strict distribution of competencies excludes that a government level takes on tasks for which they have no mandate. The financing of these different tasks follows the principle that each level is responsible for its own finances, which strengthens financial accountability at all levels. For this objective, the tax revenues of the main tax categories (VAT, income tax, corporate) are distributed among the three levels according to fixed percentages and based on number of inhabitants. Moreover, each level has certain smaller tax types which they can set and collect individually (for example federal: solidarity levy, energy tax, insurance tax; regional: inheritance tax, beer tax; municipal: trade tax, real estate tax).

In comparison, debt brakes in Germany appear to have been successful in bringing down the public debt level, whereas the efforts to contain public expenditure dynamics in France have rendered more limited effects. Consequently

([65]) Tasks of the Stability Council (Stabilitätsrat): http://www.stabilitaetsrat.de/DE/Aufgaben/Aufgaben_node.html

public debt in France has proved to be more difficult to reduce. However, the containment of public expenditure in Germany might also have had a limiting effect on public investment especially in the most indebted regions ([66]) (despite the existing federal programmes that try to alleviate it) and particularly at the municipal level, where the investment backlog remains high.

5.1.4. Outcomes of fiscal policy

The size of the respective public sectors has to be confronted with the outcomes in the relevant areas. This section aims to briefly assess how the two countries perform in areas such as health status of the population, educational attainment, research performance and social outcomes.([67])

Lower per-capita expenditure, jointly with overall better outcomes suggest higher efficiency of the public healthcare system in France. The share of healthcare in total public expenditure amounted to 16.2% in Germany in 2017, compared to 14.2% in France. These figures translate into 7.1% and 8.0% of GDP in Germany and France, respectively. Although per capita healthcare expenditure is lower in France, it goes along with higher life expectancy at birth: 82.4 years in France compared with 80.7 in Germany in 2016.([68]) Perceived health status of the population is also one point higher in France. In terms of quality indicators, France also scores higher in primary care and cancer care, whereas Germany performs better in acute care. Finally, while France is spending more than Germany in terms of its share on GDP, it also records systematically higher efficiency scores (Medeiros and Schwierz, 2015).

In turn, the German educational system appears to outperform the French one. The proportion of expenditure on education in total public expenditure is similar in both countries, 9.3% in Germany and 9.6% in France in 2017. However, as a percentage of GDP, public expenditure on education amounts to 5.4% in France and to 4.1% in Germany. Despite higher resources devoted to education in France, the ratio of students per teacher in public institutions is higher in France at all levels of education.([69]) Regarding outcomes, according to the 2015 PISA report([70]) France ranks lower than Germany in the performance indicators reading, science and mathematics, whereas France scores better in gender equality and immigrant students. Germany scores better on average in collaborative work and problem solving. In terms of attainment, the share of the population aged between 25 and 64 years with tertiary education is higher in France (35.2% compared to 28.6% in Germany). The share of those with upper secondary, non-tertiary education is, however, higher in Germany (57.9% against 43.2% in France). Overall, the employment rates are higher in Germany in all levels of educational attainment.([71])

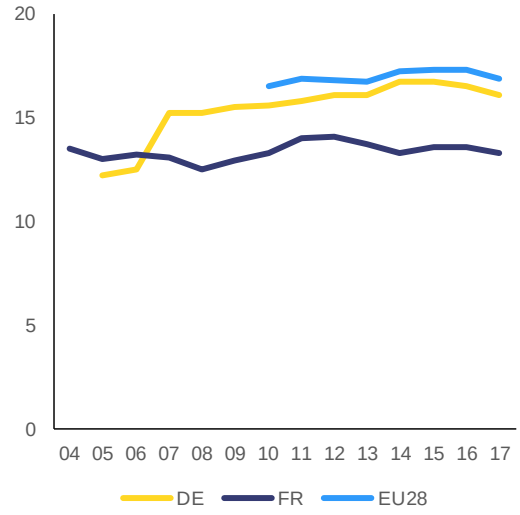
Public expenditure on R&D also seems to render better outcomes in Germany. Government-financed expenditure in R&D amounted to 0.79% and 0.81% of GDP in France and Germany, respectively, in 2015.([72]) Total expenditure on R&D in Germany (2.93% of GDP) also exceeded that in France (2.25% of GDP in 2016). In both cases, around 13% of total expenditure on R&D is performed by the government sector. However, in France a larger share of business expenditure on R&D is financed by public funds (8.8% against 3.3% in Germany). Nevertheless, the number of new patents registered in Germany stood well above those registered in France; 4 583 in the former case against 2 470 in the latter one in 2016 (also Section 5.3.1).

Regarding social outcomes, transfers and subsidies can play a crucial role to reduce market income inequality and mitigate poverty. Despite the decline in the unemployment rate in Germany to well below the French one (3.4% vs. 9.1% of the labour force in 2018), income inequality before transfers remains higher in Germany. France is slightly below the EU average,

([66]) See European Commission (2019c).
([67]) This section will briefly present some indicators to illustrate how France and Germany perform in these areas. A more detailed analysis is nonetheless presented in the upcoming note "Social and regional outcomes in Germany and France", by F. de Castro, L. Granelli, A. Jaubertie, B. Palvolgyi, J. Ziemendorff.
([68]) OECD (2017).
([69]) OECD, TALIS Teaching and learning international survey – indicators
([70]) OECD (2016).
([71]) OECD (2018a).
([72]) OECD Science, Technology and R&D Statistics database.

while Germany is among the countries with the highest unequal income distribution, measured by the Gini index before transfers. Disposable income inequality after transfers however was in both countries at Gini levels of about 29, slightly below the EU average (Section 4.2 for further details).

Graph 5.9: **At-risk-of-poverty rates**



Below 60% of mean equivalised income after social transfers
Source: EU-SILC, Eurostat.

The tax-benefit system in France plays a more important role in correcting at-risk of poverty situations. Despite the sizeable reduction in unemployment, the total rate of households at risk of poverty([73]) in Germany has persistently exceeded that in France since 2006 (Graph 5.9) and no convergence is observed. Irrespective of the levels of at-risk-of-poverty rates in the two countries, the reduction of at-risk-of-poverty rates in France by social transfers and benefits outweighs that in Germany. The social transfer-benefit system reduces the total at-risk-of-poverty rate by 7.6 and 5.9 percentage points in France and Germany, respectively. The overall higher impact of the tax-benefit system in reducing the relative poverty is mainly explained by the larger social expenditure in France. While the share of social spending in total public spending is very similar in both countries, the level of public expenditure as percentage of GDP in France significantly outweighs that in Germany. However, severe material deprivation has declined in both countries, by a similar extent.

([73]) At-risk-of-poverty rate is measured as the share of the population with equivalised disposable income, after taxes and social transfers, below 60% of the national median equivalised disposable income. The median equivalised disposable income is the total income available for spending or saving, divided by the number of household members weighted by their age.

5.1.5. State-owned enterprises

State-owned enterprises (SOEs) represent a significant share of the German and, particularly, French economies. ([74]) Table 5.1 depicts the absolute and relative size of SOEs in the two Member States, in terms of number of employees and market value. The importance of French SOEs in the economy is about two to three times larger compared to the German SOEs, depending on the type of control (majority or minority owned) and on the measurement used (employment or market value; OECD, 2017b). Local governments are strong in Germany and often run small SOEs, for example for the provision of energy.

French and German SOEs are concentrated in the network industries (electricity, gas, telecom, transportation, etc.). Economic theory suggests that SOEs will be present in markets where there are increasing returns to scale, otherwise known as natural monopolies, and where they enjoy substantial market power such as in network industries (Laffont and Tirole, 1993). This expectation largely coincides with where SOEs operate in practice in Germany and France, and it

([74]) For the purposes of this subsection, an SOE is a company where, for various reasons, the state exercises control (European Commission, 2015). This is an empirical definition, irrespective of whether the SOE is in a market where it would be expected to be present or not or where it is officially located, sometimes elsewhere for tax reasons. The analysis here covers mainly central government SOEs. On that basis, and according to the latest annual reports of authorities, there are 112 SOEs held directly by the German federal government (Bundesministerium der Finanzen, 2018) and 218 SOEs held directly by the French central government (République française, 2018). Regarding the latter, 81 are held on a long-term basis (i.e. by the Agence des Participations de l'État) and an additional 137 via the state's investment fund BPIfrance (22 large firms, with 2 overlapping with the Agence des Participations de l'État, plus 117 middle-sized firms).

Table 5.1: **Importance of state-owned enterprises**

	Majority owned or Statutory				*Minority owned*			
	Empl. (000s)	Value (€bn)	Empl. (% total)	Value (%GDP)	Empl. (000s)	Value (€bn)	Empl. (% total)	Value (%GDP)
FR	1 584.5	111.4	5.8%	5.3%	954.2	167.3	3.5%	8.0%
DE	349.2	47.3	0.8%	1.7%	713.9	84.4	1.7%	3.1%

Source: OECD.

is similar in other EU Member States and OECD countries (OECD, 2017b). By market value (where available, otherwise book value), firms in the network industries represent about 73% of the market value of the German state's holdings in SOEs compared to 51% for the French state's.

But French and German SOEs are also present in other markets. For instance, in France the large motor vehicle manufacturing groups Peugeot and Renault are SOEs, and Volkswagen is partially owned by a regional German government.

Historical background

In France, direct interventions by the State in the economy have been recurrently used throughout its history. Starting from Finance Minister J.B. Colbert in the seventeenth century, there is a tradition of state intervention in the economy in France, historically based on the sovereign's belief that private wealth and the economy of France should serve the State. In more recent times, in the aftermath of the Second World War, French governments led by President De Gaulle and Commissioner Jean Monnet established a planning bureau (Commissariat général du Plan de modernisation et d'équipement) in charge of defining the main orientations of the French economy, particularly through five-year plans. From 1946 until their demise in 1992, ten plans were adopted. Whilst respecting market principles, SOEs were given a key role in an interventionist industrial policy, accompanied by extensive use of diplomatic channels to support exports. As a result of the development of a state-led economic strategy, the frontier between SOEs and private firms became blurred (Hall, 1986).

The government elected in 1981 nationalised large parts of the economy. In 1979, the French state was a major shareholder in 500 firms and a minority shareholder in 600 others (Hough, 1979). The 1981 program, completed by 1982, nationalised a large number of firms, representing 24% of the employees and 32% of the sales of the industrial and energy sectors of the French economy, as well as banks that held approximately 90% of all customer deposits (Hall, 1986, and Sachs and Wyplosz, 1986). The poor performance of large French firms was partly used as justification for the nationalisation decision, and accordingly the French State significantly restructured and modernised them. In nominal terms, it invested 20 times more in these firms as SOEs (64 billion French francs) than the private sector had between 1967 and 1981. Moreover, three quarters of the went to three firms: Renault and two steel companies (Usinor and Sacilor) subsequently merged and restructured, which today are both part of ArcelorMittal (Schmidt, 1996).

The nationalisation program of 1981 was quickly considered to have had limited success. On the financial side, the large bank nationalisations had an impact on the cost of funding. On the real side, the impact of the related expansionary macroeconomic policies was leading to capacity constraints so that a part of the additional spending went into price increases. The resulting inflationary pressure led to a deterioration of the external position of the French economy. The French franc came under stress within the European Exchange Rate Mechanism. As a result, the government was forced to make a U-turn in its economic policies, fully reversing course by 1985 (Hall, 1986).

In addition, the EU Single Market contributed to a fundamental change of the framework for SOEs. In the mid-1980s, the French authorities acknowledged that more open markets could ensure better conditions for French firms to prosper. That is, to safeguard French firms, including SOEs, they took a pro-active stance to

open up markets to make firms fit-for-purpose for the increased competition induced, among others, by the 1986 Single European Act.

Until today, the areas covered by SOEs in France continue to be significant. This holds even though different French governments have privatised a large number of firms across a long time span, irrespective of their political orientation. The 2008/09 and 2011/12 crises did not result in a change in the scope of SOEs. Moreover, the intervention of the French State to rescue and restructure firms in difficulty is no longer taken for granted. More recently, the French state aims at delimiting the scope of SOEs as well as exiting as shareholder. Additionally, there is growing awareness in France that regulation can achieve similar or better outcomes compared to public ownership in specific sectors, considered as natural monopolies (Tirole, 2014).

In Germany, SOEs were still important in the post-war period as a legacy of the Third Reich, but the State's role decreased over time. After the war, SOEs included important parts of the industry. Some flagship privatisations, including car producer *Volkswagen* and of the national air carrier *Lufthansa*, significantly reduced the role of the State. However, in most such cases the State retained at least initially a minority stake. There were also some cases where the State refused to intervene in major companies in trouble and let them go bankrupt (e.g. most famously the car producer Borgward in 1961).

Reunification implied a return to a temporarily higher importance of SOEs in the economy. In 1990, approximately 95% of Eastern Germany's enterprises were SOEs comprising 9,000 industrial firms, 20,000 commercial enterprises, 7,500 hotels and restaurants, 40% of the total land area, and employing about 4 million employees (Dornbusch and Wolf, 1994, and Carlin and Mayer, 1994).

The initial expectation was that East German SOEs would be quickly either liquidated or restructured and then privatised. However, this proved more difficult and took longer than expected. In 1994, the German agency set up for dealing with East German SOEs, the *Treuhandanstalt*, was closed and the remaining assets were transferred to successor agencies. It had raised proceeds from the privatised firms (with 1.5 million employees) worth 60 billion Deutschmark (EUR 30 billion). However, this is to be compared to the 205 billion Deutschmark (EUR 105 billion) loss the Treuhand had accumulated until the end of its operations in 1994.

At the same time, SOEs management in the context of reunification was partly used as an opportunity by the German authorities to deregulate and open up some of the markets to competition (Carlin and Soskice, 1997). For example, the *Treuhandanstalt* requested independently audited balance sheets of its SOEs, together with business plans, viability evaluations and restructuring plans. These included, if need be, the break-up and possibility of winding up firms (e.g. *VEB Sachsenring Automobilwerke Zwickau*, the producer of *Trabant* cars, was sent to bankruptcy proceedings; Swain, 1996). Moreover, in some cases reunification provided a way out for former West German SOEs (existing prior to

Table 5.2: **Scope of central government SOEs in France and Germany, some examples**

Sector	*France*	*Germany*
Banking / Finance	CNP Assurance (EUR 14.0bn), Dexia (EUR 8.6mn)	Commerzbank (EUR 10.9bn), Hypo (EUR 1.74bn)
Aerospace / Defence	AIRBUS* (EUR 76.8bn), Arianespace (n.a.), Nexter (n.a.), Safran (EUR 48.5bn), Thales (EUR 23.8bn)	– AIRBUS*, Krauss-Maffei –
Manufacturing	PSA Group (EUR 18.7bn), Renault (EUR 21.0bn)	– Volkswagen –
Telecomm	Orange (EUR 36.8bn)	Deutsche Telekom (EUR 67.7bn)
Air transport	Air France (EUR 3.6bn)	– Lufthansa –
Gas / Electricity / Nuclear	AREVA (EUR 1.7bn), EDF (EUR 44bn), Engie (EUR 29.6bn)	– EON, RWE, Siemens–
Rail transport	– ALSTOM –, SNCF (n.a.)	– Siemens –, Deutsche Bahn (n.a.)

(1) Firms in dark blue are SOEs, firms in light grey are in the same industry, but are not SOEs.
(2) Market valuation of the global ultimate owner.
(3) Airbus has the French state as shareholder, while the German state owns a stake in AIRBUS through a subsidiary of KfW.
Source: European Commission, Cour des comptes (2017).

reunification) to restructure when merging with their East German counterparts and to adapting to new market conditions (e.g. recasting *Deutsche Bahn* as a joint stock company to realign its business model; Schwilling and Bunge, 2014). At the same time, the EU Single Market and EU competition rules were applied to reinforce competition in the East German economy.

The sectoral scope of SOEs

SOEs cover a wider set of activities in France compared to Germany. Table 5.2 presents the range of activities that SOEs typically tend to cover in EU Member States. This includes the financial sector (to control the provision of or have the capacity to provide credit to firms), industries that are considered "strategic" (aerospace and defence), and the network industries (telecoms, air transport, energy and transport infrastructure). Table 5.2 makes evident the more limited range of activities covered by SOEs in Germany compared to France.

In the financial sector, several European governments, including the French and German ones, decided to support and/or rescue a number of banks and financial institutions to address the impact of the 2008-09 and 2011-12 financial crises. In Germany, the cost of measures in response to the financial crisis to stabilise the financial sector (e.g. purchase of equity in Commerzbank, resolution of Hypo Real Estate) generated costs of about EUR 23 billion for the federal government as of end-2017. In subsequent years, some of the Landesbanken, which are owned by individual federal states and are part of the state-guaranteed savings banks system, needed to be restructured or resolved. In the case of France, the State took the opportunity to re-establish a long-term SOE (La Banque postale and CNP assurances) and wind down a failed institution rescued jointly with other EU Member States (Dexia costing approximately EUR 6.4bn - Cour des comptes 2017).

In the manufacturing sector, the aeronautics/defence sector represents a successful example of the industrial policy practised by the French State through the role of SOEs. Differences in the span of French and German SOEs are due to differing approaches regarding industrial policy. Table 5.3 presents the market positioning of top exports from each country in 2016 as developed in Bas, Fontagné, Martin, and Mayer (2016) and updated by the European Commission. This work estimates the quality of exported products using bilateral international trade data (BACI 2016 at 6-digit Harmonised System level). Table 5.3 shows how aeronautics is France's number one sector in terms of non-price competitiveness in exports. In particular, France ranks top amongst the OECD countries only behind the US.

Table 5.3: **Top 10 leading sectors for non-price competitiveness, France and Germany, 2016**

Sector	World market share (%)	Sector share of total country exports (%)	Sector volume in total world trade (%)	Quality ranking in OECD
France				
Aeronautics	21.5	11.5	1.8	2
Leathercraft	9.9	1.3	0.4	2
Footwear	1.8	0.5	0.9	2
Cosmetics	15.6	3.5	0.7	3
Cereals	6.5	1.3	0.6	3
Ships and boats	2	0.5	0.8	3
Work of art	16	0.7	0.1	3
Animal and vegetable fats	1.7	0.3	0.6	4
Sugars and sugar confectionery	4.1	0.4	0.3	4
Beverages	16.6	3.6	0.7	4
Germany				
Machinery	11.2	17.1	12.6	1
Electrical equipment	5.6	9.9	14.5	1
Vehicles	18.2	19.7	8.9	1
Dyes	15.8	0.9	0.5	1
Rubber	8.9	1.2	1.1	1
Wood pulp	2.8	0.1	0.3	1
Textile fabrics	10.8	0.2	0.1	1
Iron and steel articles	10.5	2.2	1.7	1
Copper articles	8.1	0.8	0.8	1
Aluminium articles	9.2	1.1	1	1

Source: European Commission based on Bas, Fontagné, Martin, and Mayer (2016).

On the other hand, the motor vehicle sector is an example of lower French product quality, affecting firms' viability and ultimately requiring State support to survive. German automotive exports stand number one among the OECD in the ranking presented in column 5 of Table 5.3. Instead, this sector does not appear among the top 10 sectors of French non-price competitiveness in exports. In fact, motor vehicle production in the French territory decreased by about 40% between the years 2000 to 2016,

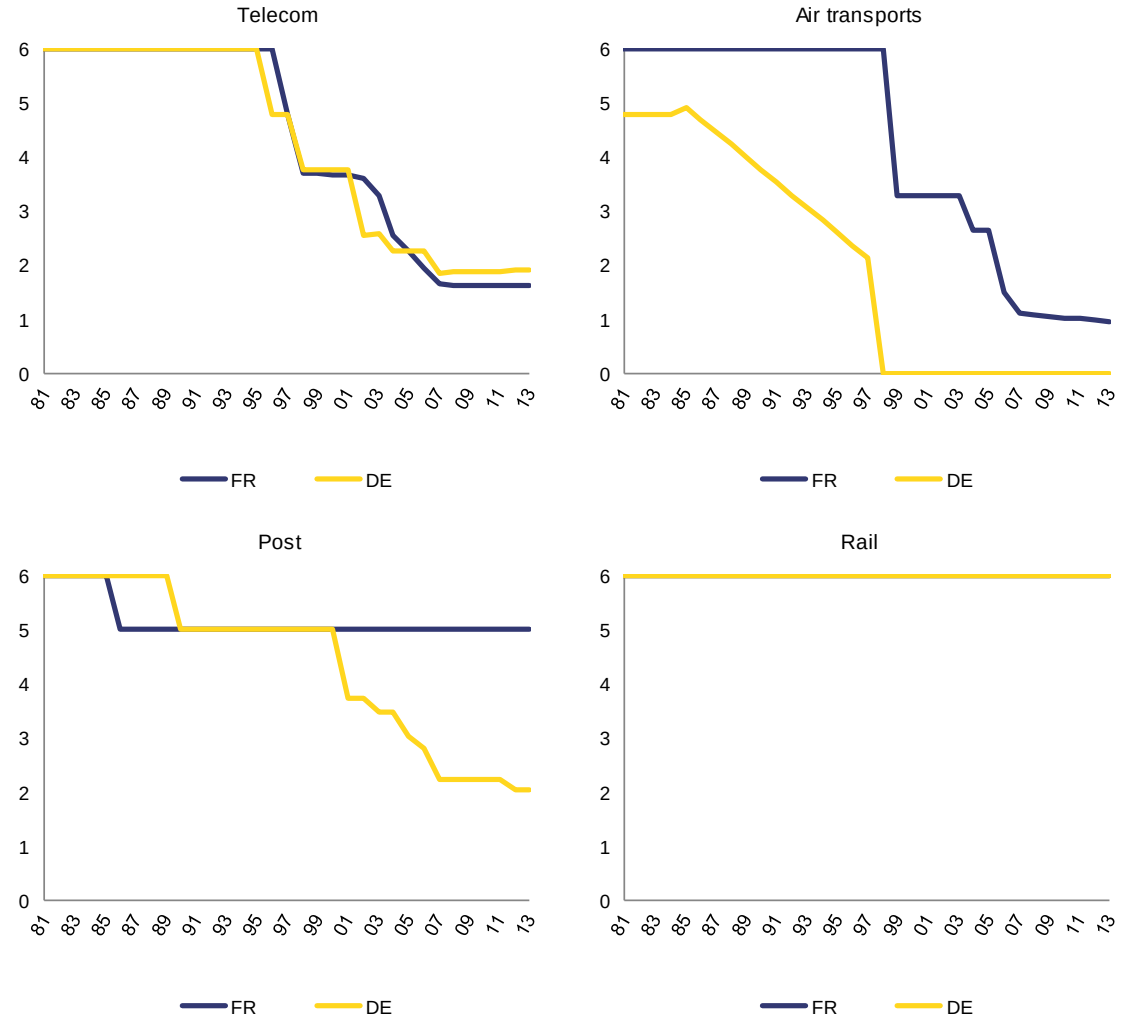
representing the largest fall in absolute numbers among EU Member States, in a context where production in the EU fell by 0.1% (Maravall and Kuffel, 2018). As a result, France is no longer the number 2 motor vehicle producer in the EU. PSA and Renault are SOEs, but this is because the State saw the need to intervene given their poor health.

In network sectors, the importance of SOEs and State control differ between France and Germany. Graph 5.10 presents the state of play regarding state ownership in the network sectors. Rail transport stands out as the sector that has been subject to less change / has remained mostly controlled by the state. In particular, until the year 2013, rail transport remained behind other network sectors in the opening up to competition.

Regarding financial results, the comparison between the French and German network SOEs also presents a mixed picture. A comparison of rates of return on assets and capital employed in French and German SOEs is presented in Graph 5.11. With regards to the transport sector, a superficial comparison between both *Deutsche Bahn* (currently an SOE) as well as *Lufthansa* (a former SOE) to SNCF (an SOE) and *Air France* (an SOE) shows how the former present stronger financial returns compared to the latter.

