
LABOUR PRODUCTIVITY – SLOWER GROWTH IN GERMANY AND EUROPE

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ABSTRACT

Labour productivity is a measure of an economy's performance, and its development is a major determinant of material prosperity. In view of this, the slowing trend growth of labour productivity in many countries is a challenge that should not be underestimated. This applies especially to Germany as its working population will decline in the long run. The article shows the development of overall labour productivity in the five largest European economies and analyses the contribution of important economic industries as well as the two components underlying labour productivity. It explains possible causes of the decline in productivity growth and highlights the special role of digitalisation in this context.



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Introduction

In economics, the term productivity refers to the ratio of an output to the quantity of a given input – labour or capital, for example – used in a production process. In a competition-based economic system, the enterprises which tend to be more successful are those which have high productivity levels, and which are also capable of further increasing their productivity. It is instructive to view this at the level of productivity development in the total economy, beyond the consideration of individual enterprises. The national accounts data are suitable for this purpose. The output is the price adjusted gross domestic product or, at the level of individual economic sectors, gross value added. In the calculation of labour productivity, which is the subject of this article, this output is related to the amount of labour used in production.

↳ Excursus

Labour productivity is probably the productivity metric to which most attention is paid. It is an important criterion for assessing the performance and competitiveness of a country. As a key benchmark for wage policy, its development has a bearing on how much households are able to consume and save – and thus ultimately on the prosperity of a country. Any decline in labour productivity growth is usually seen as critical.¹

Labour productivity growth has been losing momentum for some time now in Germany. This might seem surprising in times of record employment and increasing digitalisation of the work environment. Rising employee qualification levels (Crößmann et al., 2017) might also lead to expectations of higher productivity growth rates. However, the slowdown in productivity growth is not limited to Germany. Similar developments can be observed in almost all major developed economies.

The second chapter begins by examining the development of labour productivity in the total economy of the

five largest economies in the European Union² (Germany, the United Kingdom, France, Italy and Spain). Subsequently, there is a consideration of major economic sectors and their contributions to the result in the total economy, and a separate analysis of the productivity components of total hours worked and gross domestic product. The third chapter explores selected causes of the weak productivity development in Germany. First the structural changes towards tertiarisation in the work environment are described, then the increasing decoupling of economic activity from the labour market is analysed, especially against the background of the demographic shift in Germany. The question surrounding the extent to which official statistics can still adequately measure labour productivity is also examined. Chapter 4 deals with digitalisation of the work environment and the paradox of why this potential has not yet translated into higher productivity growth. Finally there is a summary of the principal results.

↳ Why is the focus on productivity per hour worked?

There are two relevant labour input indicators: the number of persons in employment, and working hours in the form of hours worked by the persons in employment. The focus in the present analysis is on the working hours reference value. In Germany, the development of the number of persons in employment has differed significantly to that of the number of hours worked since German unification. This becomes apparent in the evolution of the forms of employment over this period. The relevance of marginal³ and part-time employment has increased in recent decades (Schwahn et al., 2018). As a result, the average working hours per person in employment have decreased significantly over time. This renders a time series comparison or an international analysis of labour productivity on the basis of the number of persons in employment less meaningful. Measuring labour productivity on the basis of hours worked eliminates these structural effects and is therefore preferable to per capita analysis.

1 The importance of this issue is also reflected in the fact that the Council of the European Union has recommended that Member States set up National Productivity Boards. In Germany, the Federal Government has assigned this task to the German Council of Economic Experts.

2 The analysis covers the period from 1995 to 2018. It adheres to the concepts of the European System of Accounts (ESA) 2010 and is based on the Classification of Economic Activities, 2008 edition (WZ 2008).

3 Those in marginal employment are people who are in low-paid or short-term employment or who are in an “opportunity job” with compensation for additional expenditure (a so-called one-euro job).

2

Development in Germany and the European Union

2.1 Total economy

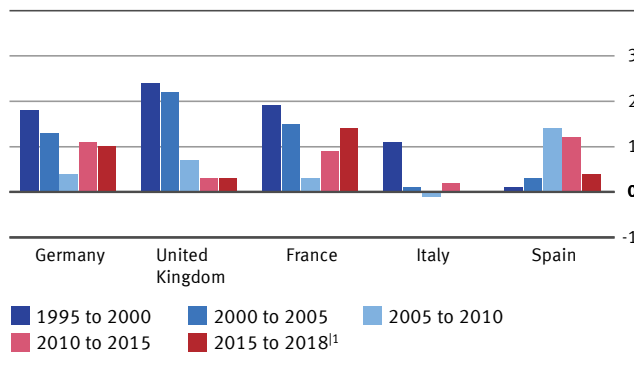
The starting point of the analysis is the development of labour productivity per hour worked in Germany, the United Kingdom, France, Italy and Spain. In 2018, these five countries accounted for 69.7% of the economic performance of the 28 Member States of the European Union (EU) in that year and therefore played a key role in determining their productivity development.

Labour productivity in the total economy is derived from the price adjusted gross domestic product and the number of hours worked (hereinafter: total hours worked). Both variables are subject to short-term economic fluctuations which are not necessarily coincidental and may have differing levels of impact. An analysis based on longer-term averages therefore suggests itself. [↗ Figure 1](#) shows the average annual growth of labour productivity in the total economy in five-year intervals since 1995.¹⁴

The data from the countries being studied provide qualified support for the statement that productivity growth is slowing in the developed economies. All countries except Spain recorded their highest productivity growth in the second half of the 1990s and then subsequently lost momentum. Germany, the United Kingdom and France experienced a sharp decline in productivity growth in the second half of the 2000s. In Spain, the slowdown has only become apparent more recently, while in Italy the trend has been stagnating since the turn of the millennium. Italy is also the only country here that has experienced a decline in labour productivity in the total economy over one of the selected five-year periods. Only France has shown a clear upward trend in labour productivity growth in the last two intervals.

4 Due to data constraints, the last interval only covers three years because, except for Germany, no data were available for the countries of comparison at the time of going to press. The starting year 1995 is the first year for which comparable national accounts data are available across the different countries. The choice of the start and end years for the intervals mitigates the impact of the sharp economic slump which occurred during the economic and financial crisis in 2009.

Figure 1
Labour productivity in the total economy
Annual average change in five-year intervals, percent



1 Due to data constraints, the last interval only covers three years because, except for Germany, no data were available for the countries of comparison at the time of going to press.
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In addition to the trend towards a slowdown in productivity growth across the countries, there were clear differences in overall growth between 1995 and 2018. With annual average growth rates of +0.7% and +0.3%, respectively, Spain and Italy recorded significantly lower productivity gains than the other countries (Germany: +1.1%, France: +1.2%, United Kingdom: +1.3%). Despite the strong influence of these five countries, the EU average is still relatively high at +1.3%. This is mainly due to the rapid growth of productivity in the eastern European countries¹⁵ as a result of economic transformation processes after the end of communism. Since 1995, labour productivity in this group of countries has risen at an annual average rate of +3.3%,¹⁶ more than twice the EU average (EU-28).

2.2 Contribution of the individual economic sectors

Gross domestic product and total hours worked – the determinants of labour productivity in the total economy – are highly aggregated indicators. A look at the economic structure can help to identify the sectors that are largely responsible for the slowdown in productivity development in the total economy. These must be sufficiently large and suitable for analysis of productivity development. This is not the case if there is only a