French and German incumbent telecom SOEs (*Orange, Deutsch Telekom*) **have adapted well to competition.** Opening up to competition has been

Graph 5.10: **Public ownership in the network sectors**



Source: OECD.

successful in both countries, benefiting customers (particularly in France where concentration indexes are lower than in Germany), without putting the incumbent SOE's viability (and state resources) into question. For instance, in 2016, the least expensive offer in fixed broadband was 10% lower in France than in Germany (European Commission, 2017a), and in mobile broadband it was between 5% and 60% cheaper in France than Germany, depending on the basket of data and calls compared (European Commission, 2017b). In parallel, both SOEs have survived without relying on State support and keeping investment-grade credit ratings (i.e. Baa1 according to *Moody's* – with possibly some implicit State support priced in). Relevant financials differ between the two, but this is not surprising given the different size and competition each face in their respective home markets. In particular, *Deutsche Telekom* is approximately 1.5 (balance sheet) to 1.8 (market valuation and revenues) times larger than *Orange* and has a higher net profit margin (7.4% versus 5.6% in 2017 – Graph 5.11).

***Air France* has struggled to compete in the EU market for air transportation.** SOEs can become locked-in into specific technologies, as well as specific market structures tying them to past practices, experiencing difficulties to move on. This seems to have been the case of *Air France* at the time of opening up to competition the market for air transport in the EU in the late 1980s and early 1990s, moving from monopolistic incumbent to competitor. Today, the market capitalisation of each airline group in Europe provides a hint of the evolution of the firms' relative strengths: *IAG* EUR 11.6bn, *Lufthansa* EUR 8.9bn, and *Air France/KLM* EUR 3.6bn (at the time of writing).

The need for railway reform, together with the need to open up to competition, has been present in both countries in the context of the Single Market for rail services. German reunification and the integration of the East German railways motivated the German authorities to (i) fold both systems into one in 1994; (ii) reform the provisions stipulating that railways were a public law company; (iii) turn them into a joint stock company; and (iv) underwrite EUR 34bn of debt. However, the reform of the Deutsche Bahn remains an example of how an SOE can struggle to reconcile the double (explicit or implicit) objectives of providing services of general interest and becoming profitable, which resulted in a weak competition framework and in eventually abandoning plans for its privatisation.

The railway reform currently underway in France considers the German system as blueprint (i.e. housing the infrastructure provider under the same holding structure as the incumbent network operator). Accordingly, the authorities are cleaning up the balance sheet of the SOE network operator, by reclassifying EUR 39.4bn of debt as part of general government debt, together with implementing reform. This also includes turning both the SOE infrastructure provider, as well as the network operator, into private law companies. Finally, they are also restructuring the working conditions for new incoming employees, to ensure they can be deployed across the system, including different operators.

The decision to prioritise SOEs in the nuclear energy sector in France contrasts with the approach in Germany. After the Second World War, the French state ensured that the nuclear industry (civilian and military) had adequate means to become a significant player in the world. This support has remained in place across successive governments. Moreover, the strategy has covered the whole supply chain, including wholesale and retail markets. This strategy included ensuring the security of supply (today's SOE: *EDF*) plus the capacity to develop and maintain nuclear technology more generally (today's SOE: *AREVA*). On the other hand, after the Second World War development of nuclear energy in Germany was curtailed and limited to civilian purposes. This might explain why the firm leading the development of nuclear power energy (*Siemens*) was not an SOE and why most electricity providers using nuclear power are not SOEs either. However, they are confronted with the federal government's decisions on nuclear energy, notably its decision in June 2011 to phase out nuclear power faster than previously foreseen, following the accident in Fukushima/Japan, as part of a low-carbon energy strategy ('*Energiewende'*).

Graph 5.11: **SOE performance in the network sectors**

Source: Orbis.

The investment in nuclear energy technology and capabilities has proven expensive for the French government. The nuclear energy sector provides hints regarding problems that can arise and challenge a state's attempt to promote technological leadership via SOEs. The French state has booked a cumulative EUR 10 bn loss since 2010 in the nuclear energy sector. This is related to SOEs becoming locked-in into a specific technology while other energy sources are become more efficient, including renewable energy sources. Possibly also for this reason, the French energy (gas and electricity) SOEs have struggled to provide a return compared to German firms (Table 5.4). Furthermore, such figures might not fully reflect future liabilities related to the treatment of nuclear waste.

Table 5.4: **Return on capital employed, French and German SOEs, energy sector: electricity and gas.**

	2011-2015	2015
France	3.3%	1.1%
Germany	6.6%	5.1%

Source: European Commission (2017c).

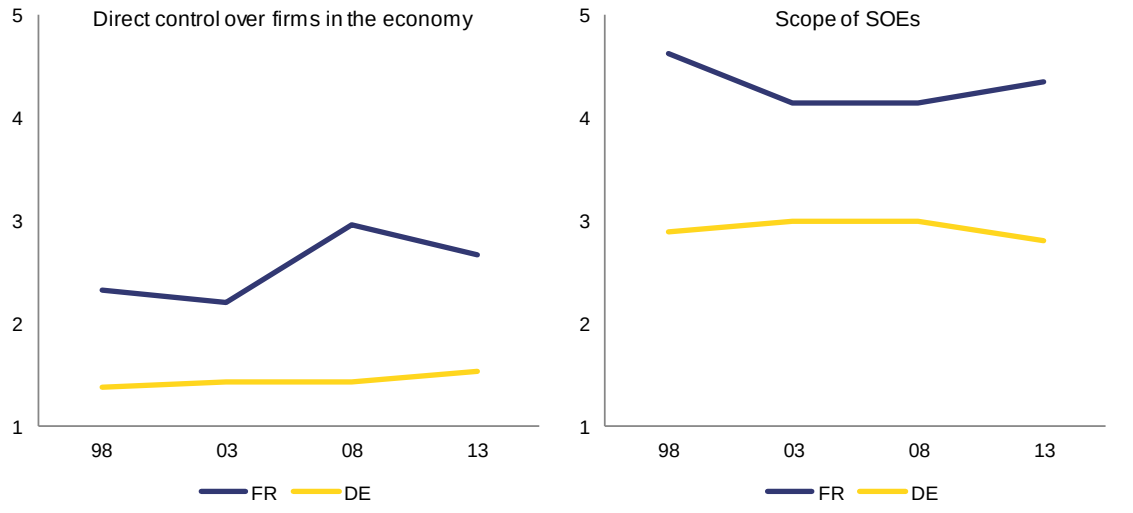
The lower return of French compared to German energy SOEs is not due to lower energy prices. Households and a large part of German enterprises actually pay more for electricity than their French counterparts, while they pay about the same price for natural gas. However, the difference does not benefit SOE revenues as this is mainly due to the tax and levies components. In particular, grid fees as well as the surcharge for renewable energy tend to be higher in Germany (Mercier, 2018). Instead, with respect to wholesale prices, there is a positive price spread between France and Germany, with prices being higher in France.

Evolution of state control over SOEs

The control of firms by the State is higher in France than Germany, and this has not changed much over time. Graph 5.12 presents the evolution of synthetic OECD indicators, pooling qualitative and quantitative information, on direct control over firms in the economy and scope of the SOEs. As these factors do not change regularly over time, the OECD only publishes the indicator every five years. Bearing these caveats in mind, over the period 1998-2013 France is exercising a more direct control over firms and the scope of SOEs is wider compared to Germany.

With the Single Market, a series of profound corporate reorganisations followed in France. The French State had to retreat from its previous direct economic and industrial policy approach. In parallel, French corporate governance had to adjust to the competitive pressures arising from increased trade and financial market integration in Europe and worldwide. Starting from 1986, and because of the resulting privatisations, a process unfolded whereby managers in large French firms started to

Graph 5.12: **Evolution of public ownership in France and Germany**



Indicators are normalised in a scale from 0-6, where 0 reflects the stance most open to competition.
Source: OECD.

Table 5.5: **Hard cores anchored to financial groups**

Hard core		Shareholdings
Financial group	Other members	
Banque Nationale de Paris, Union des Assurances de Paris	*Lyonnaise des Eaux, Suez*	8.8% *Air France* , 15% *Saint-Gobain* , 9.2% *Elf* , 7.5% *Péchiney.*
Assurances Générales de France, Crédit Lyonnais , *PARIBAS* , and *Société Générale*	*Générales des Eaux*	20% *Aérospatiale* , 20% *Usinor-Sacilor* , 14% *Rhône-Poulenc* , 7.2% *Total.*

Source: Hancké (2001).

gain autonomy from the State. This process was largely completed by the early 2000s, with large French firms raising significant amounts of external funding in the stock and bond markets.

A first step to gain autonomy from the State was to establish a system of cross-shareholdings (Hancké, 2001). The privatisation of firms drove changes in market structure and share ownership, but not in the most evident form. For instance, financial markets did not play a leading role in the privatisation process, but the role of large banks was crucial. French financial markets started to become significantly opened up to competition as of 1984. However, a thriving competitive capital market, with high merger and takeover activities over firms being privatised, did not drive the process whereby firms gained autonomy. Instead, privatisation took place by establishing core groups of shareholders ("*noyaux dur*") expected to remain for the long term, anchored around two large banking/financial groups: *Banque Nationale de Paris* and *Union des Assurances de Paris* on one side and *Assurances Générales de France*, *Crédit Lyonnais*, *Paribas* and *Société Générale* on the other (Table 5.5). The main objective was to avoid possible external takeovers. It allowed large firms to establish a first foothold to distance themselves from short-term pressures to deliver results and establish their own sphere of autonomy.

Eventually, a significant number of large firms gained autonomy from the French State. However, equally important was to gain time from private investors to restructure a business and improve profitability that require time. In this regard, short-term reporting requirements, including profitability benchmarks, requested by financial market investors could have constrained managers' actions. Instead, the distance from the state and time gained from having a *noyaux dur* permitted restructuring. Once it had taken place, the large firms started to actively access and tap funding from financial markets. This (the regular raising of funds in financial markets) eventually provided the means for the managers in the large French firms to gain independence from both the French state and the *noyaux dur* groups of investors.

Several factors explain the current mix of French SOEs. The mix is a product of the developments described above, interacting with market conditions over time (Culpepper, 2006). Nevertheless, not all SOEs have been successful in gaining autonomy from the French state. Some remain as legacies of previous approaches to state intervention, with the French state retaining golden shares (Box 5.2). Others have struggled to become profitable even after shares have been issued to private investors. As a result, instead of a temporary investor, the state has become part of the structural *noyaux dur* of investors and stakeholders of these firms, which were initially expected to be led by private investors.

In Germany, a distinct pattern of corporate governance also affects the management of the larger SOEs. Whilst not unique, it is distinct from Anglo-Saxon corporate governance models. Large German firms consistently have average ownership blocks well in excess of 50%, even in listed corporations. Stakes are generally clustered around important control thresholds of 25%, 50%, and 75% (Becht and Boehmer 2003), with the 25% and 75% thresholds being crucial as the right to veto certain decisions starts at 25% of voting rights. In this regard, large shareholders promote long-term relationships between workers and management and are monitoring closely the performance of their firms.

Other stakeholders also play a relevant role in large German companies' two-tier board

structure. The first tier is a supervisory board with shareholder and employee representatives and other stakeholders. It appoints the management board, approves the annual accounts and the firm's long-term strategy, and can intervene if serious matters affect the firm's fortunes. The chairman of the management board is not a member of the supervisory board and does not generally attend its meetings. The degree of employee representation is related to the size of the company and industry (Berger and Vaccarino, 2016). As a result, managers rarely have the capacity for unilateral action and strong industrial relations support high-quality production.

To sum up, SOEs continue to be important in both countries, clearly more so in France than in Germany, in spite of ongoing efforts to reduce the role of the State. French holdings in network industries such as electricity, gas, and air transport as well as in some manufacturing companies remain significantly higher than in Germany. In France, many SOEs were recently made subject to private law, and a new law (*Loi Pacte*) allows substituting minimum shareholding requirements for the State in SOEs by golden shares, thereby keeping some degree of influence and obtaining additional revenues while limiting the need for a further capitalisation by the State. In addition, the French State is de facto expected to take responsibility for firms in need of restructuring, something that is not unheard of but less prevalent in Germany. Many of the larger Germany SOEs have private majority or minority shareholders, but there is often a tension – notably in the network industries - between their double objectives of providing services of general interest and at the same time being profitable.

Box 5.2: **Golden shares**

Golden shares represent a solution to a fiscal problem. Holding enough shares to ensure significant rights vis-à-vis other shareholders requires significant resources and this is costly for private and public agents. Hence, golden shares represent an alternative to minimise the amount of public resources tied to such firms.

Golden shares give special rights to public authorities vis-à-vis other shareholders. They permit influencing, asserting control over a firm, parts of a firm, or on specific assets owned by a firm and/or regarding decisions made by a firm beyond those granted under general company law. Such influence or control is not generally available to other shareholders, including majority shareholders.

Legislation governs the conferral of "golden shares". The UK was the first EU Member State to issue golden shares with the privatisation of British Telecom in 1984. French lawmakers followed suite in 1986, following the change of stance after the 1981 nationalisations (see historical background above). Today, the issuance of golden shares in France is a prerogative granted via legislation. Instead, German law confers specific rights to public shareholders indirectly. Current limited company law in Germany protects shareholder minority interests by granting veto power at relatively low levels of shareholding votes (25%). In the case of Volkswagen, a specific law further lowers the veto rights threshold to 20%. In this regard, the stronger fiscal position of Germany has permitted avoiding the strict use of golden shares seen in France. That is, strictly speaking, German public authorities do not have differential rights vis-à-vis other shareholders.

Table 1: **Golden shares held by the French government today**

Firm (issuance date)	Associated rights
Thales / Thomson (04/03/1997)	**Approval** if shareholder participations or voting rights trespass (10% of capital or voting rights) thresholds or if controlling shareholder changes**.** **Nomination** of one board member. **Veto** of sales or exchange of strategic assets by Ministry of Economy/Finances.
Engie / GDF (20/12/2007)	**Veto** of sales or exchange of strategic assets by Ministry of Economy/Finances.
Safran Ceramics (14/03/2011)	**Approval** if shareholder participations or voting rights trespass (1/3 or 50% of capital or voting rights) thresholds or if controlling shareholder changes. **Nomination** of one board member. **Veto** of sales or exchange of strategic assets by Ministry of Economy/Finances.
Nexter Systems (04/12/2015)	**Approval** if shareholder participations or voting rights trespass (1/3 or 50% of capital or voting rights) thresholds or if controlling shareholder changes. **Nomination** of one board member.

Source: République française (2018).

The Commission successfully challenged extensive interpretations of rights conferred to golden shares. Article 63 of the Treaty on the Functioning of the European Union prohibits restrictions on the movement of capital between Member States (with caveats in articles 64-66). As a result of legal challenges brought by the Commission vis-à-vis Member States (signalled in a Communication in 1997 -see European Commission, 1997), the European Court of Justice further framed the issuance of golden shares in the context of the free movement of capital.

EU case law establishes safeguards when issuing golden shares. They rationalise and circumscribe the scope and criteria used to exercise the extraordinary powers that golden shares provide to public authorities. They limit indefinite, indeterminate and wide discretionary use of golden shares. Golden shares must be issued with a specific purpose, justified by imperative requirements to attain the public interest and limit powers to what is strictly necessary, whilst ensuring they are successful to achieve these aims. Objectives include public order, health, security and/or defence.

Golden shares can confer different powers. These include i) imposing specific conditions on or opposing the acquisition of participations, shares and/or assets; ii) vetoing the adoption of resolutions regarding important decisions, including statutory changes to the firm's governance, articles of incorporation, etc.; and iii) nominating board members.

Golden shares have been issued in France so far in four firms (see Table 1).

5.2. THE PRIVATE SECTOR

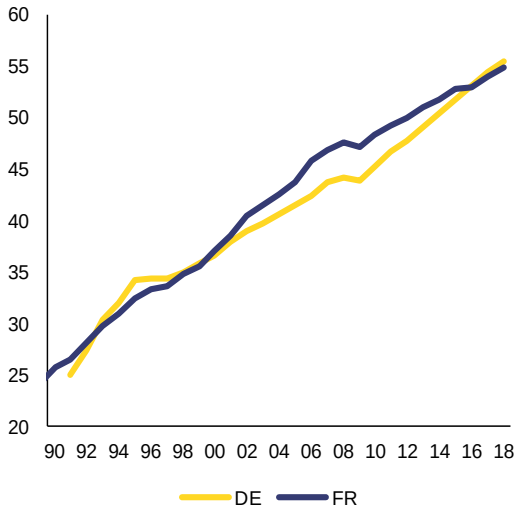
5.2.1. Determinants of productivity

This section looks at productivity developments in Germany and France over the last two decades at both the aggregate and sectoral level. It analyses the observed differences in the *level* and *growth* of labour productivity between the two countries in order to contribute to the analysis explaining the difference in the development of GDP per capita. The comparative analysis is based on hourly labour productivity to control for differences in the shares of part-time employment.([75])

Productivity at the aggregate level

The level of hourly labour productivity in Germany surpassed that in France in 2016. Looking at GDP in current prices per hour worked, widely used as a measure of productivity in comparative research (OECD 2018), shows that, since 2016, the level of hourly productivity in Germany exceeded that in France (Graph 5.13).([76]) Between 2000 and 2015, on the other hand, hourly labour productivity was higher in France.([77])

Graph 5.13: **GDP in current prices per hour worked**



Source: Eurostat.

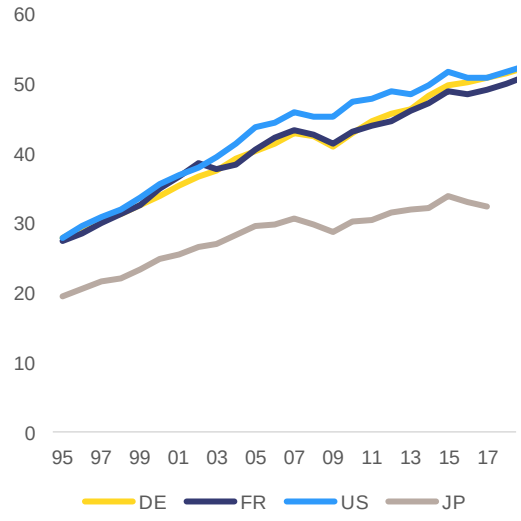
The lower employment and the higher unemployment rates in France, compared to Germany, can partly explain the higher hourly labour productivity level in France until 2015. This is the case because persons excluded from the regular labour market tend to be the least qualified. When correcting for the lower employment in France, by assuming that the number of hours worked have followed the same trend as in Germany and that the new jobs would have a rate of productivity 30% below average, the level of hourly productivity in France would fall below that in Germany (Piketty 2017). While labour market policies (e.g. the legal relaxation of the use of fixed-term contracts, the targeted reductions in social security contributions, state-aided contracts in France or the introduction of working-time accounts or short-time work arrangements in Germany) have boosted the creation of low-productive jobs in both countries, Germany has by now the largest low-wage sector in Western Europe (Askenazy & Erhel 2015, van Ark et al. 2013). Wages grew in tandem with productivity in France, whereas in Germany, real wage growth in the pre-crisis period was almost flat, while productivity grew moderately.

([75]) It should be noted that productivity can be defined in different ways. For example, GDP 'per person employed' is often used in France. However, measuring labour productivity 'per hour worked' is more useful as it eliminates differences in the full time/part time composition of the workforce across countries and years and is therefore used throughout this report.

([76]) Based on the EU KLEMS database, a slightly different measure of hourly labour productivity in the total economy, defined as the ratio between gross value added at current prices and total hours worked, shows that, in 2015, hourly productivity was slightly higher in France (47.2 €/h) than in Germany (46.3 €/h).

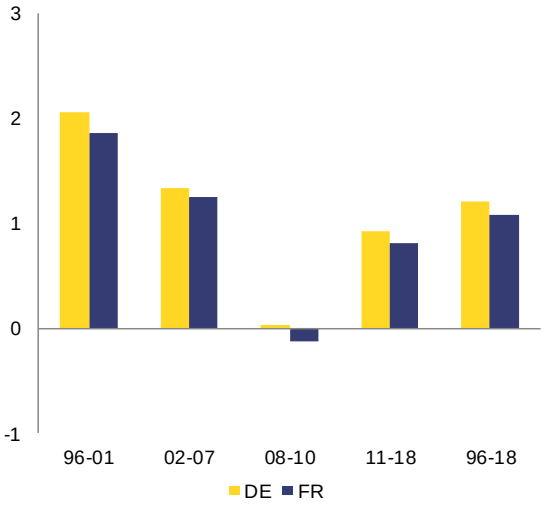
([77]) In Purchasing Power Standards, the level of labour productivity in Germany surpassed that in France even earlier.

Graph 5.14: **GDP at current prices per hour worked in PPS**



Source: Ameco, European Commission.

Graph 5.15: **Hourly labour productivity growth, GDP in CLV (2010 prices) per hour worked, average annual change**



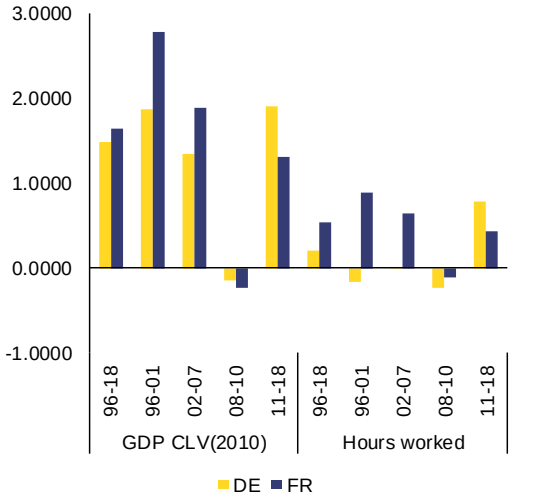
Source: Ameco, European Commission.

Growth in labour productivity in Germany has been somewhat higher than in France both before and after the crisis, which can no longer be explained by employment trends. Hourly labour productivity grew faster in Germany than in France both before (2000-2007) and after the crisis (2013-2018), see Graph 5.15. Before the crisis, the higher increase in labour productivity in Germany was linked to a weaker (and partly negative) increase in hours worked compared to France, while growth in real GDP (in chain linked volumes, 2010 prices) was stronger in France (Graph 5.16). After the crisis, the higher labour productivity growth in Germany was due to a higher increase in real GDP and was achieved despite a higher increase in hours worked. This suggests that employment trends are no longer as important in explaining the lower labour productivity growth in France and that there are other determinants to consider as well.

Total factor productivity (TFP) grew faster in Germany than in France, thereby contributing more to productivity growth. Based on the OECD productivity database, labour productivity growth can be decomposed into Information and Communications technology (ICT)-capital deepening (i.e. increases in ICT capital per hour worked), non-ICT capital deepening and TFP growth (Graph 5.17). Capital deepening in Germany has been slower than in France, in particular after the crisis and with regard to non-ICT capital, which suggests lower investment rates, but also higher employment creation and lower propensity to substitute labour by capital (OECD 2018). TFP growth, which can be described as the change in output that cannot be explained by changes in the quantity of capital and labour inputs, and which is assumed to be linked to technological progress([78]), has been stronger in Germany than in France before and after the crisis (Graphs 5.17 and 5.18). During the crisis years, TFP, i.e. the efficiency with which labour and capital are used together, declined in both countries, due to labour hoarding and postponement of investment, which have created a temporary setback for TFP growth (van Ark et al. 2013).

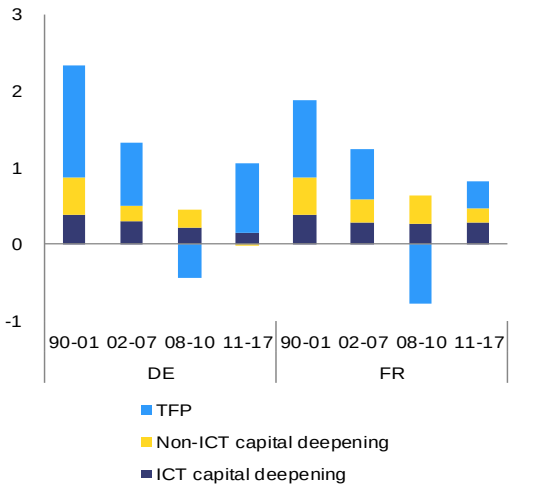
([78]) TFP is also described as the unexplained remainder resulting from the so-called Solow residual.