5 Bulgaria, Estonia, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, Czech Republic, Hungary.

6 Weighted average based on the nominal gross domestic product in 1995.

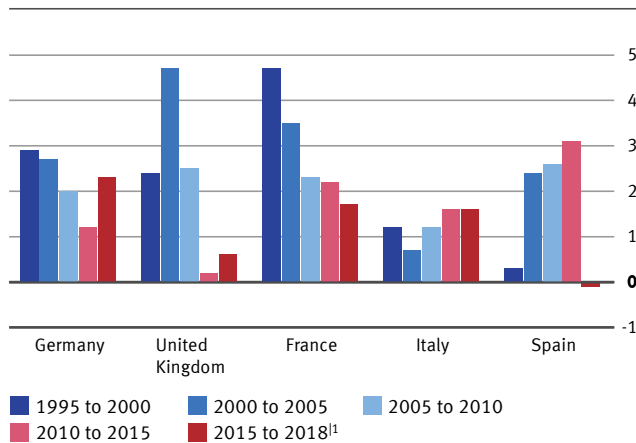
weak substantive link between gross value added and labour input. This applies, for example, to agriculture, real estate, financial and insurance activities. In public administration, gross value added is determined via costs. The input – basically labour in this case – thus determines the output. Productivity gains are determined here on the basis of models (Hauf, 2019). If relevance and interpretability are applied as criteria, this reduces the list of economic sectors¹⁷ for analysis to the following:

- › Manufacturing
- › Construction
- › Trade, transport, accommodation and food services
- › Information and communication
- › Business services

In 2018, these accounted for between 54% (United Kingdom) and 60% (Germany) of the total gross value added in the five countries.

↳ Figure 2 shows the development of labour productivity in manufacturing. In Germany, the United Kingdom and France, this is partly responsible for the slowdown

Figure 2
Labour productivity in manufacturing
Annual average change in the five-year intervals, percent



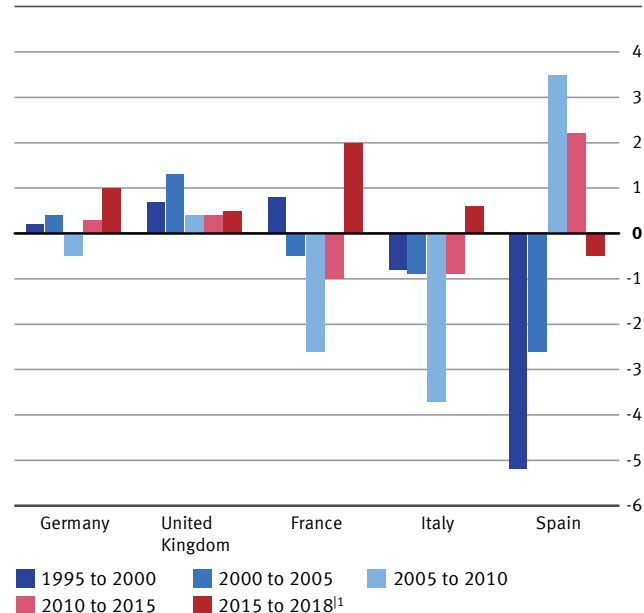
¹ Due to data constraints, the last interval only covers three years because, except for Germany, no data were available for the countries of comparison at the time of going to press.
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⁷ The grouping is based on the breakdown into ten aggregated economic sectors used as one type of breakdown in the national accounts.

in productivity growth in the total economy, whereas in Italy the opposite is the case. In Spain, development in manufacturing is similarly uneven to that of the total economy. The overall increase in productivity in manufacturing since 1995 has significantly exceeded the respective value in the total economy in all countries – industry as such is proving to be a driver of productivity growth. By contrast, however, manufacturing’s share in the total gross value added is steadily declining. The exception to this is Germany, which is also the only country in this study in which manufacturing has the greatest significance in the total economy of the economic sectors shown here, accounting for 22.7% in 2018.

The strongly positive productivity increases in manufacturing are in contrast to those of construction. ↳ Figure 3 The rates of change are comparatively low and often even negative. No clear development trend is apparent in any country, and construction basically has a dampening effect on productivity performance in the total economy in all the countries under consideration. However, the share of this economic sector within the total economy is relatively small, ranging from 4.2% (Italy) to 6.2% (Spain). Studies for Germany have con-

Figure 3
Labour productivity in construction
Annual average change in five-year intervals, percent