Graph 5.16: **Growth in GDP CLV(2010 prices) and hours worked, average annual change**



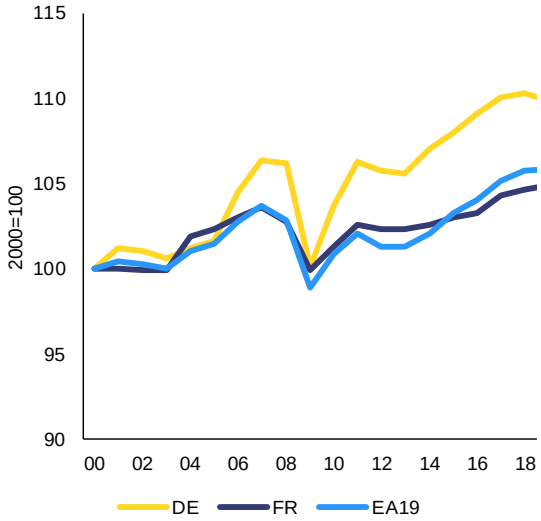
Source: Ameco, European Commission.

Graph 5.17: **Contribution to labour productivity growth, percentage points**



Source: OECD.

Graph 5.18: **Total factor productivity**



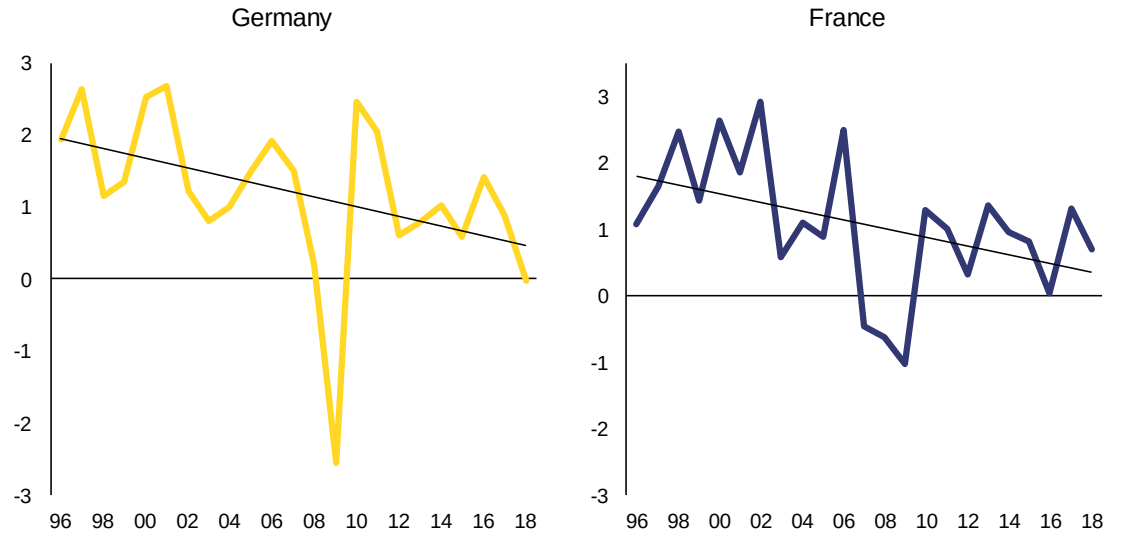
Source: Ameco, European Commission.

Both countries seem to be affected by a global productivity slow-down, recorded in most advanced economies, in the context of a so-called secular stagnation. A prolonged period of weak growth (well beyond cyclical fluctuations) where GDP deviates from its potential started already before the crisis (Summers 2014, Summers 2015). Numerous explanations have been put forward for this slowdown, going beyond labour-market developments and policies (Syverson 2010, Andrews et al. 2015, Gordon 2012). The most important productivity determinants discussed in the literature include([79]):

1. **Decline in radical innovations and competition**. A decline in the contribution of radical innovation to productivity growth is

([79]) There is a wide range of other factors typically discussed in academic literature, which are found to explain productivity developments, including e.g. managerial quality and style. A number of comparative studies look at managerial quality/talent (Adalet McGowan & Andrews 2015, Syverson 2010, Bloom et al. 2013) and management style (Martin 2018) as an explanatory factor for productivity developments. OECD studies rank countries according to managerial quality and show that Germany performs better than France (Albrizio S, Nicoletti G 2016). Another study by Martin (2018) argues that the decentralised, less hierarchical management style in German firms has had an impact on the strong increase in gross value added among German exporters.

Graph 5.19: **Gross domestic product per hour worked, constant prices, annual percentage change**



Source: Ameco, European Commission.

seen by some authors as a reason for the global productivity slowdown, as the current wave of technological progress (e.g. computers, internet, mobile phones) might not be as significant as the one the world saw following the second industrial revolution (e.g. electricity, internal combustion engine etc.) (Gordon 2012). Moreover, ideas which lead to exponential growth are getting harder to find (Bloom et al. 2017). It might be linked to the lack of competition pressure, which (up to a certain point) incentivises companies to innovate in order to escape neck-and-neck competition (Aghion & Griffith 2008). Investment in R&D and intangible assets([80]) in general are associated with productivity growth (Thum-Thussen et al. 2017, Ebnet & Timiliotis 2018, DIW 2017, Crass & Peters 2014) and TFP in particular.

2. **Decrease in knowledge diffusion and winner-takes-all dynamics**. A decline in the dissemination of technologies between companies at the frontier and laggards is seen as a further reason for the productivity slowdown. This could result from the growing importance of "tacit knowledge" linked to the increase in complexity of technology with time (Andrews et al., 2015) and "winner-takes-all" dynamics facilitated by the characteristics of ICT (large economies of scale, linked especially to network effects and zero marginal production costs). These evolutions can have an ambiguous impact on aggregate productivity to the extent that they explain a growing divergence between the most and the least productive firms (rather than an overall slowdown). They can nevertheless lead to monopolies, which stifle competition and, in turn, have a detrimental effect on overall productivity growth (Cette et al. 2017).

3. **Obstacles to the reallocation of production factors (labour and capital) between firms.** An inefficient (re)allocation of production factors is another explanation for lower productivity growth, in particular when companies are faced with a crisis that requires significant (sectoral and geographical) reallocation of production factors. Such crises can stem from technological shocks, like that of ICT, shocks to industrial specialisation in the context of globalisation, or shocks linked

([80]) Intangible assets captured in the System of National Accounts include Software, Databases, R&D, Mineral Exploration, Copyright and creative assets. Further intangible assets according to Corrado, Hulten and Sichel (2005), which are not captured in the SNA include: New product development in financial services, New architectural and engineering designs, Brand-building advertisement, Market research, Training of staff, Management consulting, Own organisational investment.

to a financial crisis or the bursting of a real-estate bubble. Increasing difficulties in the reallocation of production factors are expected to increase the dispersion of productivity (Cette et al. 2017). The reallocation of production factors is considered increasingly important as the potential for productivity gains derives less and less from within-firm improvements and increasingly more from the reallocation of resources across firms (Enderlein & Pisani-Ferry 2014).

Turning to Germany and France, more specifically, productivity-growth differences appears to originate from the following factors:

- **Overall innovation performance appears stronger in Germany and research and innovation policies aimed at strengthening the public science base and encouraging the cooperation between public research and businesses appear more effective than in France.** A number of composite indicators such as the European Innovation Scoreboard, the Global Innovation Index, the Innovation Output Indicator by JRC and also the innovation related subcomponents of the Global Competitiveness Index suggest that the innovation performance of Germany is higher than in France. Public and private R&D intensity (R&D expenditure as a share of GDP) is higher in Germany (3.02% of GDP in 2017) than in France (2.19%). However, the structure of the economy largely explains the higher business R&D intensity in Germany (2.09% of GDP) compared to France (1.43%), as the share in value added of most of the highly R&D intensive sectors is much higher in Germany than in France.([81]) Even though the indicators measuring the innovation performance of countries need to be interpreted with great care, a number of converging qualitative and quantitative elements seem to suggest a stronger innovation performance in Germany. In particular, research and innovation policies aimed at strengthening the public-science base and encouraging cooperation between public research and businesses appear more effective in Germany (see also the section on Research and Innovation).

- **Technology diffusion seems to happen at a similar speed in both countries, and slightly faster in France when it comes to digital technologies.** Looking at the use and penetration of digital technologies, as a proxy for technology diffusion, a recent study finds that firms' use and penetration of digital technologies are similar in France and Germany; slightly higher in France than in Germany, but clearly below the UK (Diermeier & Goecke 2017). The data is based on the European Commission's Digital Agenda Scoreboard (DAS) and includes categories such as: Sending or receiving of e-invoices, Automatic exchange of business documents, Electronic supply-chain management, Enterprises using radio-frequency identification for product identification, and Integration of international processes (orders). A strong correlation was found between the use and penetration of digital technologies by firms and TFP, which can be seen with a time lag even at the macro level (Diermeier & Goecke 2017). However, a recent study based on firm-level data found no evidence for a decrease in the dissemination of innovation in the case of France, as the convergence of productivity between the most and the least productive firms has not slowed down in the 2000s (Cette et al. 2017).

- **Allocative efficiency is found to be higher in Germany.** Allocative efficiency measures the degree to which labour and capital are allocated to their most productive use and an efficient allocation of resources is typically found to boost productivity performance. Comparative research found that allocative efficiency in Germany is higher than in France (European Commission 2018c) and that the efficiency of the allocation of the labour force in France was particularly weak in the years after the crisis 2008-2012 (Berthou 2016). The weaker performance in allocative efficiency in France is linked to an increase in productivity dispersion. A recent study based on firm-level data for French firms confirms that this dispersion has increased, which suggests

([81]) Comparative research shows that when controlling for the economic structure in the two countries, business R&D intensity in France increases above that in Germany (Sachwald 2014).

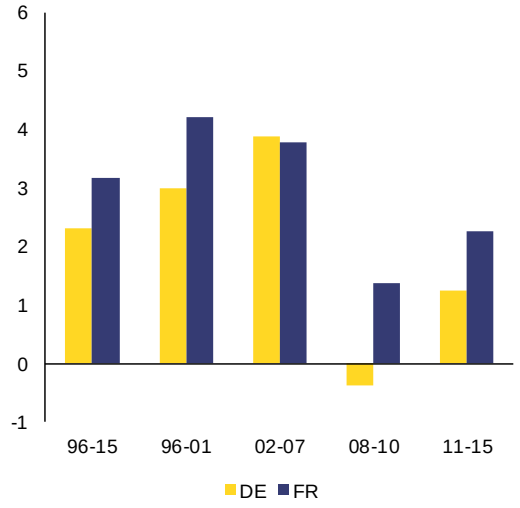
increasing difficulties in the reallocation of production factors (labour and capital) between firms (Cette et al. 2017). A recent study has found that the allocation of labour has slightly improved over 1995-2015 in Germany, while the efficiency of labour allocation in France was stable over 2000-2015, after a significant downward shift in 1999-2000. In France, annualised labour productivity growth over 1995-2015 was 0.87% and inter-sectoral labour reallocation contributed negatively to it (-0.25% per year), while in Germany, annualised labour productivity growth amounted to 1.29% over the same period and inter-sectoral labour reallocation contributed positively, i.e. 0.24% per year (European Commission 2018c).

Comparing productivity at the sectoral level: manufacturing vs. services

Manufacturing

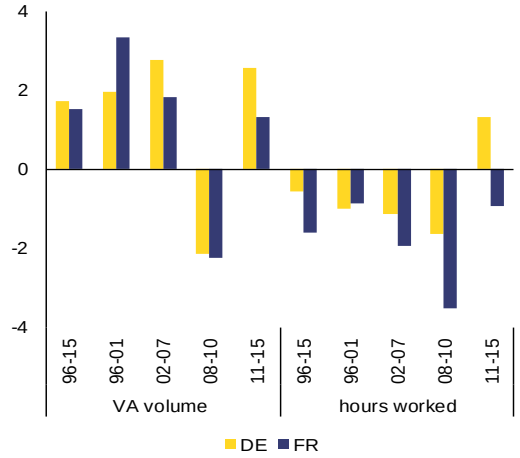
Germany shows a higher level of hourly labour productivity in manufacturing and a stronger growth in gross value added between 2011 and 2015. However, growth in labour productivity was higher in French manufacturing over the same period, due to a strong contraction in working hours. Labour productivity in the manufacturing sector measured as the ratio between gross value added at current prices and total hours worked by persons engaged was somewhat higher in Germany (56.9 €/h) in 2015 than in France (55.1€/h). Growth in labour productivity in manufacturing was higher in France (2.3%) than in Germany (1.2%) between 2011 and 2015 (Graph 5.20). This was due to the strong contraction in working hours, while gross value added in Germany increased substantially more (Graph 5.21). The share of value added in manufacturing in total value added in Germany is at 23% significantly higher than in France 12%. While Germany was a growth laggard during the pre-crisis period, labour-market reforms in the early 2000s, together with a strong focus on integrating the manufacturing sector into global value chains, helped the economy to recover relatively rapidly from the crisis years (van Ark et al., 2013b). In 2011-2015, gross value added in the total economy increased at 1.5% per year compared to 1.0% in France.

Graph 5.20: **Gross value added per hour worked in constant prices, average annual change, manufacturing**



Source: EU KLEMS.

Graph 5.21: **Gross value added in constant prices, and hours worked, average annual change, manufacturing**

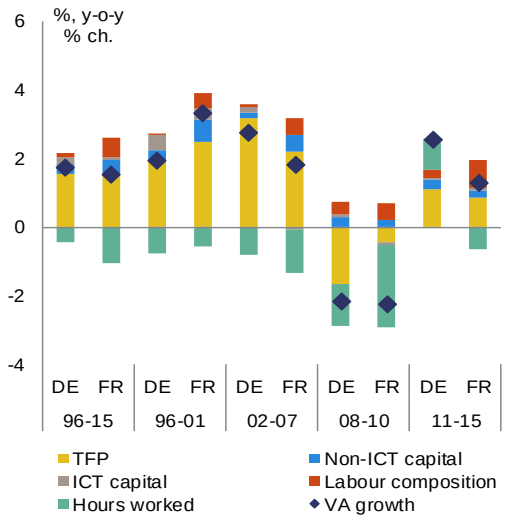


Source: EU KLEMS.

Much of this recovery came from faster value added growth in the manufacturing sector, 2.5% compared to 1.3% for France in 2011-2015. Based on the EU KLEMS database, the contributions of labour input, capital input and TFP growth to gross value-added growth in manufacturing can be compared across EU countries. Graph 5.21 shows that a large part of the manufacturing growth advantage in Germany originated from a strong performance in hours worked. Germany was among the few European countries with a positive

and by far the highest (0.9 pps.) contribution from total hours to manufacturing-output growth 2011-2015, whereas the contribution from total hours to manufacturing was negative (-0.7 pps.) in France. In fact, France shows one of the lowest shares of hours worked in manufacturing as per cent of total economy hours worked (van Ark et al. 2017). At the same time, French manufacturing workers make a strong output contribution from skill improvements, as seen by the above average contribution from labour composition (0.8 pp. compared to 0.2 pp. in Germany, see also Graph 5.22).

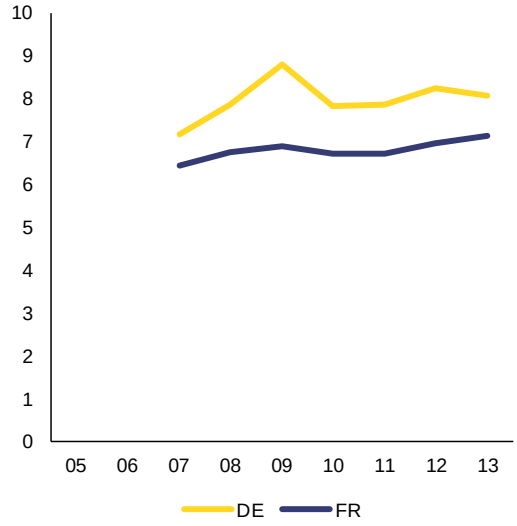
Graph 5.22: **Contributions to gross value added growth, manufacturing**



Source: EU KLEMS.

TFP growth in manufacturing was higher in Germany both before and after the crisis, and Germany seems to invest more in R&D. TFP growth in French manufacturing was 0.9 pp. in 2011-2015 versus 1.1 pp. in Germany, where it was higher also before the crisis. However, labour productivity as well as TFP growth rates in German manufacturing were lower than in 2002-2007. The lower productivity growth in manufacturing in Germany in recent years compared to the period before the crisis might reflect the strong reductions in gross value added during the crisis, while employment decreased more moderately due to labour hoarding. In 2009, when real gross value added dropped by almost 20%, the number of employees fell by only 2.4% and the number of hours worked (employees and self-employed) by 9.1% (van Ark et al. 2013). TFP growth is associated with investment in intangible assets, such as R&D expenditure. The available data suggest that R&D intensity in the German manufacturing sector is higher than that in France and grew faster between 2007 and 2013 (Graph 5.23). The link between TFP and R&D spending in manufacturing has been widely explored in the scientific literature and a large number of studies show a positive relationship, while a reverse causality cannot be excluded (Ebnet & Timiliotis 2018). Finally, also allocative efficiency in the manufacturing sector is higher in Germany (European Commission 2018c).

Graph 5.23: **R&D intensity in the manufacturing sector**



R&D intensity: business R&D expenditure/gross value added.
Source: Eurostat.

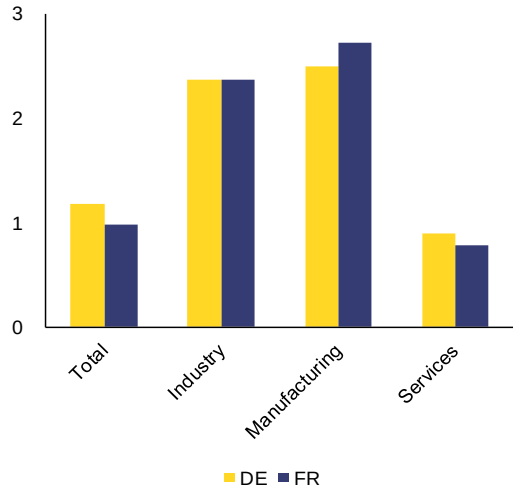
Market services

In levels, hourly labour productivity is higher in most services sectors([82]) in France. On the other hand, labour productivity growth has been higher in the German services' sectors, primarily due to a stronger increase in gross value added and a weaker growth in hours worked. Hourly labour productivity in most

([82]) The EU KLEMS database does not offer an aggregation of services sectors, while the OECD provides an aggregation of services sectors in their productivity database. An aggregation of market services sectors based on EU KLEMS was done in van Ark et al. 2017. Market services in van Ark et al. 2017 exclude the entire health care, education and government sectors of the economy.

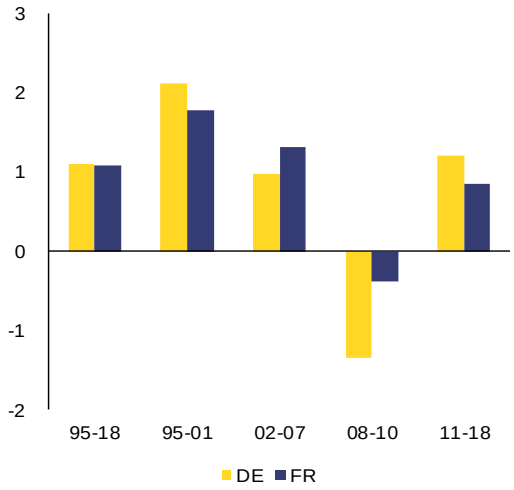
service sectors covered in the EU KLEMS database is higher in France, while labour productivity growth in the services sectors has been higher in Germany between 2010-2018 (Graph 5.24) and in particular after the crisis (Graph 5.25). Gross value added in market services has recovered slightly more in Germany than in France between 2011 and 2015, at 1.8% and 1.4%, respectively (Graph 5.26, van Ark et al. 2017). However, France saw a higher contribution from labour input to market services growth, which was due to both stronger increase in hours worked and especially stronger skill improvements in services-sector jobs (Graph 5.26, Askenazy and Erhel, 2016). In contrast, the German labour-market reforms in the early 2000s have been more favourable to low-skilled jobs (van Ark et al. 2017).

Graph 5.24: **Gross value added per hour worked, constant prices, average annual growth 2000-2018**



Source: OECD.

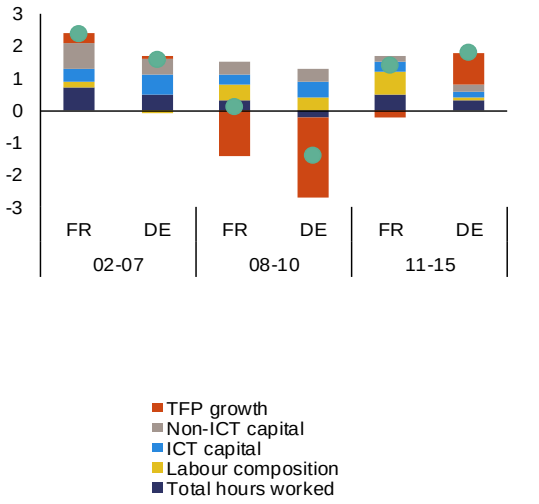
Graph 5.25: **Business services, gross value added per hour worked, constant prices, average annual growth**



Business services according to the OECD, excluding sector L.
Source: OECD.

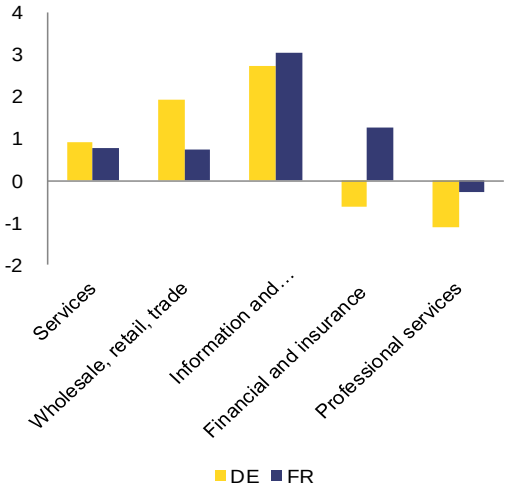
In both countries, labour productivity growth in services has been weaker than in manufacturing and labour hoarding has been stronger. Labour-productivity growth in services has been significantly weaker than in manufacturing before and after the crisis in both countries. In France, the contribution of hours worked to gross value added in market services was positive (0.3 pp.) during 2008-2010, while in manufacturing it was negative (-2.4 pps). In Germany, the contribution of hours worked to gross value added in market services was only modestly negative during the crisis period (-0.2 pp.) while in manufacturing the contraction in working hours was stronger (-1.2 pps). In the post-crisis period 2011-2015, the growth in hours worked returned to a positive contribution in both countries, 0.5 pp. in France and 0.3 pp. in Germany, while remaining negative for French manufacturing.

Graph 5.26: **Contributions to value added growth in market services**



Source: van Ark et al., 2017.

Graph 5.27: **Gross value added per hour worked, constant prices, average annual growth**

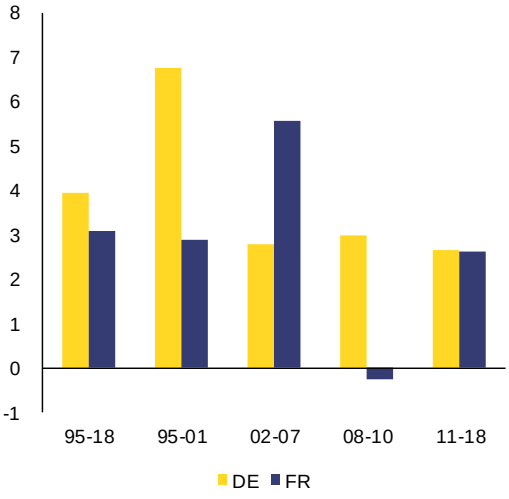


Source: OECD.

TFP growth in market services was lower than in manufacturing before and after the crisis, whilst being significantly stronger in Germany. In both countries, TFP growth in market services was significantly lower than in manufacturing before and after the crisis. While in manufacturing, TFP growth contributed 3.2 pps. in Germany and 2.2 pps. in France to gross value added, in market services the contributions were negligible, 0.3 pp. and 0.1 pp., respectively. After the crisis, between 2011-2015, TFP growth in market services in Germany was positive and higher than in France, at 1.0%, (-0.2 pp. in France). The higher TFP growth in Germany suggests that Germany's market services sector may have benefitted from the economy's integration into global value chains more than France (van Ark et al., 2013b).

In both countries, there are significant differences across services sectors with the information and communication sector showing strong labour-productivity growth, while in the professional-services sector it has been particularly weak/negative. The differences across services sectors are significant in both countries (Graph 5.27).

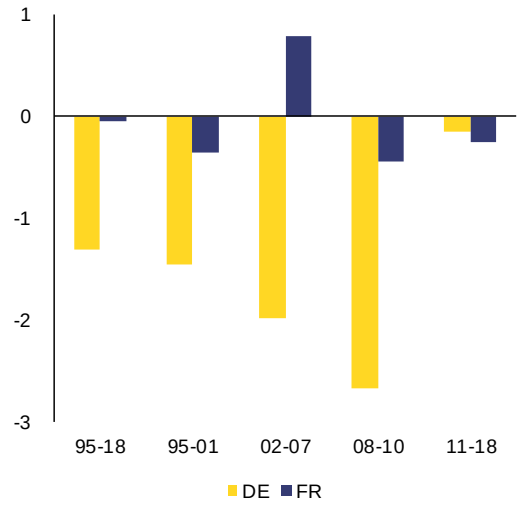
Graph 5.28: **Information and communication, gross value added per hour worked, constant prices, average annual growth**



Source: OECD.

For example, in both countries, productivity growth in the information and communication sector is relatively strong and above that in the manufacturing sector (Graphs 5.27 and 5.20). In both countries, labour-productivity growth was particularly weak (largely negative) in professional, scientific and support service activities, and, in Germany, also in financial and insurance activities. Labour-productivity growth in the German professional-services sector has been negative, before but also after the crisis (Graph 5.29).

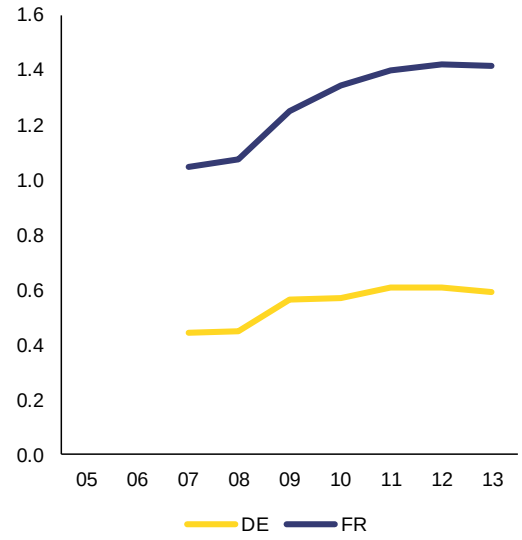
Graph 5.29: **Professional, scientific, and technical activities, gross value added per hour worked, average annual growth**



Source: OECD.

While noting that there are particular difficulties in measuring labour-productivity growth in the services sectors (Box 5.3), the poor productivity performance is largely explained by structural features such as the persistence of very small firms but also by an inefficient allocation of resources within the sector. Allocative efficiency in professional services is negative in both countries, but more so in Germany, which suggests that resources are allocated less efficiently there (European Commission 2018c). Moreover, although Germany is one of the EU countries with more competition-friendly regulation, compared to France and in international comparison, according to the OECD indicators of product-market regulation, it is also one of the countries where regulation is least conducive to competition in the professional-services sector. High gross-operating surplus rates in Germany (higher than the EU28 average) and low churn rates (lower than the EU28 average) suggest lack of competition in the services sector.

Graph 5.30: **R&D intensity in business services**



R&D intensity = business R&D expenditure / gross value added.
Source: Eurostat.

While gross-operating surplus rates in France are lower than in Germany and lower than the EU28, the low churn rates in France suggest room for improvement in competition, even if not that significant as in Germany. Finally, R&D intensity in the business services sectors is higher in France and has grown faster between 2007 and 2013 (Graph 5.30).

Box 5.3: Measurements issues in productivity

Comparing productivity across different countries and different industries faces measurement problems, which affect mainly the services sectors, but cannot explain alone the decline in labour productivity. Comparing productivity across different industries and countries faces limitation and measurement issues (OECD 2018a, Falck & Wölfl 2018). This is particularly the case for measuring productivity in services. The negative productivity growth in business sector services may partly reflect an under-estimation of service productivity growth, linked to difficulties measuring price indices, and hence volume series of services value added. While problems estimating an appropriate price index may arise in some manufacturing industries, measurement problems are found to be stronger in the service sector than in manufacturing (Rothgang et al. 2018). Because of the difficulty in measuring services producer price indices (SPPIs), different methods are used in OECD countries to compute volume series of value added (OECD 2018). Over the last years, the availability of SPPIs has significantly increased. However, even where SPPIs have been computed, they are based on different pricing methods across industries and countries, affecting the comparability of productivity growth estimates. Furthermore, measurement of price changes in services is complicated by the way businesses provide and charge for services, by problems identifying quality change, through the provision of bundled services, and by the difficulty identifying separate price indices per end-user (OECD 2018a). Nevertheless, a number of papers conclude that the discussed measurement problems do not lead to significant distortions as regards the major trends. Despite the existing measurement errors, the observed decline in labour productivity growth is not a statistical artefact (Bersch et al. 2018, Rothgang et al. 2018, Ahmad et al. 2017, Syverson 2017)

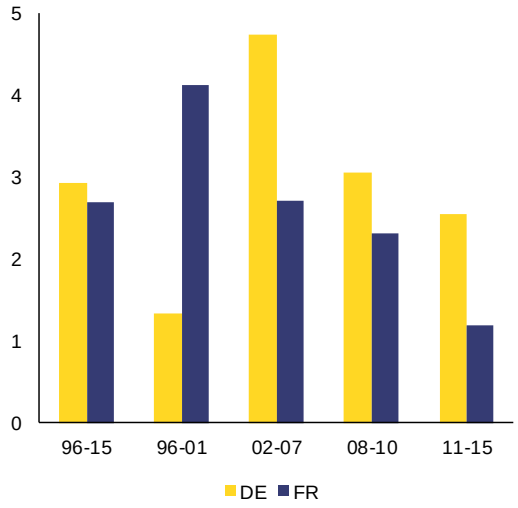
Zooming in on some key sectors

This section looks in greater detail at three sub-sectors (NACE 2-digit) that are particularly important for the two economies or exposed to major transformations: the automotive sector, telecommunications and professional services.

The automotive sector

Hourly labour productivity in the automotive sector was similar in the two countries in 2015, as Germany caught up with France on the back of a higher labour productivity and TFP growth rates in Germany after the crisis. Hourly labour productivity in the automotive sector([83]) is similar in Germany and France, at around 92 €/h. However, the dynamics in labour productivity have been different over time. Labour-productivity growth in the automotive sector has been higher in Germany since 2002, while in the 1990s it was higher in France. The growth in real gross value added was significantly higher in Germany both before and after the crisis (Graph 5.32). Before and during the crisis years, in both countries the number of hours worked contracted, with a stronger contraction recorded in France. After the crisis, the German automotive sectors show a strong recovery in the growth of gross value added but also in hours worked, while in France, real value added and hours worked both contracted, with a larger contraction in hours worked (Graph 5.32). TFP in the automotive sector has grown faster in Germany before and after the crisis and contributed substantially more to value added before and also after the crisis years (Graphs 5.33 and 5.34).

Graph 5.31: **Gross value added per hour worked, constant prices, average annual growth, automotive sector**



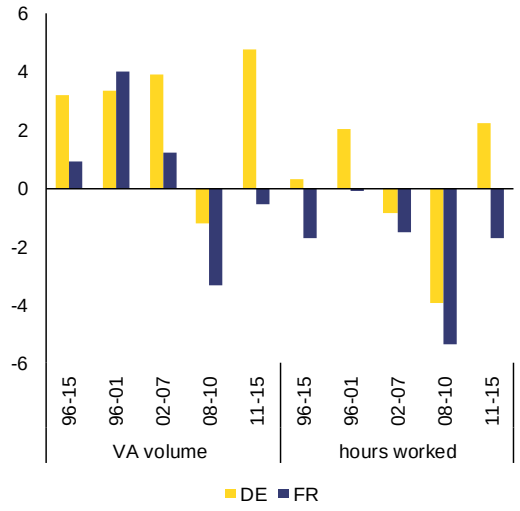
Source: EU KLEMS.

Labour-productivity growth in the German automotive industry was one of the highest in

([83]) NACE C29-30 Transport equipment

the economy and the sector increased its share in total value added and in manufacturing much more than in France. The average annual increase in hourly labour productivity in the German automotive sector was 2.9% in the period from 1996 to 2015, compared to 2.3% per year for the total manufacturing industry. The automotive industry's annual average productivity growth was thus only below Telecommunications (+9.2%), Electrical and optical equipment (+4.5%), IT and other information services (+4.2%), and Wholesale trade, except of motor vehicles and motorcycles (+3.5%). The automotive industry has gradually increased its share in total value added in Germany (3.1% in 1995, 3.8% in 2005, and 4.7% in 2015) and in manufacturing (14% in 1995, 17% in 2005, and 21% in 2015). At the same time, the share of car manufacturing in the total economy of France has stagnated at around 1.4% since 1995, while the share of the sector in total manufacturing increased from 8.6% in 1995 to 10.3% in 2005 to 12% in 2015 (EU KLEMS 2018).

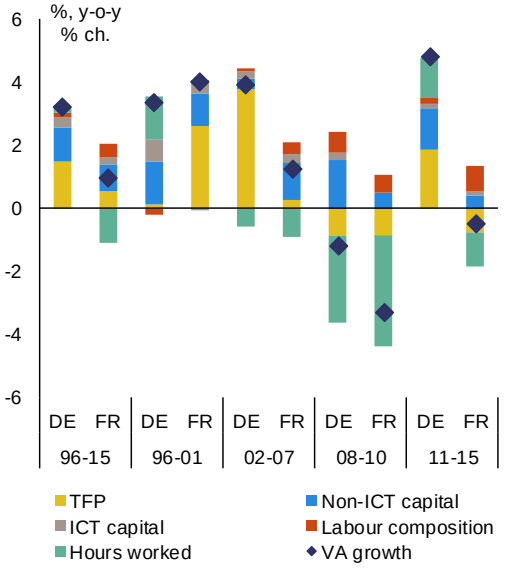
Graph 5.32: **Gross value added at constant prices and hours worked, average annual change, automotive sector C29-30**



Source: EU KLEMS.

A range of factors, such as incremental innovations, product variety, outsourcing and geographical location might explain the strong performance of the German automotive sector – both compared to France and in international comparison. A study by the Expert Commission on Research and Innovation explored the determinants of productivity at the sectoral level in Germany and found that a number of factors explain labour productivity developments in the car-manufacturing sector. Due to a strong competition in the sector (in particular from Japan), car manufacturers in both Germany and France had to increase their efficiency and productivity, by adopting existing technology (e.g. Toyota lean-production-model) and also innovating in order to meet customer's demands (e.g. navigation, safety) or regulatory requirements (environmental protection) (Rothgang et al. 2018).

Graph 5.33: **Contributions to gross value added growth, automotive sector**

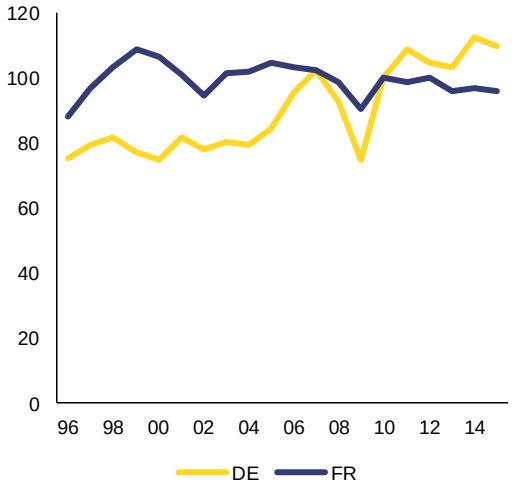


Source: EU KLEMS.

Further factors that increase productivity were outsourcing (i.e. relocation of production from Original Equipment Manufacturer (OEM)) to suppliers and the role of ICT. The relationship between research and innovation, on the one hand, and productivity developments, on the other hand, has been found to be complex, but positive. For example, results of microeconometric studies show a significant increase in TFP of patenting (i.e. more innovative) firms between 2006 and 2015 (+8.4%) compared to those of non-patenting companies (+4.9%) (Rothgang et al. 2018). Despite a higher business R&D intensity in the French automotive sector, a number of indicators suggest that research and innovation performance is stronger in Germany and that their policies supporting public-research organisations working for the business sector (e.g Fraunhofer) have

benefitted the car manufacturing sector (see section on Research and Innovation). Other factors which might explain the strong performance of the automotive sector in Germany include geographical location and proximity to the 'EU production corridor'.

Graph 5.34: **Total factor productivity growth, 2010=100**



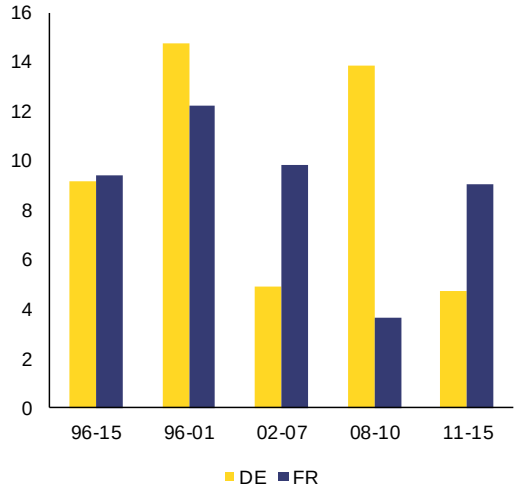
Source: EU KLEMS.

Technology adoption and robot density in the automotive industry appear similar in both countries. In 2015, Germany had the highest robot density in the automotive sector in Europe with 1 147 industrial robots per 10 000 employees. With a robot density of 940 robots per 10,000 employees, France is on second place in this industry among EU Member States (International Federation of Robotics 2016). In 2016, the robot density in Germany slightly declined (1 131) while in France it increased (1 150), which might be due to the increase in employment in Germany and the decrease in France. In terms of robot density, however, both countries lie well behind the Republic of Korea (highest density of 2 145 industrial robots in 2016), where large projects aimed at manufacturing batteries for hybrid and electric cars might be the reason for the high increase in robot density, but also somewhat behind the US (1 261) and Japan (1 240) (International Federation of Robotics 2017).

The transformations in the car industry (e.g. new technologies such as electric or hydrogen fuel cell cars) might challenge the current strong position of the German automotive industry and possibly lead to a global shift in value creation, which would have an impact on the productivity development of the German automotive industry. Predicting productivity developments is difficult, but what can already be observed is that a vehicle powered by an electric motor is significantly less complex than one with a combustion engine, which diminishes the advantage of the German OEMs in driving technology, but also in systems integration. At the same time, the US Tesla is gaining a growing market position, and a stronger competition can be expected also from producers in China as well as from within Germany, such as the Consortium around Deutsche Post with its delivery cars under the name of StreetScooter, possibly raising productivity (Rothgang et al. 2018). The disruptions noted in the second half of 2018, e.g. linked to the revisions of environmental certifications, is believed to be primarily of a cyclical nature, but illustrates well the challenges the industry is currently facing.

The telecommunications sector

Graph 5.35: **Gross value added per hour worked, constant prices, average annual growth, telecommunications**



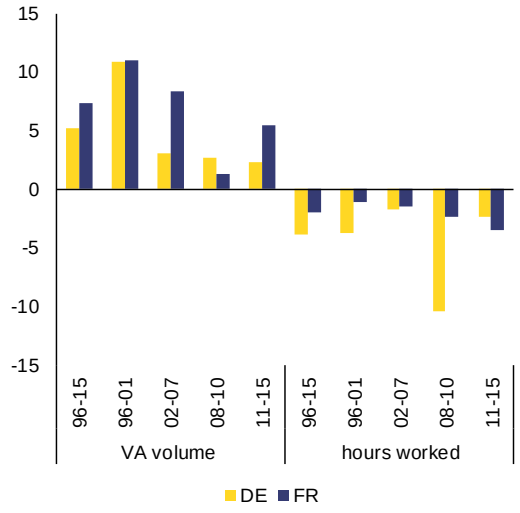
Source: EU KLEMS.

The telecommunications sector shows dynamic productivity developments in both countries, above average productivity growth, with the increase being stronger in France. Hourly labour productivity in Telecommunications([84]) is higher

([84]) NACE code J61

in France (146.3 €/h) than in Germany (135.8 €/h). Labour-productivity growth was higher both before and after the crisis in France (Graph 5.35), due to stronger increases in value added, while hours worked contracted in both countries (Graph 5.36). During the crisis period, Germany shows a stronger increase in labour productivity due to a stronger decline in hours worked. Over the last two decades, 1995-2015, Germany shows a weaker increase in gross value added and also a stronger reduction in hours worked (Graph 5.37). The contribution of TFP growth to Gross Value added and labour productivity has been mainly positive and strong in both countries, reflecting the major importance of technological progress for the telecommunications sector. TFP growth was stronger in France before (2002-2007) and after the crisis years, while it was stronger in Germany before 2002 and during the crisis years (Graph 5.37).

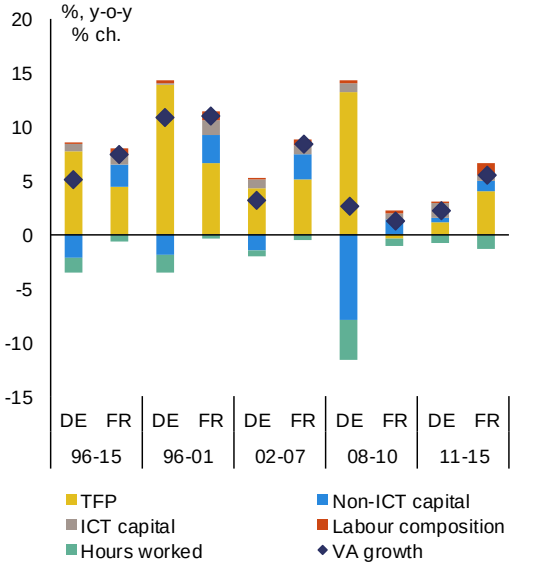
Graph 5.36: **Real gross value added average growth and growth in hours worked in the telecommunications**



Source: EU KLEMS.

The strong productivity increases in telecommunications have been driven by innovation and technological progress, but also by state regulation and an entry of an additional operator (in the case of France), which increased competition in the sector. The link between research and innovation and value creation in the telecommunications sector has been found to be direct and strong (Rothgang et al. 2018). For example, the expansion of the data supply is the result of research, particularly in the area of hardware, but also of software. Most of the research takes place outside the industry, meaning that the telecommunications services as a whole are more likely to be a user of innovations generated by other sectors of the economy (in particular in the electronics sector). The development of Information and Communication technologies had a direct impact on the supply of telecommunications services directly, with mobile data since 2009 showing an exponential development path. Some key milestones were the launch of ISDN (1987), the take-up of Internet (1991) and of smartphones (2007) as well as the launch of Long Term Evolution (4G) (2011).

Graph 5.37: **Contributions to value added growth volume, telecommunications**



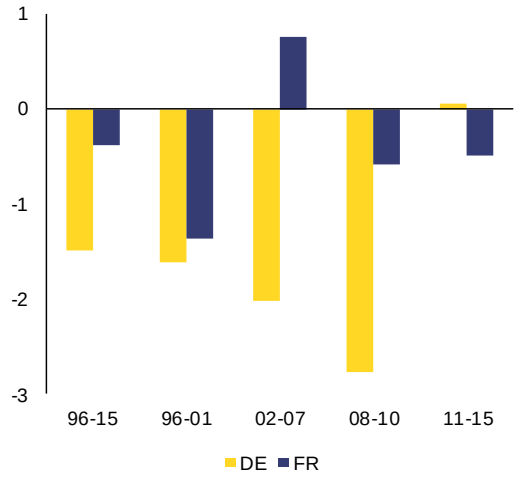
Source: EU KLEMS.

State regulation since the late 1980s, which increased competition in the sector, has also strongly influenced productivity developments therein. Market opening for competitors of Deutsche Telekom, which previously held a monopoly position, triggered a number of market adjustments. Regulatory milestones were the liberalisation of the terminal market (1988), the opening up of cable networks to competitors (1995), the regulation of the telecommunications market (1998) and the auctioning of new mobile licences (from 2010 onwards). Despite market opening, a few large players still shape the German market, such as Deutsche Telekom, Vodafone or

Telefonica. Overall, less than 3 000 firms are active in the telecommunications sector in Germany. Due to the still high market share of the former monopolist, Deutsche Telekom, state regulation measures can enable further productivity growth (Rothgang et al. 2018). France has currently four mobile network operators, Orange, SFR, Bouygues Telecom and Free Mobile, but the relatively high number of mobile virtual-network operators (MVNO), i.e. wireless communications services provider that do not own the wireless network infrastructure over which they provide services to its customers, has increased competition.

Professional services

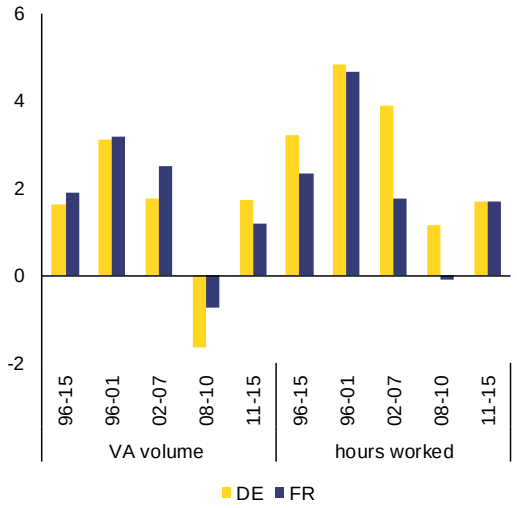
Graph 5.38: **Gross value added per hour worked, constant prices, average annual growth, professional services**



Source: EU KLEMS.

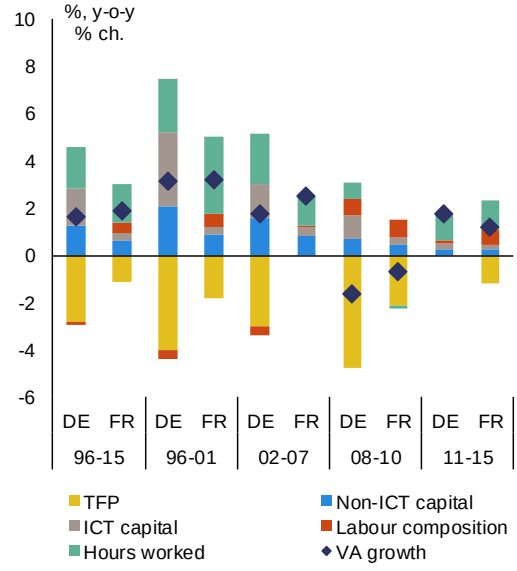
Hourly labour-productivity growth in professional services has been negative or close to zero in both countries, with the decline being stronger in Germany. Hourly labour productivity in professional services is higher in France (41.6 €/h) than in Germany (39.6 €/h). Over the last two decades (1996-2015), labour-productivity growth in the professional services has been negative in both countries (Graph 5.38), with the decline being stronger in Germany, due to a higher increase in working hours and a lower increase in gross value added (Graph 5.39). Only in the post-crisis period (2011-2015) did gross value added increase faster in Germany and labour productivity shows a slight positive growth, compared to the negative labour productivity growth in France. The contribution of TFP growth to gross value added has been negative or equal to zero before and after the crisis in both countries with the decline being stronger in Germany (Graph 5.40).

Graph 5.39: **Real gross value added average growth and growth in hours worked in the professional services**



Source: EU KLEMS.

Graph 5.40: **Contributions to gross value added growth, professional services (M-N)**

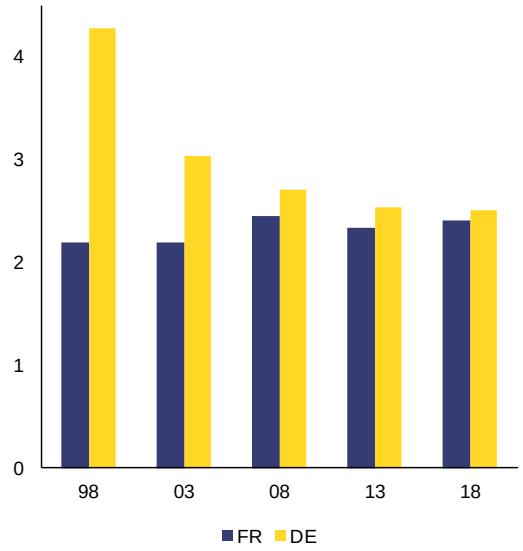


Source: EU KLEMS.