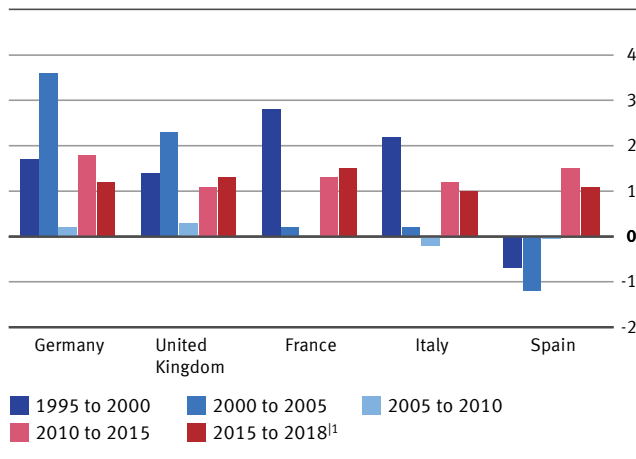
¹ Due to data constraints, the last interval only covers three years because, except for Germany, no data were available for the countries of comparison at the time of going to press.
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cluded that, especially in construction, existing digitalisation potential (see Chapter 4) – such as building information modelling (BIM; see Mai/Schwahn, 2017a) – has scarcely been exploited so far (Bertschek et al., 2019).

↘ Figure 4 shows the development of labour productivity in trade, transport, accommodation and food services. With total gross value added shares ranging from 16.1 % (Germany) to 23.8 % (Spain), this economic sector carries the greatest weight in all the relevant countries with the exception of Germany. Apart from Spain, there is a tendency for labour productivity growth to weaken, although there is no clear trend in any country which extends beyond individual intervals. Nevertheless, this economic sector helps to explain the development in the total economy. As regards the relevant productivity growth in relation to the total economy, there is no uniform, transnational finding, unlike in manufacturing and construction. Growth throughout the observation period was above the value for the total economy in Germany and Italy, at the same level in the United Kingdom and France, and below it in Spain.

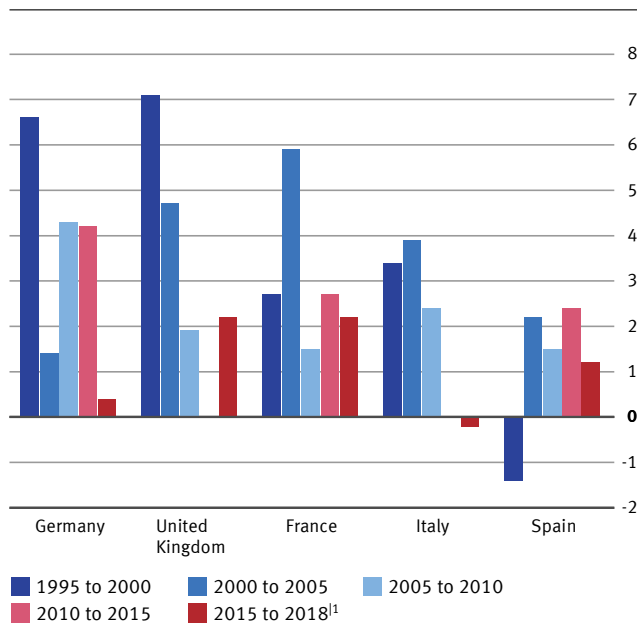
Figure 4
Labour productivity in trade, transport, accommodation and food service
Annual average change in the five-year intervals, percent



¹ Due to data constraints, the last interval only covers three years because, except for Germany, no data were available for the countries of comparison at the time of going to press.
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The information and communication sector, which includes telecommunications, software development and data processing, is seen as a source of particular hope for labour productivity during this period of digitalisation. ↘ Figure 5 illustrates that this hope has already

Figure 5
Labour productivity in information and communication
Annual average change in the five-year intervals, percent