The strong regulation of business services in Germany with potentially competition-

distorting effects is contributing to the negative productivity growth. According to the indicators of product-market regulation in Business Services, the access to and the exercise of these professions is relatively strongly regulated in both Germany and France, with more restrictive regulation in Germany (Graph 5.41).

Graph 5.41: **OECD indicator of regulation in professional services (M-N)**



Source: OECD.

The OECD indicators include barriers to entry, such as specific entry requirements, as well as so-called exclusive rights. For example, admission to the legal profession in Germany requires a university study with a state examination and a two-year legal clerkship preceded by another state examination. In addition, any form of legal advice is reserved exclusively for lawyers "Rechtsanwalte". Company lawyers "Diplom-Wirtschaftsjuristen" cannot work as independent legal advisers even in the out-of-court jurisdiction on issues concerning corporate affairs. Furthermore, the OECD indicators include regulations governing the actual exercise of the professions such as binding fixed prices or price recommendations, rules for advertising, the permissible business form or cooperation with other occupations. For example, in Germany the fees for legal services are regulated through the Lawyers Compensation Act, according to the object value (the economic importance) of a matter. Client and lawyer can together set a higher remuneration. The lawyer, however, may not set a lower fee, if this is not explicitly allowed in the Lawyers Compensation Act (Falk & Wölfl 2018). A justification for the regulations in business services is preserving quality on markets characterised by asymmetric information as well as ensuring a fair distribution of benefits. However, according to the German Monopolies Commission (2006) it is questionable if the regulations can really solve the problems arising from imperfect markets and if they achieve a better result than unregulated competition. In general, the easing of regulations is expected to increase productivity over several channels. Lower market-access barriers can increase competitive pressure, which can cause the existing firms in the market to increase their productivity or unproductive companies to leave the market. The latter would improve resource allocation. Furthermore, productivity increases in business services can indirectly increase the productivity of the firms that use their services (ECB, 2006).

In France, despite progress, barriers to entry and competition in business services and regulated professions also remain high. The level of regulatory restrictiveness remains high in France, even though according to the OECD PMR indicator in professional services, France had in 2013 a slightly less stringent regulation in professional services compared to Germany. However, churn rates are lower in key business services in France compared to the rest of the EU. The low degree of competition combined with high labour costs has contributed to keep prices high, notably in real-estate transactions, housing, catering and professional services. Insofar as these services costs are also borne by firms using them as inputs, they represent an additional factor weighing on France's competitiveness, including on industry. In recent years, the Competition Authority's opinions and recommendations have helped to improve the functioning of key markets. For example, in January 2015, the Authority published an opinion on regulated legal professions (such as notaries and bailiffs) stressing that those professions should be modernised and opened up to competition. This led to ambitious reforms in the field of regulated professions, in particular the 2015 Law on growth, activity and equality of economic chances, designated as 'loi Macron'. However, the implementation of certain measures has taken loner than expected and further

improvements could be made. Meanwhile reforms in specific sectors continue. For instance, the healthcare transformation strategy announced by the President in September 2018 aims to reform the health professions and health education (European Commission, 2019).

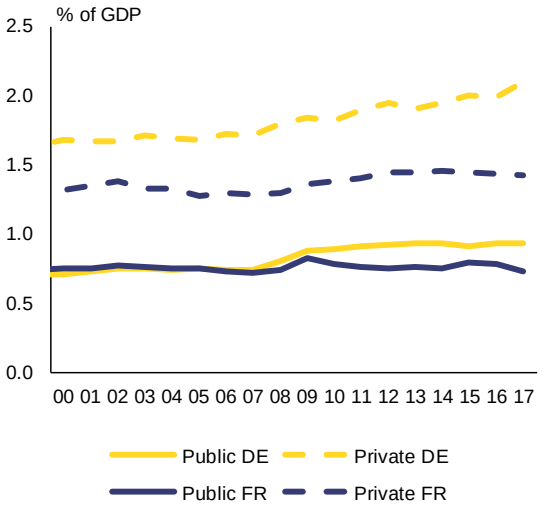
5.2.2. Research and innovation

The aim of this section is to compare research and innovation (R&I) investment and policies across Germany and France in order to contribute to the analysis explaining differences in non-cost competitiveness, productivity, export and economic performance between the two countries. According to economic growth theory and empirical work, in advanced knowledge-based economies, where the growth potential of usual factor accumulation and imitation have been exhausted, innovation becomes a major source of productivity and long-term economic growth. Recent work suggests that investments in industrialised countries tend to shift away from tangible assets towards more intangible capital, such as research and development (R&D) (Thum-Thyssen et al., 2017).

Investment in research and innovation

Both countries have a national Europe2020 target for R&D expenditure of 3% of GDP, which Germany has reached, while France remains below it. Total R&D intensity in Germany reached 3.02% in 2017 (+0.57 pp. compared to 2007) and 2.19%([85]) in France (+0.17 pp.). Both public([86]) and business R&D intensity are higher in Germany (Graph 5.42) and grew faster over the last decade.

Graph 5.42: **Public and business R&D expenditure**



Source: Eurostat.

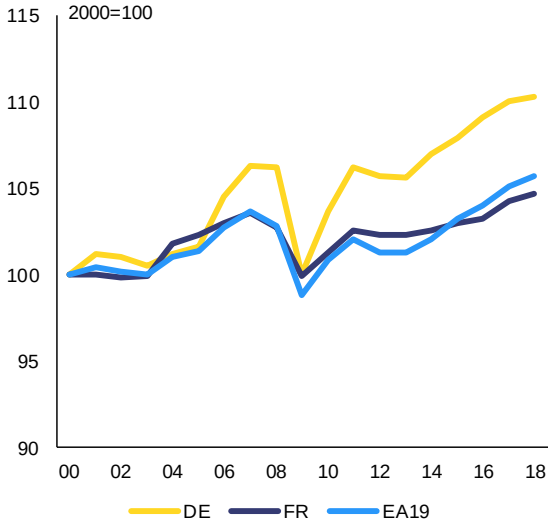
In both countries, the increase in total R&D intensity since 2007 has been mainly driven by an increase in business R&D, with a stronger growth in Germany (+38 pps. increase from 1.71 % of GDP in 2007 to 2.09 % in 2017) compared to the one in France (+0.14 pps. increase from 1.28 % to 1.42 %). Furthermore, while in Germany public R&D intensity increased by 0.2 pp. compared to 2007, the increase in France was marginal (0.01pp.). Latest data suggest a decline in R&D intensity in France from 2.25% in 2016 to 2.19% in 2017 with the strongest decline affecting the higher education sector ([87]). TFP, which is associated with investment in intangible assets, notably R&D, grew faster in Germany than in France (Graph 5.43).

([85]) Eurostat estimates.

([86]) Public R&D intensity refers to the R&D expenditure performed in the public sector as a share of GDP. It does not include public support to business R&D.

([87]) Eurostat estimates for 2017.

Graph 5.43: **Total factor productivity**



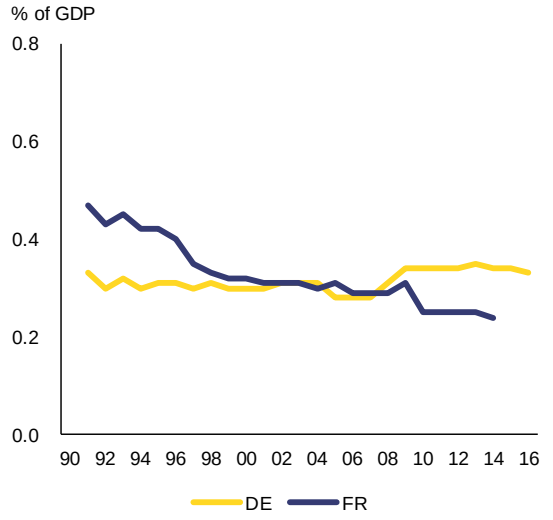
Source: Ameco, European Commission.

According to the European Innovation Scoreboard 2018, which compares R&I performance across EU and a few non-EU countries based on a number of indicators, both countries are in the group of strong innovators, with Germany ranking 7th in the EU, while France ranks 11th, (European Commission 2018d). This difference in relative performance is confirmed by other rankings such as the one based on the Innovation Output Indicator([88]) developed by the European Commission's Joint Research Centre, where Germany scores 6th and France 11th in the EU (Vertesy 2017). Finally, international rankings like the Global Innovation Index suggest that Germany (9th in the ranking) performs better than France (16th) (Cornell University, INSEAD, and WIPO 2018). According to the latest Global Competitiveness Index of the World Economic Forum (WEF), Germany scores first in the world on innovation capability while France scores 11th (WEF 2018).

Since 2007, German public R&D intensity has outperformed the French one. In particular, public spending on Public Research Organisations increased in Germany, while it decreased in France. Public R&D intensity in Germany increased from 0.7% of GDP in 2000 to 0.9% in 2017, while in France it has stagnated at about 0.7%. Germany belongs to the group of EU countries (together with Austria, Denmark, Luxembourg, Portugal, and Sweden) that have followed a counter-cyclical policy on public R&D investment and increased their government expenditures on research over 2000-2014 (Reale 2017). Taking a longer term perspective and looking at the two categories of public spending on R&D – government sector (i.e. public research organisations which are not part of the higher education sector such as the Centre national de la recherche scientifique (CNRS) in France, Fraunhofer in Germany etc.) and the higher education sector (e.g. universities) - the different trends between Germany and France become even more pronounced. With regard to public research organisations which are not part of the higher education sector, France and Germany have followed different strategies, which are to be understood in the light of the different compositions and functions of those organisations in the two research systems: R&D performed in those organisations declined in France from about 0.5% of GDP in 1991 to less than 0.3% in 2016, while over the same time period it increased from 0.3% to 0.4% in Germany. This is mainly due to a decline in the government funding for those organisations in France, while in Germany it increased (Graph 5.44). R&D performed in the higher education sector (as a share of GDP) increased in both countries, remaining slightly higher in Germany. The part that is funded by the government is similar in both countries, measured as a share of GDP, and has stagnated for the last years available (Graph 5.45). France seems to have shifted resources from public research organisations to universities in line with a trend observable in others OECD countries between 1981 and 2014 (OECD, 2016b), which reflects the increased role of universities as performers of public research.

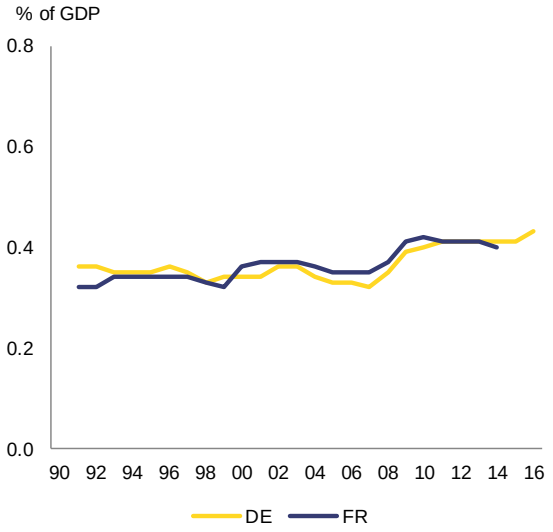
([88]) The Innovation Output Indicator is a composite indicator published by the European Commission since 2013 aiming to quantify the extent to which ideas for new products and services carry an economic added value and are capable of reaching the market (Vertesy 2017).

Graph 5.44: **R&D performed in the government sector, financed by government**



Source: Eurostat.

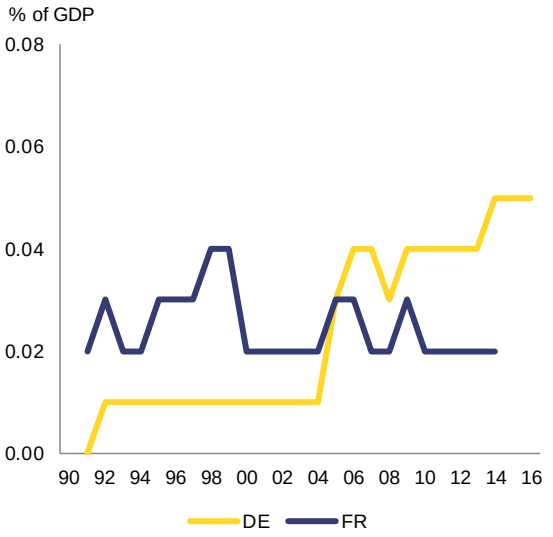
Graph 5.45: **R&D performed in the higher education sector, financed by government**



Source: Eurostat.

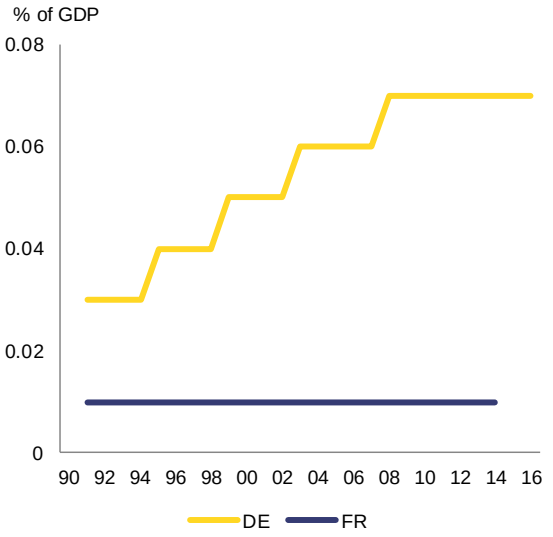
Businesses in Germany appear more attracted to contracting publicly performed R&D than firms in France. Businesses in Germany increased their funding of R&D performed in the public (i.e. in government and Higher Education) sector, while in France the business contribution stagnated at a lower level (Graphs 5.46 and 5.47). This suggests that businesses deem the public science and research base more attractive to cooperate with in Germany and that this has improved over time, while in France there is room for improvement.

Graph 5.46: **R&D performed in the government sector, financed by business**



Source: Eurostat.

Graph 5.47: **R&D performed in the higher education sector, financed by business**

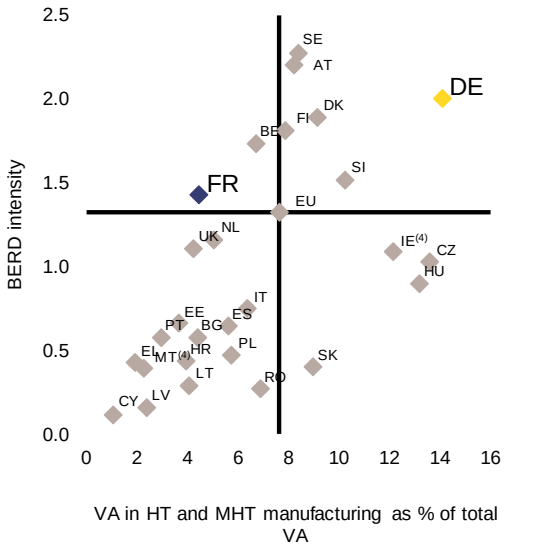


Source: Eurostat.

The higher business R&D intensity in Germany compared to France is largely explained by differences in the structures of the two economies. Business R&D intensity is about 0.7 pp. higher in Germany and has increased since 2007 at a higher pace, at 2% compound annual growth, compared to 1.3% in France. When

comparing business R&D intensity across countries, it is important to take their economic structure into account: as some economic sectors labelled as high-tech (HT)([89]) and medium-high tech (MHT) manufacturing sectors([90]) and high-tech knowledge-intensive services (HT KIS)([91]) are much more R&D intensive than other sectors. The share of these sectors in each national economy is a key determinant of the overall R&D intensity of the country. Value added in high tech manufacturing sectors (such as pharmaceuticals and ICT) as % of total value added is higher in Germany (2.25% of total value added in 2015) than in France (1.18%). The difference in the value added shares of the Medium High Tech manufacturing sectors (such as Automotive and Chemicals) is even more important: the share of these sectors in total value added is nearly four times higher in Germany (11.8% of total value added) than in France (3.2%). On the other hand, the value added in high-tech knowledge-intensive services as % of total value added is slightly higher in France (6.1%) than in Germany (5.0%). These differences in the structure of the German and French economies largely explain the higher business R&D intensity of Germany. Comparative research shows that when controlling for the economic structure in the two countries, business R&D intensity increases in France to above that in Germany (Sachwald 2014). This finding is confirmed by an OECD study, where the business R&D intensity in Germany is found to drop below the OECD average when adjusting for the structure, while, in France, business R&D intensity is shifted above the OECD average and above that of Germany (OECD, 2017a). Graph 5.48 shows that business R&D intensity in France is higher than in all the other Member States with a similar economic structure (for what concerns the weight of high-tech and medium-high-tech manufacturing), such as the United Kingdom and the Netherlands; and is even higher than in Italy and Spain where the share of high-tech and medium-high-tech is higher.

Graph 5.48: **BERD intensity vs. value added in high tech and medium high tech manufacturing as % of total value added, 2016**



Source: Eurostat.

Graph 5.49 shows that, looking at business expenditure on R&D (BERD) as % of value added in the sector, it is often higher in the MHT sectors in France. Indeed, five out of seven HT and MHT sectors have higher BERD intensities in France ([92]). The developments in the economic structures of the two economies give a possible explanation for these higher sectoral BERD intensities in France.

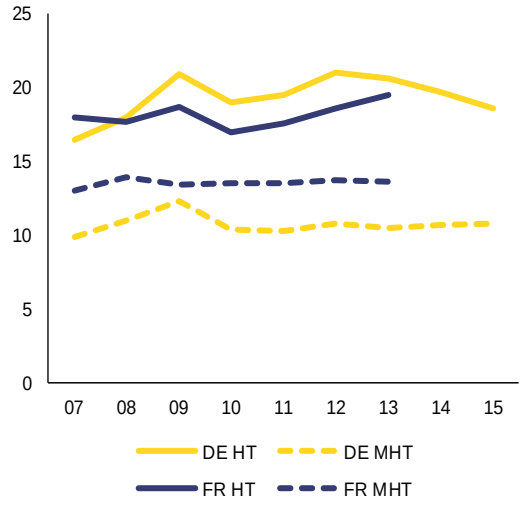
([89]) High-tech manufacturing High-tech manufacturing (HT) includes the following sectors (NACE Rev.2 codes - 2 digit level are given in brackets): manufacture of basic pharmaceutical products and pharmaceutical preparations (C21), manufacture of computer, electronic and optical products (C26).

([90]) Medium-high-tech manufacturing (MHT) includes the following sectors (NACE Rev. 2 codes – 2 digit level are given in brackets): manufacture of chemicals and chemical products (C20), manufacture of electrical equipment (C27), manufacture of machinery and equipment (C28), manufacture of motor vehicles, trailers and semi-trailers (C29), manufacture of other transport equipment (C30).

([91]) High-tech knowledge-intensive services (HT KIS) include: Motion picture, video and television programme production, sound recording and music publishing activities (59); Programming and broadcasting activities (60); Telecommunications (61); Computer programming, consultancy and related activities (62); Information service activities (63); Scientific research and development (72).

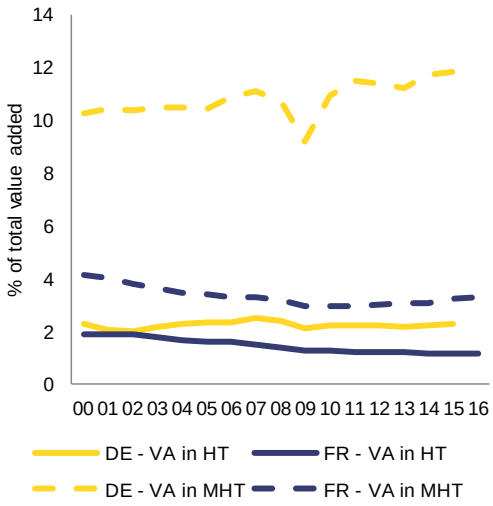
([92]) France has a higher BERD intensity in: computer, electronic and optical products; electrical equipment; machinery and equipment; motor vehicles, trailers and semi-trailers and other transport equipment. BERD intensity is higher in Germany only in: Basic pharmaceutical products and pharmaceutical preparations, and Chemicals and chemical products.

Graph 5.49: **BERD intensities in high tech and medium high tech manufacturing**



Source: Eurostat.

Graph 5.50: **Value added in high tech and medium high tech as % of total value added**

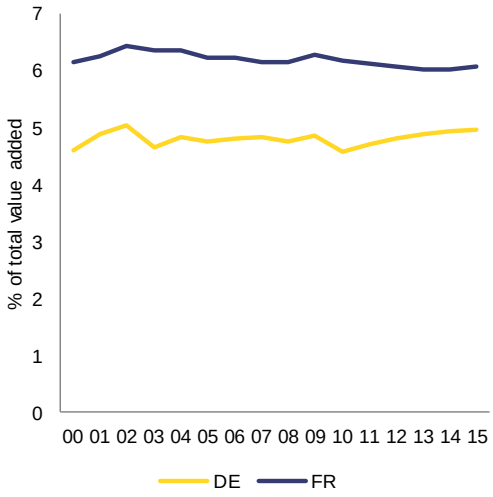


Source: Eurostat.

Economic structures: developments and impacts

The economic structures of Germany and France have further diverged since 2000 in high-tech and medium-high-tech manufacturing, while converging in knowledge-intensive services. In France value added in high tech manufacturing sectors as percentage of total value added decreased from 1.9% in 2000 to 1.2% 2015, while in Germany it remained stable at 2.3%. The different trends are even more pronounced in the medium-high-tech sectors: in Germany, it increased by 1.6 pps. between 2000 and 2015, while, in France, it declined by 0.9 pps. during the same time period. While there has been some slight rebounding in the value added in medium high tech manufacturing in France since 2012, value added in high tech manufacturing has stabilised at its lowest level of 1.2% (Graph 5.50). However, the share of value added in high-tech knowledge-intensive services is higher in France albeit at a declining trend, while in Germany there has been a slight increase compared to 2000 (Graph 5.51).

Graph 5.51: **Value added in high-tech knowledge-intensive services (HTKIS)**

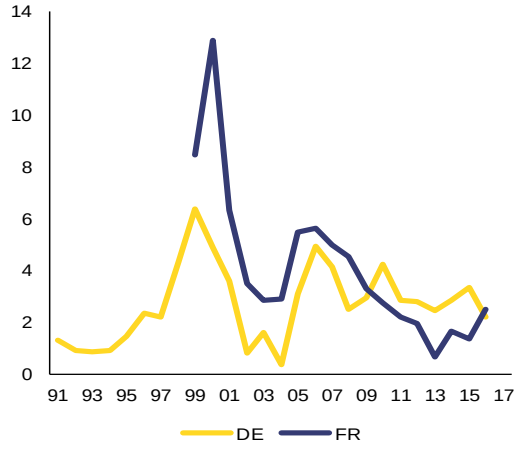


Source: Eurostat.

The decline in the share of value added in high-tech and medium-high-tech manufacturing in France can be partly attributed to a relocation of production. Outward foreign direct investment (FDI) flows as % of GDP increased strongly in the 1990s and were above that of Germany until 2009 (Graph 5.52). FDI stocks as a share of GDP are also higher in France with the gap increasing over the years (Graph 5.53). This reflects different internationalisation strategies of German and French manufacturing firms. While the latter often

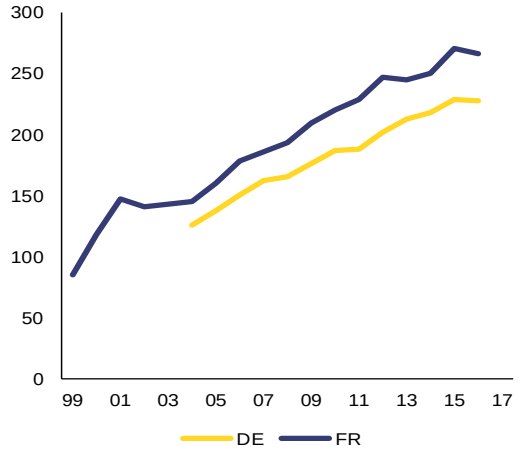
delocalised substantial parts of their production (and thus of the value added) to lower-cost countries (e.g. Renault in Romania and Turkey), German firms kept more to the "Made in Germany" brand, even if they also did some outsourcing, primarily to Central and Eastern European Countries as low-cost components providers (Cohen and Buigues, 2014). As the relocation abroad of production was not accompanied by a corresponding relocation of R&D activities, the decline in the value added of the French HT and MHT manufacturing sectors contributed to inflate their BERD intensities.

Graph 5.52: **Outward FDI flows as % of GDP**



Source: Eurostat.

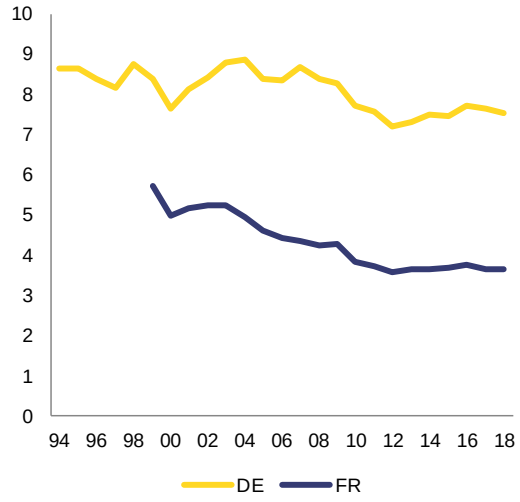
Graph 5.53: **FDI stocks as % of GDP**



Source: Eurostat.

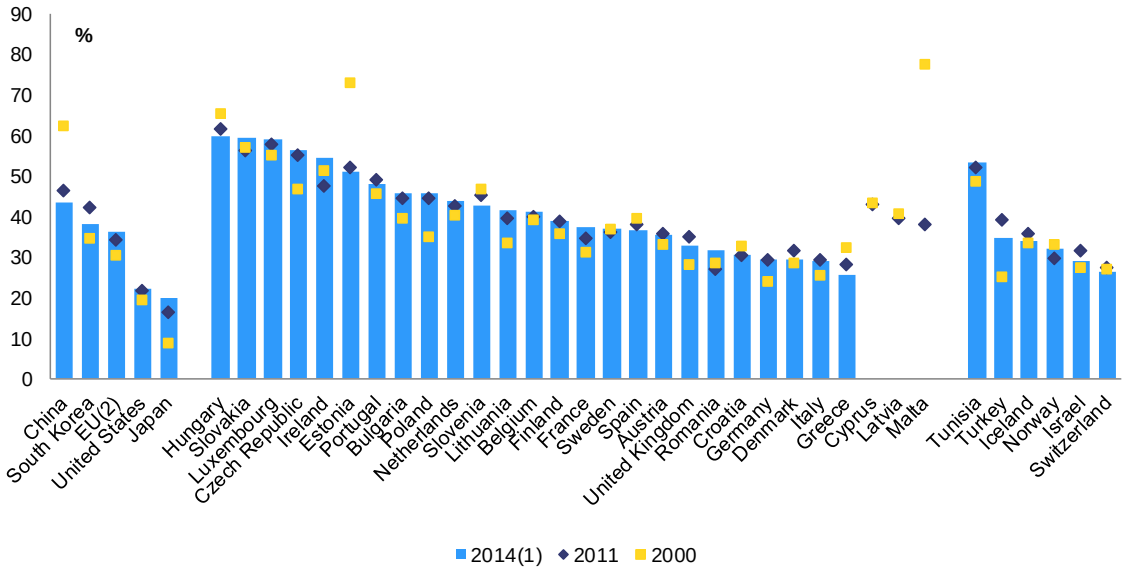
The different developments of the value added in high-tech and medium-high-tech manufacturing can be one explanatory factor for the different external-trade performances of the two countries. The export market share of France has been continuously declining with the difference between France and Germany increasing (Graphs 5.54). The total share of high-tech and medium-high-tech exports in total manufacturing exports is higher in Germany (Graph 5.57). This difference mainly reflects the higher share of medium-high-tech exports, where Germany outperforms France, with the gap increasing over the last couple of years, whereas France outperforms Germany with regard to the share of high-tech exports (Graph 5.58). Not only is the total share of high-tech and medium-high-tech exports in total manufacturing higher in Germany, but also the foreign value added share as % of gross exports in high tech and medium high tech sectors is lower in Germany (about 30%) than in France (37%). The increase in the share between 2000 and 2014 was slightly higher in France (6 pps.) than in Germany (5.5 pps.) (Graph 5.56).

Graph 5.54: **Export market share, % of world total**



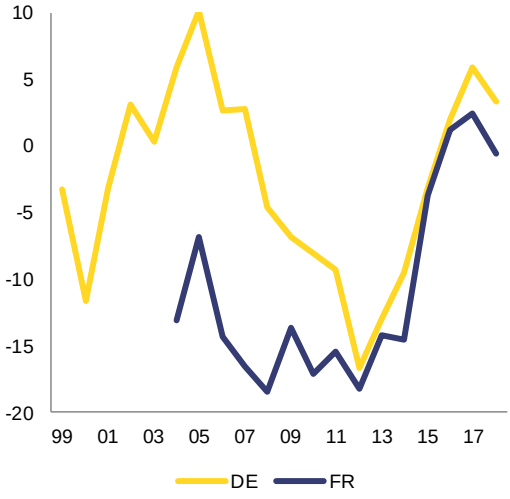
Source: Eurostat.

Graph 5.56: **Foreign value added share (%) of gross exports in high-tech and medium-high-tech sectors, 2000, 2011 and 2014**



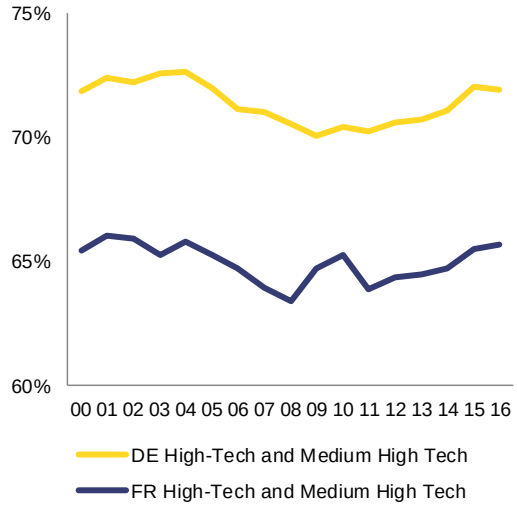
Source: European Commission (2018e), Science, research and innovation performance of the EU. 2018. Strengthening the foundations for Europe's future.

Graph 5.55: **Export market share, % of world total, 5 – year % change**



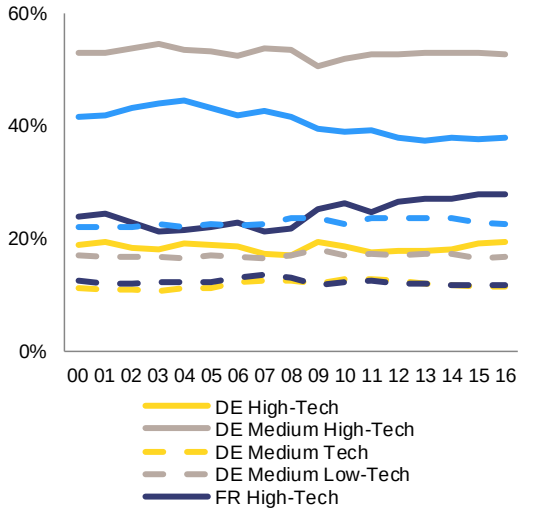
Source: Eurostat.

Graph 5.57: **Share of high tech and medium high tech exports in total manufacturing**



Source: Eurostat.

Graph 5.58: **Share of high tech, medium high tech, medium tech and medium low-tech exports**



Source: European Commission, 2018e.

Policies on research and innovation

Policies on Research and Innovation (R&I) and the broader framework conditions for innovation can play an important role in explaining differences in R&I performance. The justification for public intervention to support R&D&I is based on the correction of market and system failures in the production and dissemination of knowledge. The main market failures include the provision of public goods (fundamental R&D has some characteristics of a public good, as it is partly non-excludable and non-rival), externalities (mainly positive externalities from knowledge spill-overs), uncertainty of the research and asymmetric information (about the viability of the research project), while system failures relate mainly to problems with the coordination of different actors such as universities, research institutes and businesses.

Public support to R&D in Germany has been focused on strengthening the public science base, while France has developed more strongly its public support to business R&D. In 2007, the public R&D intensities of France and Germany were similar, as well as their scientific performances as measured for example by the share of publications among the top 10% most cited scientific publications worldwide. Since then, Germany has made efforts to further strengthen its science and research base (e.g. universities and research institutes) through initiatives such as the Pact for Research and Innovation, which funds science and research institutes; the Higher Education Pact, which supports higher education institutes in providing quality education; and the Excellence Strategy, a successor programme to the Excellence Initiative. Both public R&D intensity of Germany and its scientific performance rose significantly, while French public R&D intensity and scientific performance have increased only moderately. In France, the efforts have been directed more towards R&D performed in the business sector, notably through offering tax incentives.

Nevertheless, France has a relatively good human capital in the fields relevant for research and innovation, whereas human resources could become a critical bottleneck for R&I investment in Germany. The proportion of new graduates in science, technology, engineering and mathematics (STEM)([93]) is higher in France (2nd in the EU) than in Germany (9th). The same trend can be observed for new graduates in the field of computing, where France scores 9th and Germany 14th. On the indicator of researchers (in full time equivalents) employed by business, both countries score similarly (Germany 6th in the EU, France 7th). While France scores 14th in the EU in terms of the share of population aged 30-34 who have successfully completed tertiary education, Germany scores 21st only. This, however, reflects also the more developed vocational education and training system in Germany. Nevertheless, skilled labour might increasingly become a critical bottleneck in Germany. Although there are some very dynamic start-up environments in large German cities such as Berlin, employment in fast-growing firms in innovative sectors has fallen, as has the share of innovative firms. The overall trend in entrepreneurship is also declining, which may, in part, be explained by the favourable labour-market situation, with good job opportunities making entrepreneurship less attractive. However, these downward trends might also reflect the effects of an ageing population (European Commission 2018f).

Indicators suggest that cooperation between public research and businesses is stronger in

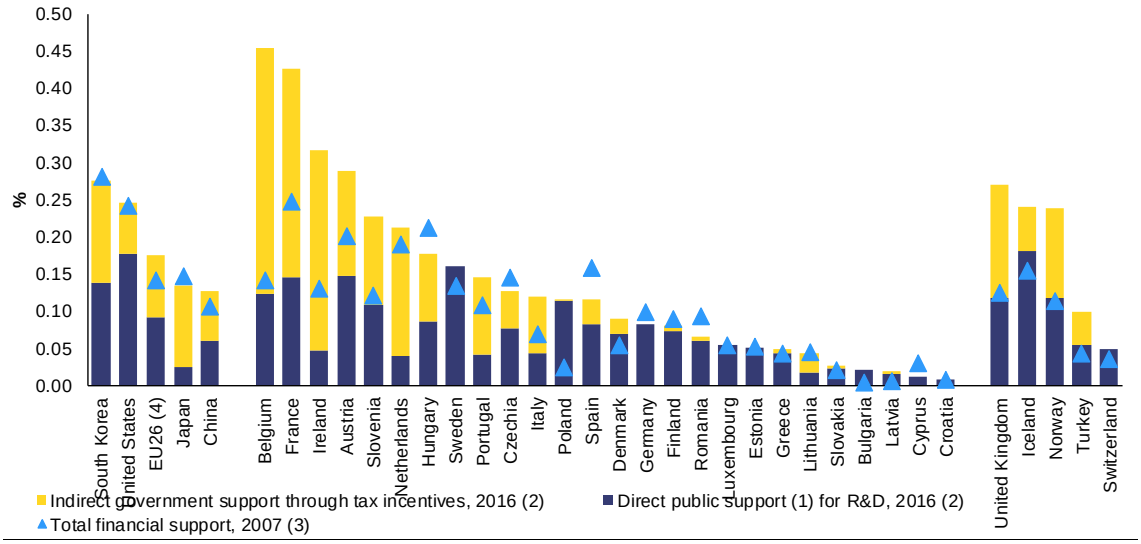
([93]) in the population aged 25-34

Germany, while SMEs' cooperation with public research is a challenge for both countries. The European Innovation Scoreboard shows that collaboration between innovation actors is one of Germany's strengths, while it remains weak in France. This is confirmed by various indicators such as public R&D financed by business, on which Germany scores first in the EU and France 11th, and public-private scientific co-publications (as % of total number of publications), on which Germany scores 2nd in the EU and France 8th. Germany's policies to encourage science-business cooperation (e.g. through the Fraunhofer Society) are often taken as examples of worldwide best practice. However, the country's high scores on the relevant indicators are mainly the result of strong cooperation between large manufacturing companies and the public research institutes, while cooperation between SMEs and academia or research institutes is much weaker. Furthermore, innovation activity in Germany has become increasingly concentrated in large firms in the MHT manufacturing sectors, in particular in the automotive sector, while SMEs' R&D expenditure as a share of GDP has remained stable over the past decade below the EU average (European Commission 2018f). In France, while there is a broad range of instruments aimed at facilitating the transfer of academic ideas to new ventures (e.g. Sociétés d'Accélération du Transfert de Technologies, Carnot institutes) and at supporting companies in collaborating with public research institutions, the efficiency of these instruments could be improved (European Commission, 2018g). These schemes appear to have a low effectiveness in encouraging cooperation between academia and business, as shown by key indicators such as public R&D financed by business, which is 82% of the EU average. In addition, the evaluation of competiveness clusters (pôles de compétitivité), which were designed to stimulate public research-business collaboration, show mixed results: while they increased SMEs' R&D activities (e.g. R&D personnel, leverage effect on R&D expenditures), no evidence was found of a significant impact on economic activity or on bringing new ideas to the market, since variables such as patent applications, turnover, productivity, added value and investment of companies had not increased (CNEPI, 2017). Knowledge transfer between public research and firms also takes place through the mobility of researchers to the private sector. A new law (PACTE Law([94]), adopted in April 2019, contains measures to simplify and incentivise the mobility of public researchers to the private sector and to facilitate the creation of businesses by researchers.

Germany and France follow different strategies in supporting business R&D, with public support to business R&D as a share of GDP being much higher in France. Public support to business R&D in France is one of the highest in the EU, well above that of Germany, and has strongly increased since 2006 (Graph 5.59). Business R&D expenditure is subsidised through a variety of direct (e.g. grants and loans) and indirect (R&D tax incentives) support measures in France, including one of the most generous R&D tax-incentive systems (e.g. "Crédit Impôt Recherche (CIR)", "Jeunes entreprises innovantes") in the EU. In 2014, the CIR was claimed by more than 15 000 firms (of which 91% are SMEs), even if 34% of the total tax relief benefitted very large firms (i.e. with more than 5.000 employees). The other French tax incentive "Jeunes entreprises innovantes", which targets in particular young innovative enterprises, has been assessed as a good practice as it has positive impact on R&D activities and the general performance of firms (CPB 2014). Foregone tax revenues related to R&D tax incentives increased by more than a factor of 10 from EUR 584 million in 2000 to EUR 6 341 million in 2015 (about 0.3% of GDP) reflecting a reform of the R&D tax credit (CIR) from an incremental to a volume-based design. At the same time, competitive funding for research and innovation has declined from EUR 2.9 billion in 2000 to EUR 1.6 billion in 2015 (CNEPI 2016). While tax incentives for business R&D might be less burdensome for smaller companies, direct support measures appear better suited to encourage high-risk projects, meet specific policy goals, tackle societal challenges and target R&D activities with the highest discrepancy between social and private returns, i.e. the highest spillovers. Furthermore, R&D tax incentives might encourage overreporting of business R&D (European Commission 2017d). In addition, the French direct and indirect support schemes appear to have a lower effectiveness in encouraging cooperation between academia and business

([94]) Loi PACTE ("Plan d'action pour la croissance et la transformation des entreprises), June 2018

Graph 5.59: **Public support to business R&D as % of GDP, 2007 and 2016**



(1) Estimated direct public support for business R&D includes direct government funding, funding by higher education and public sector funding from abroad.
(2) US, SE: 2013; FR, FI, IS: 2014; BE, DK, DE, IE, EL, LU, AT, SI, FI, UK, CH: 2015.
(3) LT, CH, TR: 2008; CN: 2009; DE, EL, NL, IS: 2011.
(4) EU26 was estimated by DG Research and Innovation and does not include the UK and MT. Data on tax incentives for R&D are not available for MT. The following countries have no tax incentives for R&D: BG, DE, EE, HR, CY, LU, CH.
(5) Elements of estimation were involved in the compilation of the data.
Source: European Commission, 2018.

(European Commission, 2018g). Germany, unlike the majority of EU countries, does not have R&D tax incentives in place so far and relies solely on direct support for business R&D, such as competitive project funding via grants or loans. Even if considering direct support to business R&D only (thus disregarding tax incentives), its level as a share of GDP is much lower and has slightly decreased as a share of GDP from 2006 to 2015 (Graph 5.59). However, in Germany, where programmes such as *Zentrales Innovationsprogramm Mittelstand (ZIM)* and *KMU Innovative* provide direct project funding to SMEs, the political discussion has returned to considering tax incentives for business R&D, with a draft law announced in May 2019. The precise modalities of such schemes play a crucial role for their effectiveness, with for instance the situation of young firms deserving particular attention.

Both countries have scope to improve their performance on disruptive innovation([95]), which also requires a well-functioning European Single Market to unfold its market-creating potential in the EU. Germany's policies have been very effective in promoting incremental innovation, through the strong links between public research organisations (e.g Fraunhofer Society) and businesses, in the manufacturing sector in particular. However, the financial incentives and the framework conditions for risky and disruptive innovations are considered weak (Expert Commission on Research and Innovation, 2018). While in France, measures have been taken to support disruptive innovation including a EUR 10 billion fund (Fonds pour l'innovation de rupture) which should support priority projects in artificial intelligence, Germany decided to set up an agency for disruptive innovation in 2018 only ('Agentur zur Förderung von Sprunginnovationen'), which was widely recommended by the Expert Commission on Research and Innovation, as well as by other stakeholders (Expert Commission on Research and Innovation, 2018). In the field of artificial intelligence, both countries have developed separate national strategies but there are also ideas for synergy projects such as the Joint European Disruptive Initiative (JEDI). Even if both countries improve their performance on disruptive

([95]) Disruptive innovation is an innovation that creates a new market and value network and eventually disrupts an existing market, displacing established market leading firms, products and alliances.

innovation, a well-functioning European Single Market will be needed for these disruptive innovations to unfold their market-creating potential in Europe rather than elsewhere (such as the US). Despite progress, EU's market continues to be fragmented, notably in areas such as digital technologies, the provision of capital or services, which hinders the ability of companies to grow and scale up (European Commission 2018d).

Finally, both countries have scope to improve the effectiveness and efficiency of their policies through a greater use of evaluation and better evaluation methodologies. In France, a Commission on Assessment of Innovation Policies (CNEPI) tasked with reviewing the French innovation system was established in 2014. However, their comprehensive review of the French innovation support system (CNEPI, 2016) has not led yet to any major changes. Several public support schemes have been evaluated (e.g. competitiveness poles), but it is not clear how these evaluation results will be translated into policy change. A recent large-scale evaluation of the R&D tax credit (Crédit d'Impôt Recherche) in France published in March 2019 shows mixed results. While the evaluation results seem to suggest that the program has been successful in stimulating business R&D expenditure (additionality effect([96]) of around 1), the impact on innovation output and on employment was limited so far. Further research would be needed to assess the overall macro-economic impact (CNEPI 2019). An independent agency for the evaluation of the research system and higher education (Agence d'évaluation de la recherche et de l'enseignement supérieur) was established in 2006 and in 2014 replaced by the High Council for the Evaluation of Research and Higher Education (Hcéres), which evaluates the research entities benefiting from public labelling and funding covering the entire French territory. However, research organisations are not obliged to take action following its evaluations. In Germany, evaluation programmes are carried out on a regular basis, but the evaluation methodology of innovation programmes has been criticised by the Federal Audit Court because of the lack of counterfactual analysis. This suggests a need to strengthen the evaluation of research and innovation policies and of public research performers in both countries.

([96]) Additionality is defined as the firm's R&D expenditure that can be attributed to the policy intervention relative to the size of the tax incentive itself (CPB 2014). If a firm spends every euro it saves on taxes on R&D, then input additionality is equal to one; if the firm spends ten percent more than it receives from the tax incentive, input additionality is 1.1.

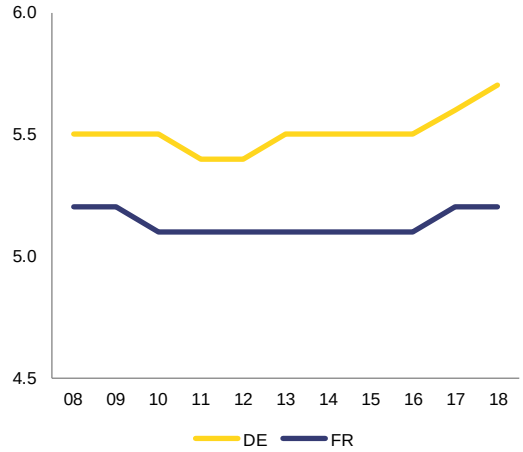
5.2.3. Business environment and corporate dynamics

The aim of this section is to compare the business environment and corporate dynamics in Germany and France. The analysis is done based on indicators trying to capture the broader framework conditions for entrepreneurship and innovation in the two countries and on indicators describing corporate dynamics. The business environment and framework conditions allowing a swift (re)allocation of resources towards more productive activities and enabling new players to enter the market and challenge incumbents, efficient firms to grow and inefficient ones to exit, are of crucial importance for entrepreneurship, innovation([97]), competitiveness and economic growth. A number of indicators try to capture the quality of framework conditions and the competition-friendliness of the business environment and to compare them across countries such as the Ease of Doing Business (EDB) Index by the World Bank, Product Market Regulation (PMR) by the OECD, and the Global Competitiveness Index (GCI) by the World Economic Forum.

([97]) From a theoretical point of view, the link between competition and innovation is not clear-cut. On the one hand, higher competition increases the probability of innovations taking place, providing incentives to firms to invest in R&D and to innovate in order to 'escape competition' and maintain their rents. As a result, disruptive ideas and technologies can change and/or create new markets. On the other hand, too much competition can in some cases discourage innovation by reducing the expected rents from innovation (rent dissipation effect), which justifies policies on intellectual property protection. Empirical work suggests the existence of an inverted U-relationship between competition and innovation (Aghion & Griffith 2008).

The business environment as measured by the GCI, PMR and EDB

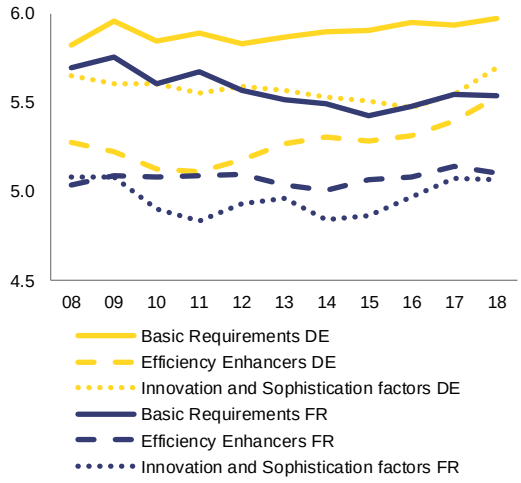
Graph 5.60: **Global Competitiveness Index**



Source: World Economic Forum.

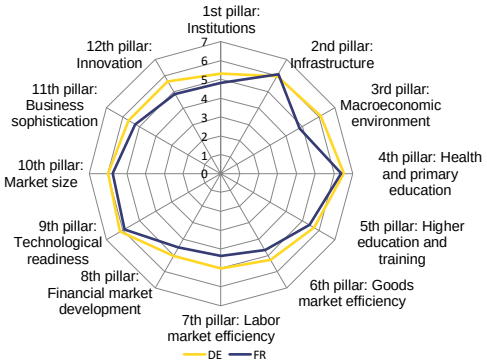
Germany's economy shows a higher level of competitiveness according to WEOs Global Competitiveness Index: Germany ranks 5th in the world and France 22nd, with the gap increasing over time. While Germany's performance has improved over the last decade, France has remained at the same level since 2008 (Graph 5.60). As a consequence, France left the group of the ten and then of the twenty most competitive economies. Germany scores better on the three subindexes (1) Basic Requirements; (2) Efficiency Enhancers; (3) Innovation and Sophistication factors and the gaps seem to be increasing over the years (Graph 5.61) and on 11 out of the 12 pillars making up the index, and in particular on Macroeconomic environment, Innovation, Labour market efficiency (Graphs 5.61 and 5.62).

Graph 5.61: **Global Competitiveness Index, subindexes**



Source: World Economic Forum.

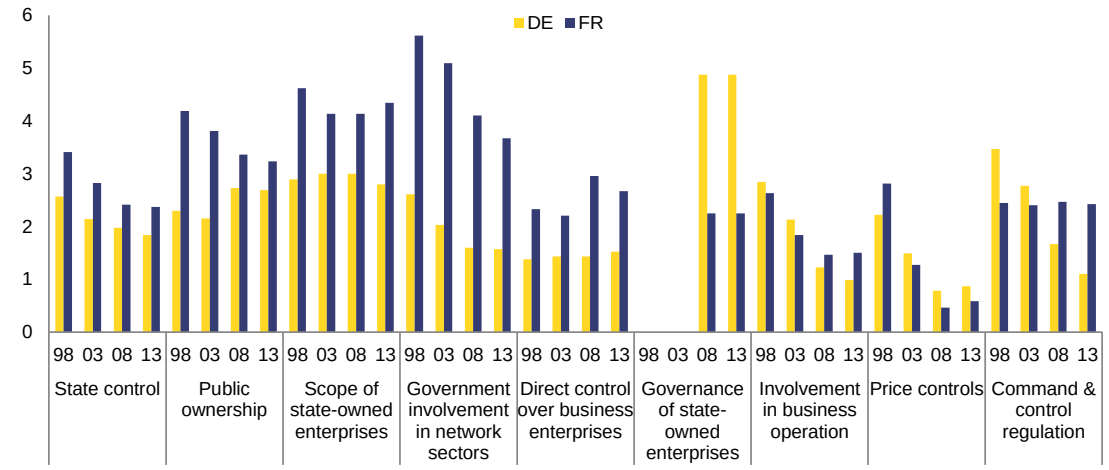
Graph 5.62: **Global Competitiveness Index**



Source: World Economic Forum.

The relative strengths of France are in the second pillar, Infrastructure, where France scores 7th and Germany scores 10th. The quality of electricity supply, the quality of roads and railroad infrastructure appears to be particularly poor in Germany compared to France, highlighting the investment backlog in Germany's, in particular in network industries. In the first pillar of the GCI called Institutions, Germany (21st) scores better than France (31st) in general, with significant differences on the Efficiency of government spending (France 67th, Germany 6th), Burden of government regulation (France 115th, Germany 7th), Efficiency of legal framework in challenging regulations (France 28th, Germany 9th), Efficiency of legal framework in settling disputes (France 30th, Germany 15th). However, in some areas France outperforms Germany, for example on

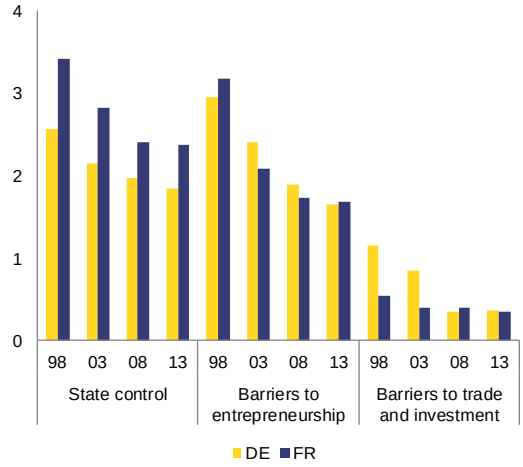
Graph 5.64: **Product market regulation: state control**



Source: OECD.

Efficacy of corporate boards (France 13th, Germany 24th), Strength of auditing and reporting standards (France 19th, Germany 24th).

Graph 5.63: **Product Market Regulation, main components**



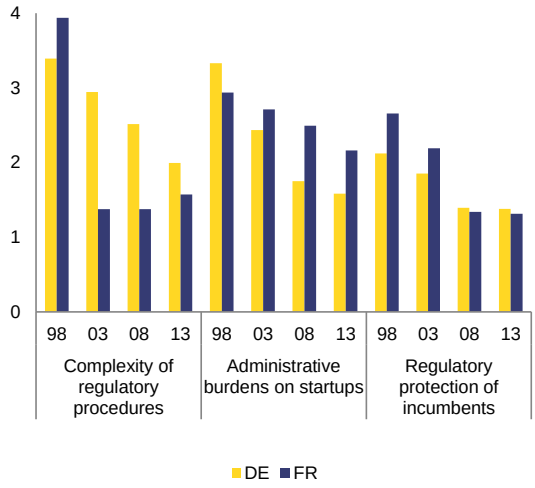
Source: OECD.

According to the 2013 OECD's Product Market Regulation (PMR) index Germany performs slightly better than France, but both countries have scope for improvement being around the OECD average. Both countries improved their performances since the 1990s in all three main PMR components (Graph 5.63). Regarding Barriers to Entrepreneurship, both countries improved their performance, in particular when it comes to the complexity of regulatory procedures, which according to the most recent data is still higher in Germany than in France (Graph 5.65). Both countries improved their performance on the administrative burden on start-ups, in particular in Germany. However, Germany performs worse than France when it comes to the regulatory protection of incumbents (antitrust exemptions in particular) and on the complexity of regulatory procedures (licenses and permits system, communication and simplification of rules and procedures). Finally, the regulatory barriers in the service sector show a more favourable regulatory environment in Germany (Graph 5.67). On the indicators of State control, Germany performs better than France in most but not all cases, with 'governance of state-owned enterprises' as a notable exception (Graph 5.64). When it comes to Barriers to trade and investment, while Germany improved, barriers remain slightly lower in France (Graph 5.66).

Most recent data from the 2018 Product Market Regulation index confirm that Germany continues to have a more competitive and competition friendly regulatory environment overall. According to the 2018 Product Market Regulation, Germany performs better than France on both categories "Distortions induced by State Involvement" and "Barriers to Domestic and Foreign Entry". With regard to Distortions induced by State Involvement, Germany performs better in terms of "Public Ownership" and "Involvement in Business

Operations", while France has an advantage in terms of Simplification and Evaluation of Regulations. When it comes to Barriers to Domestic and Foreign Entry, such as Administrative Burden on Start-ups; Barriers in Service & Network sectors, Barriers to Trade and Investment, Germany appears to perform better than France.

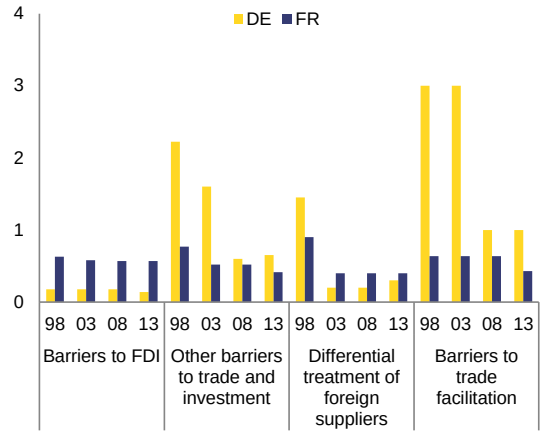
Graph 5.65: **PMR: barriers to entrepreneurship**



Source: OECD.

Germany outperforms France on the World Bank's EDB 2018, but the aggregate index masks some significant weaknesses in Germany. Germany ranks 24th, while France ranks 32nd on the 2019 EDB. Germany performs better in the areas of Resolving Insolvency, Getting electricity, Paying Taxes, Getting Credit and Registering Property. However, when it comes to Starting a Business, Protecting minority investors, Enforcing contracts, Dealing with construction permits, or Trading across borders France outperforms Germany (Graph 5.68).

Graph 5.66: **PMR: barriers to trade and investment**



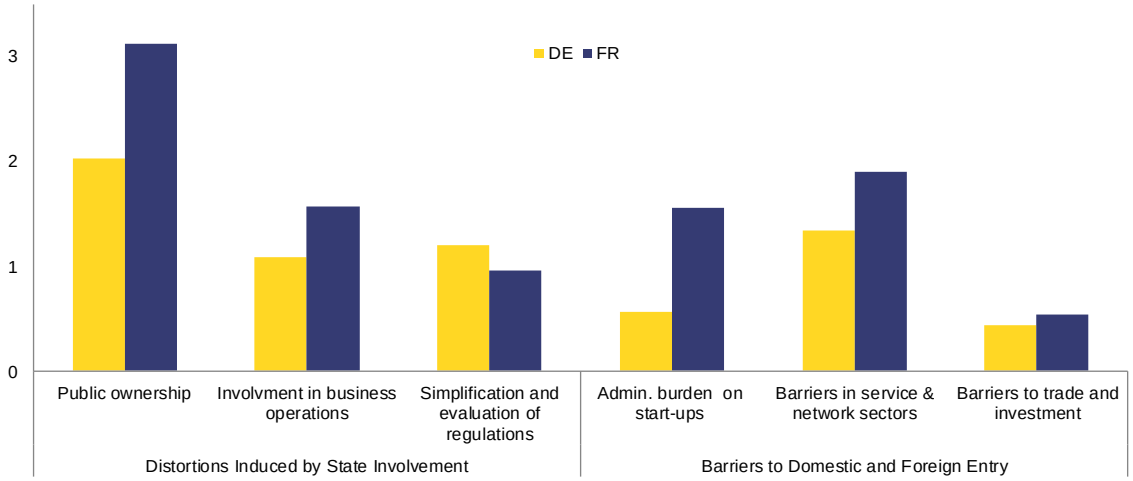
Source: OECD.

Particularly striking is the relatively poor performance of Germany with regard to the indicator on the 'ease of starting a business', where Germany ranks 113th, while France ranks 25th. The number of procedures needed and the paid-in minimum capital are the issues where German entrepreneurs experience the main difficulties when they start their business, compared to the other OECD high-income economies. Compared to France, Germany's performance appears weaker, not only when it comes to the number of procedures (5 in France, 9 in Germany) but also when it comes to the number of days (3.5 in France, 10.5 in Germany) and the paid-in minimum capital([98]) as percentage of income per capita (0% in France, 32.4% in Germany). The regulation on starting a business in Germany might thus constitute an obstacle for firm birth and entrepreneurship in general. Data based on the Digital Economy and Society Index (DESI) shows another weakness of the broader business environment in Germany: while France ranks 15th as regards digital public services([99]), Germany ranks only 24th according to the 2019 DESI. Digitalisation of public services can lead to

([98]) The paid-in minimum capital is the amount that an entrepreneur needs to deposit in a commercial bank or with a notary when, or shortly after, incorporating a business, even if the deposited amount can be withdrawn soon after a company is created.

([99]) The digital public services dimension measures the digitalisation of public services, focussing on eGovernment and eHealth.

Graph 5.67: **2018 Product Market Regulation index**



Source: OECD.

efficiency gains, not only for the public administration, but also for businesses and citizens alike.

Access to finance and risk capital

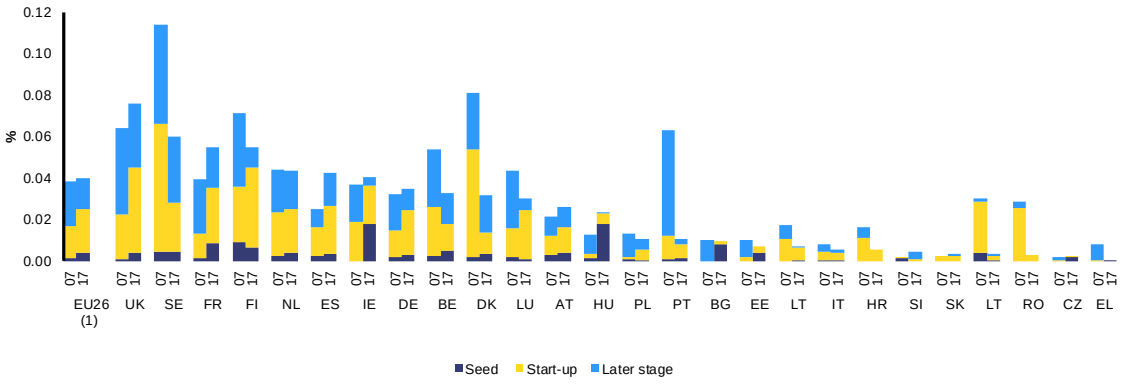
While access to finance in general appears to be similar in both countries, the amount of venture capital received by companies, as a share of GDP, is lower in Germany than in France and the gap seems to have increased since 2007. Access to finance and venture capital can be considered part of the business environment in a wider sense given its implications for entrepreneurship and innovation. Access to finance in general appears to be only very slightly better in Germany than in France, according to the ECB's Survey on the Access to Finance of Enterprises in the euro area (ECB 2019) This seems to be linked to the far greater dynamism of external financing demand in France compared to Germany. The German SMEs seem to have less external financing needs than the French ones because their internal funds are more often sufficient for their level of investment, and this is why access to finance is less cited as a problem. And when French SMEs apply for bank loans, they are now slightly more successful at getting them than the German SMEs (ECB 2019). Also the World Banks' Ease of Doing Business index suggests that the legal rights of borrowers and lenders are stronger and the depth of credit information higher in Germany (Graph 5.68). However, the amount of venture capital received by companies, as a share of GDP, is lower in Germany and the gap seems to have increased since 2007, even though the data need to be interpreted with great care due to their high volatility (Graph 5.69).

Graph 5.68: **Ease of Doing Business 2018, global ranking and indicators rankings**

Source: Invest Europe, Eurostat.

In both countries, a number of measures have recently been taken to attract private

Graph 5.69: **Venture capital (market statistics) by stage as % of GDP, 2007 and 2017**



EU26 does not include CY, MT.
Source: Invest Europe, Eurostat.

investments in risk capital, but scaling-up([100]) remains a challenge for both countries and the EU as a whole. In Germany, the INVEST grant programme, which supports private investors wishing to acquire a stake in innovative new companies with a tax free grant worth 20% of the sum invested, was extended and the maximum grant was doubled. An exit grant for individuals selling their shares was introduced, amounting to 25% on the capital gains, which roughly covers the tax due on the sale. Other recent measures include an 'ERP/EIF growth facility' co-investment fund of EUR 500 million launched to support later-stage financing of innovative companies, a new SME stock market segment, 'Scale', revisions to the rules for loss carry forwards and simplified taxation of investment funds (European Commission 2018f). However, the availability of later rounds of financing at the capital-intensive scale-up phase (later stage venture capital and growth financing) remains subdued and is considered a constraint on the growth of domestic start-ups (Expert Commission on Research and Innovation, 2017). The main reason for this is the scarcity of sufficiently large amounts of finance and of large venture capital funds. In France, several public and private-led initiatives have been put in place to attract private investment in risk capital, such as 'French Tech' and the creation of the largest start-up hub in Europe, 'Station F'. However, there is still not enough venture capital to allow fast-growing businesses to grow and stay in France. Public financing (mainly through BPI France) plays a large role in the French market, and there are not many funds that have sufficient capacity to invest in larger projects. Other instruments include tax incentives for venture capital such as the "Madelin tax reduction" granted on investments in SMEs (European Commission 2018g). Similarly to the German INVEST Programme, the "Madelin tax reduction" granted on investments in young SMEs is also considered a good practice. In 2018, the "Madelin" scheme allowed an income tax reduction equal to 25% of the investment value. This scheme is considered to be successful thanks to its targeting of a specific category of business size and age and its non-coverage of some economic sectors such as finance and real estate (European Commission 2017e). The recently adopted law PACTE is expected to facilitate access to diversified funding (public listing, investment capital, crowdfunding and ICO) and orientate French citizens' savings towards companies' equity capital to fund future growth and innovation. Furthermore, it is expected to provide companies with the resources they need in order to innovate and to enable researchers to set up companies with the minimum of difficulty and simplify patent filing procedures for SMEs.

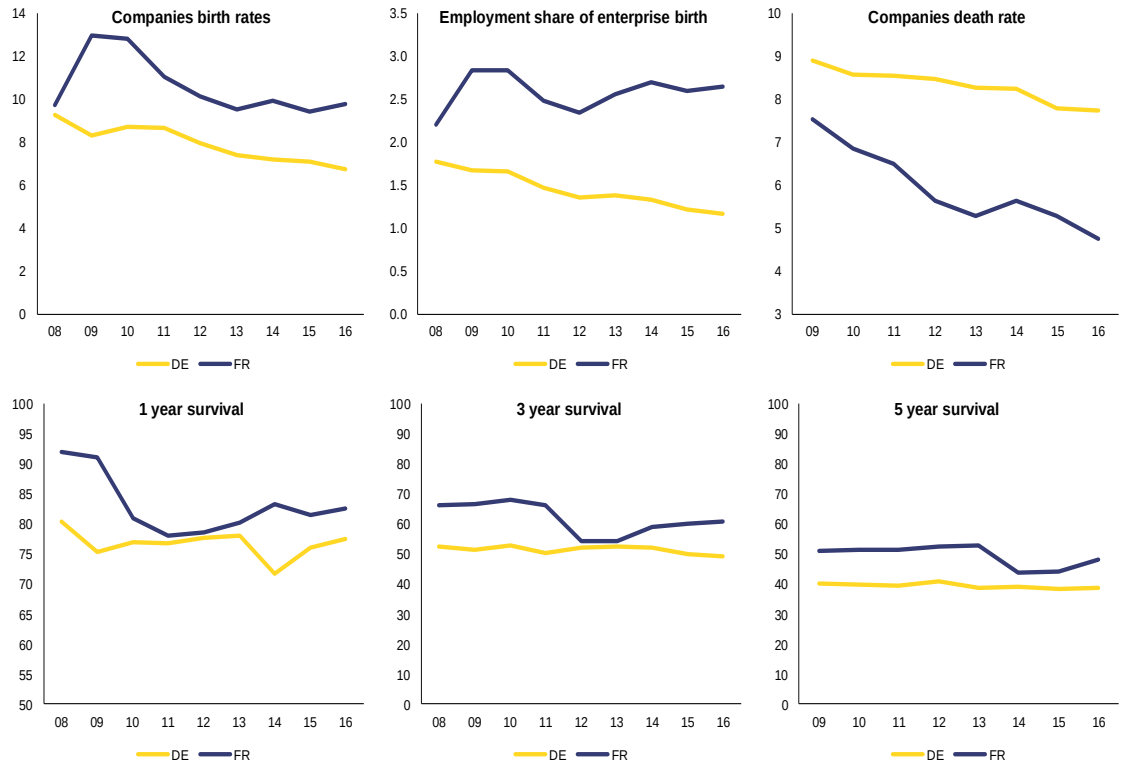
([100]) A 'scaleup' is defined by the OECD as an enterprise with average annual growth in employees or turnover greater than 20% per annum over a three year period, and with more than 10 employees at the beginning of the period. A scaleup can be identified as being in the "growth phase" life-cycle.

Corporate dynamics

France has a more dynamic corporate sector than Germany, judging from higher enterprise birth and survival rates. The birth of new enterprises is one of the key determinants of job creation and economic growth. Enterprise births are thought to increase the competitiveness of firms, by obliging them to become more efficient in view of newly emerging competition. As such, they stimulate innovation and facilitate the adoption of new technologies, while helping to increase overall productivity within an economy. Enterprise births are most likely to occur where profits are consistently high, whereas among loss-making activities, enterprise deaths will be relatively more frequent. Enterprise birth and survival rates are higher in France than in Germany, while declining in both countries (Graph 5.70). The start-ups rate is higher in France than in Germany (European Commission 2018e).

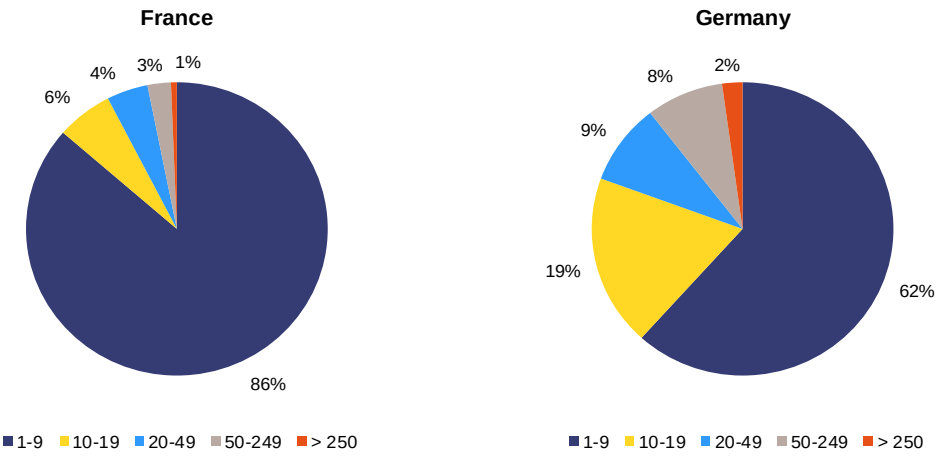
Also the churn rate (the sum of company birth and death rates) is higher in France, even though the enterprise death rate in Germany is higher than in France (European Commission 2018e). Churn rates as a measure of 'economic dynamism' show how often new firms are created and existing enterprises closed, which can be associated with the so-called Schumpeterian process of creative destruction. The higher death rate in Germany compared to France might be related to the insolvency regime. According to the World Bank's Ease of Doing Business indicators, the time to resolve insolvency in France is higher than in Germany (Graph 5.68). Furthermore, those firms that survive tend to grow faster in Germany, as suggested by the higher share of high-growth firms. This might be related to the higher allocative efficiency in Germany compared to France (European Commission 2018c). Finally, also the employment in fast-growing enterprises in innovative sectors is slightly higher in Germany than in France.

Graph 5.70: **Companies demographics**



Source: Eurostat.

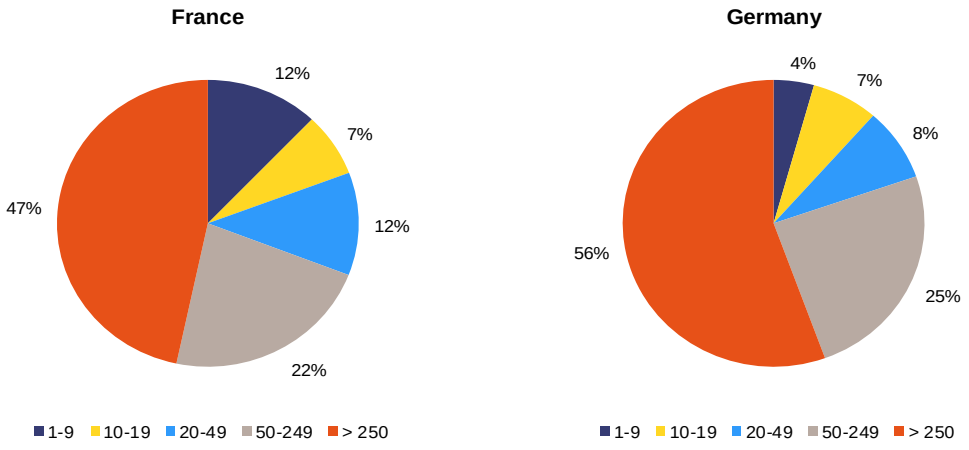
Graph 5.71: **Share of enterprises by firm size**



Source: OECD.

France has a larger share of microenterprises with a greater share of employees, which might suggest that French enterprises face problems to grow and scale-up. France has a significantly higher share of microenterprises (with 1 to 9 employees): 86% of all enterprises compared to 62% in Germany (Graph 5.71), which also employ a larger share of employees (12% vs 4% respectively) (Graph 5.72). This difference might be related to the regulatory business environment in the two countries. According to the World Bank's Ease of Doing Business, it is easier to start a business in France than in Germany. However, German SMEs seem to have less external financing needs than the French ones and access to finance is less cited as a problem (ECB 2019). This factor, in combination with lower allocative efficiency and strong regulatory threshold effects (European Commission 2018h) might explain why French firms face larger problems to grow and scale-up compared to Germany. Small enterprises (with 10 to 49 employees) in Germany represent 28% of the total, while in France this share is only 10%. Looking at the employment figures, however, the share of employment in French small enterprises is higher (19% vs 15% in Germany). Medium enterprises with 50 to 249 employees represent 8% in Germany and 3% in France, but as a share of total employment, the difference is smaller. With regard to large enterprises, the share

Graph 5.72: **Share of employees by firm size**



Source: OECD.

in Germany is higher 2% (1% in France) and with a larger share in total employment (OECD 2018c, 2018d).

5.3. SUMMARY OF MAIN FINDINGS ON ECONOMIC STRUCTURES

Structural features of public finances could contribute to explaining some part of France's worse macroeconomic performance overall. Firstly, the persistently higher deficits in France fed public indebtedness and led to small sovereign interest-rate spreads with respect to Germany. Moreover, the high structural deficits in France and the upward trend in public debt brings about higher sustainability risks in the medium term, which could also explain part of the spreads in France.

Public expenditure proved more difficult to control in France. Contrary to Germany, public expenditure in France has increased broadly in line with or above potential GDP for most years since the late 1990s. Significant increases in the expenditure-to-GDP ratio in France tend to persist, whereas in Germany similar episodes tend to be transitory as they are offset in the following years by expenditure growth below potential. A relatively recent setting-up of expenditure ceilings for the different subsectors of the general government in France has helped contain expenditure dynamics, although no clear downward trend in expenditure can be observed yet. In addition, the spending reviews in place have yielded only very limited results in terms of expenditure savings so far. By contrast, control of public expenditure and the adoption of debt-brake mechanisms in Germany proved more successful and put public debt on a clear downward trend. Consequently, the public expenditure to GDP ratio in France is currently about 12 percentage points higher than in Germany, while public debt is almost 40 percentage points higher. However, the containment of public expenditure in Germany also came at a cost of limiting public investment especially in the most indebted regions.

Looking at the efficiency of public expenditures, however, a slightly different picture emerges. In both countries, the functional classification of public expenditure unveils a broadly similar composition, with no clear systematic pattern in terms of their respective efficiency. Still, lower per-capita expenditure together with overall better outcomes, suggest a higher efficiency of the public healthcare system in France. Furthermore, France spends more on benefits (such as pensions and social support) to mitigate income inequality and poverty. On the other hand, outcomes of spending on education (in terms of PISA results) and on R&D appear better in Germany.

The higher public expenditure in France implies a significantly higher tax burden, which, ceteris paribus, weighs on growth. The divergent trends in public expenditure since the early 2000's triggered a need for higher taxes in France, and contributed to higher inflationary pressures and competitiveness losses that all weighed on growth. As regards the composition, the tax systems of both Germany and France rely heavily on production factors, which may constitute an obstacle to business development. In particular, the tax wedge and taxes on labour are high, although more clearly in the case of France, which could be a disincentive for job creation. However, the tax wedge for low-wage earners is actually higher in Germany, which might entail a more negative impact on potential and actual consumption than in France for these workers. The overall income tax burden on corporations is higher in France. Moreover, while both corporate tax systems entail significant debt biases that may hamper private investment, this debt bias is almost twice as high in France as in Germany.

The higher role of state-owned enterprises (SOEs) in France compared to Germany may come with some efficiency losses. France has continued to reform its approach to state ownership in several steps. SOEs were initially subject to public law and only recently made subject to private law. A new law (*Loi Pacte*) has been adopted to substitute minimum shareholding requirements for the state in SOEs by golden shares, thereby keeping some degree of influence and obtaining additional revenues while limiting the need for a further capitalisation by the state. Nevertheless, French holdings in network industries such as electricity, gas, and air transport remain significantly higher than in Germany. In addition, the French state is de facto expected to take responsibility for firms in need of restructuring, something that is not unheard of but less prevalent in Germany. For this reason, and

while a disengagement of the French state in SOEs is still ongoing, in the foreseeable future it might not go as far as done in Germany.

Turning to the private sector, labour productivity differences are reflecting the countries respective strengths, but the productivity differences are diminishing. Productivity growth in the German car-manufacturing sector has been particularly strong compared to France, but its performance is noteworthy also in an international comparison. This can be explained by a range of factors such as (incremental) innovations, product variety, outsourcing and geographical location. However, the future transformation of car manufacturing can come to challenge the current strong position of the German automotive industry, as illustrated by the disruptions linked to the revision of environmental certifications for cars in 2018 and the shifts in demand away from fossil-fuel engines. Productivity growth in the telecommunications sector has been higher in France, suggesting a potential for improved productivity growth in Germany through regulatory measures. In professional services, productivity growth has been weak in both countries, at times even negative in Germany. This cannot be explained by measurement problems alone, but rather by entry barriers and other restrictive regulations governing the actual exercise of the profession, such as binding fixed prices.

Overall, the business environment appears more favourable in Germany, but the detailed picture is more mixed. Germany outperforms France on a number of indicators such as the Global Competitiveness Index (GCI) by the World Economic Forum, the Ease of Doing Business (EDB) database by the World Bank, and the Product Market Regulation (PMR) index by the OECD. In spite of a better ranking overall for Germany, the aggregate indexes mask some weaknesses in Germany, such as for example its relatively poor performance on the ease of starting a business, a subcomponent of the EDB, which might partly explain its lower firm birth rates and weaker corporate dynamics in general.

The German corporate sector positioned itself different from that of France in the context of both European integration and globalisation. The German manufacturing sector outsourced many low-productive activities to Eastern Europe, Asia and elsewhere, which was less the case for the French manufacturing sector for various reasons (geographic and cultural distance, industrial structure, etc.). Accordingly, a non-negligible part of German private investment took place abroad, which could help explain the lower investment-to-GDP ratios in Germany and, combined with a more compressed wage dispersion in France, the French industries' relatively weaker cost-competitiveness position.

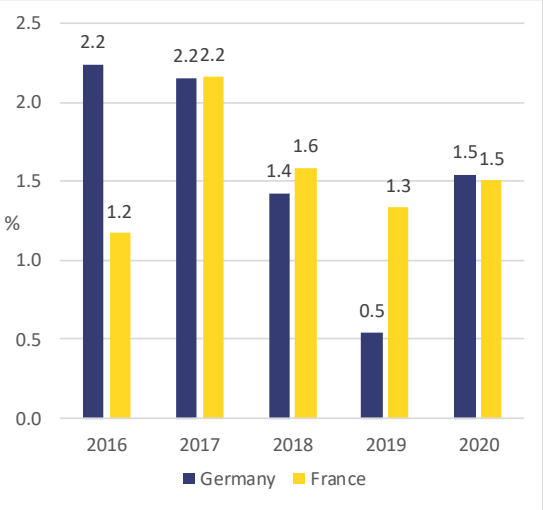
Indicators of research, development and innovation show a stronger performance in Germany. Total R&D intensity is higher in Germany and both private and public R&D intensities grew more strongly than in France. Germany outperforms France in terms of scientific excellence and total factor productivity (TFP) growth. The structure of the economy largely explains the higher business R&D intensity in Germany. The countries follow different strategies in terms of public support to R&D. France provides a very high level of public support to business R&D, notably through a strong tax incentives system, while Germany does not provide any such incentives and its level of direct public support to business R&D, such as grants and loans, is also lower than in France. Public support to R&D in Germany has been more focused on strengthening the public science base (e.g. universities and public research institutes). One of Germany's major strengths lies in the strong cooperation between public research and business, which is a key factor behind Germany being a worldwide leader in incremental innovation. However, the cooperation of SMEs with universities and research organisations remains a challenge, even in Germany. With regard to human resources, France performs better than Germany on some indicators related to the numbers of graduates in science, technology, engineering and mathematics; in the field of computing; and on the share of population who have successfully completed tertiary education. In both countries, a number of measures have recently been taken to attract private investment in risk capital, but scaling-up remains a challenge. Both countries also struggle to become leaders in disruptive innovation.

6. ARE THE DIVERGENCES LIKELY TO CONTINUE?

As shown in the previous sections, the French and German economies have displayed clear differences in how GDP per capita has grown over the past decade, reflecting their respective resilience to and adaptability after the crisis. However, in order to be able to provide a tentative answer to the question whether the recent divergences in growth performances are also set to continue, it is necessary to build on the findings in the previous sections that identified the main drivers for the differences between the French and German economic developments. More specifically, the respective growth models of the two economies as apparent in the differences in the openness of the economy; in the functioning of the labour market; as well as the differences stemming from their respective economic structures, in both the public and private sectors, that all need to be taken into account. These findings are also reflected in the Commission's projections on how labour, capital and productivity are expected to contribute to potential growth in the coming years. However, as such projections are typically based on no-policy-change assumptions, it is critical to recall that future developments can be changed by economic policies.

Implications of the different growth models

Graph 6.1: **Real GDP growth in Germany and France, 2016-2020**

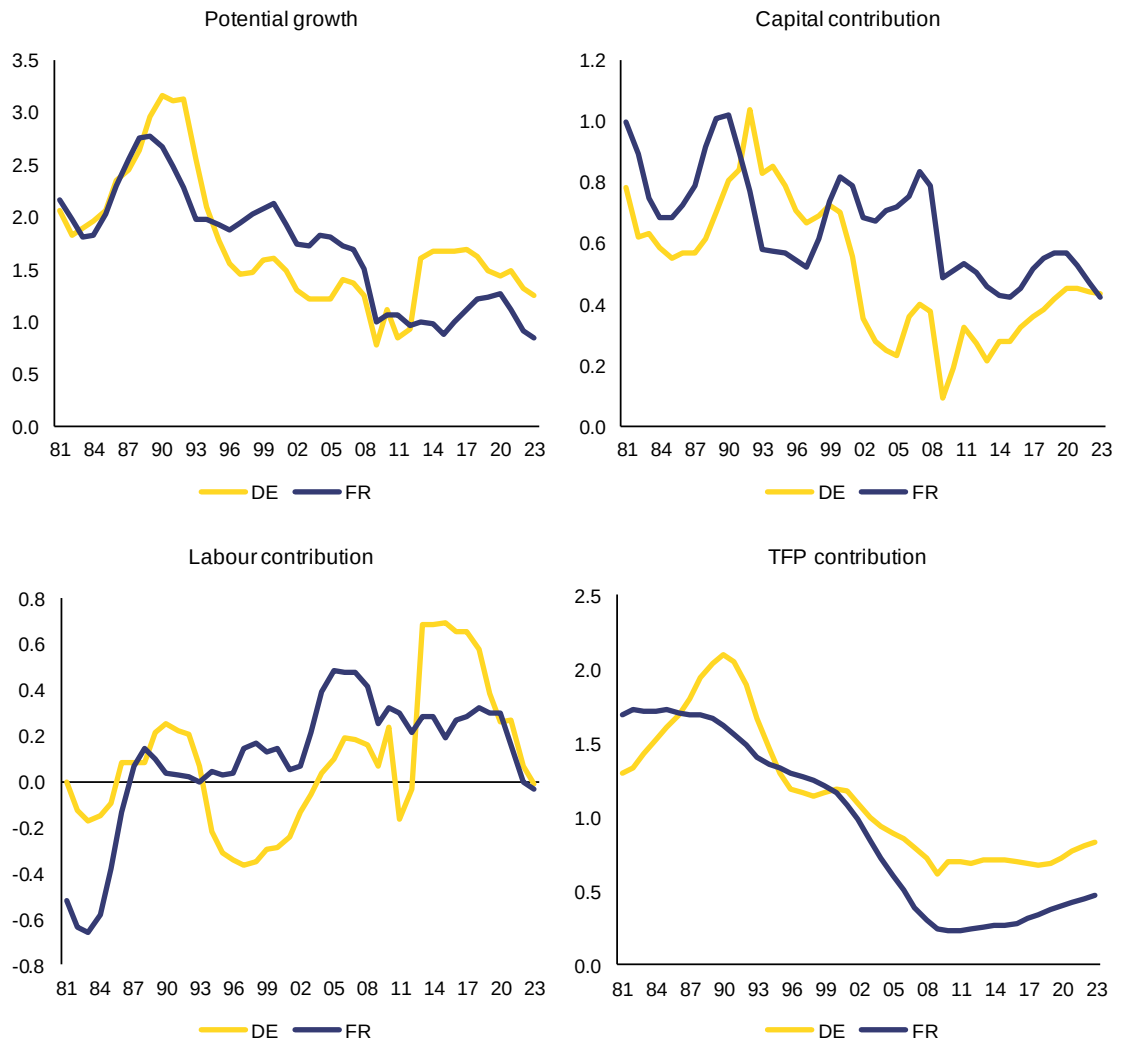


Figures for 2018 are provisional, for 2019 and 2020 forecast
Source: Commission's spring 2019 forecast

Looking ahead, the differing degree of openness in their respective growth model implies that economic growth in Germany is more dependent on the global economy, while France tends to follow a much more stable path. Germany is usually outperforming France in times of strong global growth, while France is usually performing better in times of a weaker global economy. Therefore, Germany's current growth advantage might not be lasting. Besides being more exposed to a cyclical slowdown of the global economy, as already visible in the Commission's recent macroeconomic forecast pointing to a sharp slowdown of economic activity in Germany in 2019 (see Graph 6.1), it would also be more affected if additional global risks were to materialise, such as for example a trade war or a disorderly withdrawal of the UK from the EU (even if France together with all other EU economies would also be affected).

Furthermore, the German export sector's product and geographical mix could become more challenging ahead. On the back of a strong recovery in emerging markets, the global economy picked up relatively fast after the crisis. However, the composition of global demand is likely to change going forward. Not least in China, where a more consumption-based growth model is sought after on the back of an emerging middle-income class. This could contribute to shift global demand towards a larger share of high-quality consumer goods and services, which could provide a better opportunity for the French economy. Moreover, globalisation and technological change is set to exert pressures for rapid structural changes in some of the hitherto well-performing industries, such as the car or capital-goods industries, which are an important part of the German economy. Indeed, given that the automotive sector alone is accounting for 19.2% of German exports in 2017, a future shift towards low- and zero-emission mobility may affect not only German car manufacturers and suppliers profoundly, but also the economy at large. With 66% of German-branded vehicles produced abroad, such an impact could also have non-negligible spill-over effects to other parts of the EU. As electric vehicles are significantly less complex than those with a combustion engine, the competitive advantage of German cars may be at risk.

Graph 6.2: **Potential growth and contributions in Germany and France, 1981-2023**



Source: European Commission.

Potential growth projections

Germany and France share a common trend of a sharp decline in potential growth. From rates of around 3% in the early 1990s potential growth has come down to all-time lows of about 1% in 2012. Although recovering since then, it is projected to decline again in the years to come (Graph 6.2). This slowdown in potential growth can also be seen at the global level, albeit to different degrees.

In spite of these common trends, potential growth often evolved differently in the two economies. It was higher in France than in Germany until 1980 and again from 1995 until the crisis years when it converged to lower levels around 1%. Since 2013, however, the positions are reversed and there is a widening gap with Germany's potential growth rising to 1.6% in 2018, while France's potential growth remained around 1%, increasing only moderately to 1.2% in 2018.

Most of the recent difference in potential growth corresponds to the difference in the labour contribution. In most years, the higher contribution from capital in France tends to, more or less, offset the higher contribution from total factor productivity (TFP) in Germany. Thus, higher potential growth in Germany since 2013 roughly equals that of the higher contribution from labour.

The contribution of capital is higher in France since the late 1990s, but is expected to converge with that of Germany by 2023. A higher and newer capital stock should in principle go along with higher total factor productivity. However, France's higher investment-to-GDP ratio does not seem to spill over into higher productivity. This points to potential weaknesses in the quality and return of investment, possibly arising from a stronger role of the public sector in investment decisions (e.g. on public investment or in SOEs) and a more difficult business environment, but it may also reflect a closer cooperation in Germany between public-research organisations, like Fraunhofer, with the business sector.

On the other hand, persistently lower public and private investment may weigh on Germany's medium-term growth prospects. While foreign investment may also be needed to make competitiveness gains in a globalising economy, it implies less private investment domestically. In Germany, the efforts in the last decades towards reducing the size of the public sector and of public expenditure apparently also affected public investment. Recent evidence points to a development of the public capital stock - notably in network infrastructure and the education sector - that is placing Germany behind some of its global competitors. ([101])

Commission services' projections expect that the contribution from labour to potential growth is going to drop sharply in Germany in the medium term. As it is expected to turn marginally negative by 2023, this implies that the main driver in Germany for the recent episode of income divergence will soon be exhausted. Indeed, shortages of workers with certain qualifications are already becoming visible in Germany and could increasingly constrain the economy. The scope for further significant increases in the labour force through higher participation or additional immigration seems to have reached its limits. While there is also an expected decrease of the labour contribution in France, the drop is smaller than in Germany. As the difference in the contribution from capital is also expected to disappear, the projected difference in potential growth of about 0.4 pps. would then correspond to the difference in total factor productivity growth.

([101]) See European Commission (2019), pp. 47ff.

Different demographic structures contribute to the reversal in medium to long-term labour-market trends. The demographic structure is currently in favour of Germany as its share of working-age population (aged 15-64) is significantly higher than in France, including a higher involvement of elderly on the German labour market. Still, this asset will become a liability in the future as baby boomers' retirement will not be counterbalanced by a corresponding entry of young people in the labour force. The share of working-age population will decrease considerably in Germany, while the deterioration will be less severe in France where the birth rate is also higher. According to the European Commission's 2018 Ageing Report, the share of working-age population in Germany will decrease from 65.7% in 2016 to 55.3% in 2070. Over the same time, this share will only fall by half in France, where the working-age population will decrease from 62.6% in 2016 to 57.3% in 2070. The old-age dependency ratio will soon become a drag on Germany's potential growth, and with the migration-driven population growth balancing it at best and probably not for long.

A role for economic policies

The (relative) future of Germany and France will ultimately depend on the capacity of the two countries to reform their economies with a view to their respective weaknesses. This is important not only for the countries themselves, but also for a well-functioning EMU overall. It is also important with a view to lifting the prospects for the rather low potential growth by historical comparison in both countries to ensure a high level of social welfare in the long term.

As the above projections are based on the conventional no-policy-change assumptions, the predicted developments can be changed by economic policies. In Germany, increasing labour shortages and a more adverse demographic development ahead could result in upward pressures on wages that could have a larger impact on competitiveness than on households' incomes and consumption. Germany's traditional export-oriented growth model could thus come at risk and, to achieve a more stable growth path, suggest a structural strengthening of domestic demand. At the same time, this would support a rebalancing of the current-account imbalances within the euro

area. France's growth model, on the other hand, relies more on domestic demand that, together with a larger public sector, enabled a certain smoothening of the economic cycles. Nevertheless, with persistently high unemployment and a significantly higher tax burden, France may be at risk of a negative long-term impact on its human capital and on its growth potential.

Key policy challenges seem to derive in particular from differences in labour-market institutions. The higher degree of labour-market flexibility, including employment-oriented collective bargaining, with a greater capacity to internalise the general interest of the country, and the existence of a low-wage sector, allowed the German economy to better weather the crisis and to provide more employment and market-income opportunities. This brought some adverse social outcomes that the tax-benefit system needed to correct in a way that reduces poverty and undue inequalities in disposable income, whilst avoiding a negative impact on the incentives to take up work. The higher unemployment resulting from a lower labour-market flexibility implies that such redistribution is a higher burden for public finance in France. Indeed, ongoing reforms in Germany to re-calibrate its tax-benefit system and in France to reform its labour-market institutions are already addressing several of these challenges, even though results can only be expected to become more visible in the coming years.

Moreover, the size of the public sector, while ultimately being a matter of social preferences for the role of the state in the economy, may have an impact on the dynamics of an economy. The higher public expenditure-to-GDP ratio in France comes along with a higher tax burden and a higher public deficit and debt. The stronger role for state-owned enterprises in the French economy – in view of their soft budget constraints – may come with a lower efficiency of their services and possible future losses to be covered by the taxpayer. In turn, all this can negatively affect the business environment and the incentives for private investment. In Germany, more public investment in network infrastructure and education could positively affect its growth prospects.

In addition, France and Germany have common structural challenges that affect the conditions for private investment and their growth potential. Challenges in both countries include in particular the respective weaknesses in the business environment, creating the right framework conditions and policies to encourage disruptive innovations, and weak competition in certain activities such as professional services. Both countries benefit from a high level of human capital, with virtually no unemployment for high-skilled workers. However, employment opportunities for lower-skilled workers are higher in Germany than in France and coupled with more on-the-job training opportunities for workers.

All in all, one cannot be sure that the better performance of the German economy between 2006 and 2018 is a trend which is here to stay. The labour market as its main driver is already reaching its limits and persistently lower public and private investment in Germany may weigh on medium-term growth prospects. Overall and based on the outcome of this data-driven discussion paper, it appears as if the different growth models have a larger impact on the volatility of their respective economic performances (and less on longer-term growth dynamics). While corporate structures and the business environment might look somewhat better in Germany at present, there are *a priori* no reasons why the French economy cannot adapt accordingly. It is worth recalling that it is not too long ago that Germany was dubbed 'the sick man of Europe'. Economic, technological and demographic developments imply that there can be no guarantee that the current growth models, which gave an advantage to Germany over recent years, will continue to do so in the medium to long term.

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ABBREVIATIONS

BERD	Business Expenditure on R&D
BMF	Bundesministerium der Finanzen
BPI France	Banque Publique d'Investissement, France
CAPB	Cyclically-Adjusted Primary Balance
CICE	Crédit d'Impôt pour la Competitivité et l'Emploi
CIR	Crédit Impôt Recherche
CNEPI	Commission Nationale d'Évaluation des Politiques d'Innovation
CNRS	Centre National de la Recherche Scientifique
COFOG	Classification of the Functions of Government
DESI	Digital Economy and Society Index
DFR	Deposit Facility Rate
ECB	European Central Bank
EDB	Ease of Doing Business
EDP	Excessive Deficit Procedure
EEC	European Economic Community
EMU	Economic and Monetary Union
EPL	Employment Protection Legislation
EU-SILC	European Union Statistics on Income and Living Conditions
FDI	Foreign Direct Investment
FTE	Full-Time Equivalent
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
Hcéres	Haut Conseil de l'évaluation de la recherche et de l'enseignement supérieur
HT KIS	High-Tech Knowledge-Intensive Services
HT	High-Tech
ICT	Information and Communication Technologies
ILO	International Labour Organization
IMF	International Monetary Fund
ISCED	International Standard Classification of Education
ISDN	Integrated Services Digital Network
JEDI	Joint European Disruptive Initiative
KLEMS	Kapital, Labour, Energy, Material and Services
LFSS	Loi de Financement de la Sécurité Sociale
LPFP	Loi de Programmation des Finances Publiques
MAP	Modernisation de l'Action Publique

MHT	Medium-High Tech
MRO	Main Refinancing Operations
MVNO	Mobile Virtual Network Operator
NACE	Nomenclature statistique des Activités économiques dans la Communauté Européenne
NEET	Not in Education, Employment, or Training
NUTS	Nomenclature des Unités Territoriales Statistiques
OECD	Organisation for Economic Co-operation and Development
OEM	Original Equipment Manufacturer
OMT	Outright Monetary Transactions
ONDAM	Objectif National de Dépenses d'Assurance Maladie
OPCO	OPérateurs de COmpétences
PACTE	Plan d'action pour la croissance et la transformation des entreprises
PISA	OECD's Programme for International Student Assessment
PMR	Product Market Regulation
R&D	Research and Development
R&I	Research and Innovation
RCI	Regional Competitiveness Index
RIS	Regional Innovation Scoreboard
RSP	Responsibility and Solidarity Pact
S1, S2	Sustainability Risk Indicators
SMEs	Small and Medium-sized Enterprises
SOEs	State-Owned Enterprises
STEM	Science, Technology, Engineering and Mathematics
TFP	Total Factor Productivity
TLTROs	Targeted Long-Term Refinancing Operations
VAT	Value Added Tax
WEF	World Economic Forum
ZEW	Zentrum für Europäische Wirtschaftsforschung

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