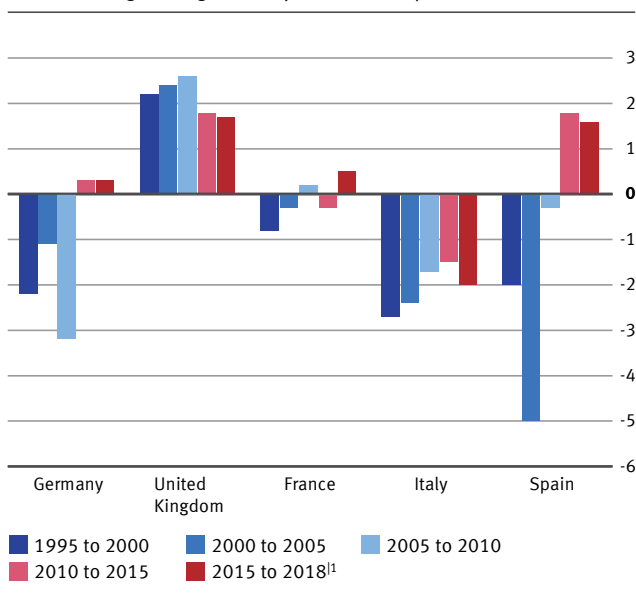
¹ Due to data constraints, the last interval only covers three years because, except for Germany, no data were available for the countries of comparison at the time of going to press.
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been fulfilled because growth rates during the observation period were significantly above the average in the total economy. This is particularly true for Germany: with an average annual rate of change of + 3.6 % since 1995, the recorded productivity growth of this sector has been 2.4 percentage points above the average. In the other countries, too, the difference in growth compared with the total economy was considerable, ranging from +0.5 to +1.9 percentage points in Spain and France respectively. On the other hand, the labour productivity trend growth is also declining across countries, again with the exception of Spain. Information and communication services are thus contributing to the declining productivity growth, although their significance within the total economy was still relatively low in 2018, ranging from 3.7 % of total gross value added (Italy, Spain) to 7.0 % (United Kingdom).

The significance of business services within the total economy in the five countries is considerably higher – and is still increasing. These services include legal and accounting activities, architectural and engineering activities, scientific research and development, and temporary employment activities. With shares between

9.0% (Spain) and 14.0% (France) of total gross value added, business services rank second (United Kingdom, France) and third (Germany, Italy, Spain) among the economic sectors analysed here. [↘ Figure 6](#) shows that in four of the five countries, the productivity trend is basically upward, albeit starting from significantly negative growth rates in most cases at the beginning of the observation period. The exception is the United Kingdom, where business services have enjoyed consistently strong positive growth rates since 1995. There has been no decline in productivity in Germany, France and Spain, at least not recently.¹⁸ However, business services cannot explain the slowdown in productivity growth in the total economy.

Figure 6
Labour productivity in business service
Annual average change in five-year intervals, percent



¹ Due to data constraints, the last interval only covers three years because, except for Germany, no data were available for the countries of comparison at the time of going to press. 2020 - 01 - 0276

Economic sector-based analysis reveals that productivity development within a country often differs more than that within a particular sector across national borders. The best examples of this are manufacturing and construction. It is not possible to draw definitive conclusions with regard to productivity development in the

⁸ Temporary employment distorts to some extent the development of labour productivity in business services: according to the ESA 2010 instructions, this is assigned to the agencies, but most of the places of work are in industry.

total economy. However, it can be seen that manufacturing, trade, transport, accommodation and food services, and information and communication services in Germany and France tend to contribute to the weakening growth in the total economy. In the United Kingdom, the same also applies for business services. In Spain, too, the different economic sectors, insofar as they show a trend, contribute to the relevant situation in the total economy – which in this case is positive. In Italy the contribution of the different economic sectors is not clear. Only trade, transport, accommodation and food services, plus information and communication show a trend towards declining labour productivity growth rates.

2.3 Components of labour productivity

In addition to studying the specific developments in the various economic sectors, it is also worth examining the interaction of the two determinants in the calculation of labour productivity, determined by the equation:

$$(1) \quad AP_t = \frac{BIP_t^{real}}{AV_t}$$

AP_t is the labour productivity in year t , BIP_t^{real} the price adjusted gross domestic product and AV_t the total hours worked in the total economy. For smaller percentage changes labour productivity growth can be approximated by:

$$(2) \quad \Delta AP = \Delta BIP^{real} - \Delta AV$$

This means that a given productivity development can be the result of fundamentally different macroeconomic developments. For example, a 1% increase in labour productivity could be the result of a 1% decline in hours worked during a period of economic stagnation. Conversely, a 3% increase in the total hours worked combined with a 4% increase in the gross domestic product could lead to a 1% increase in labour productivity.

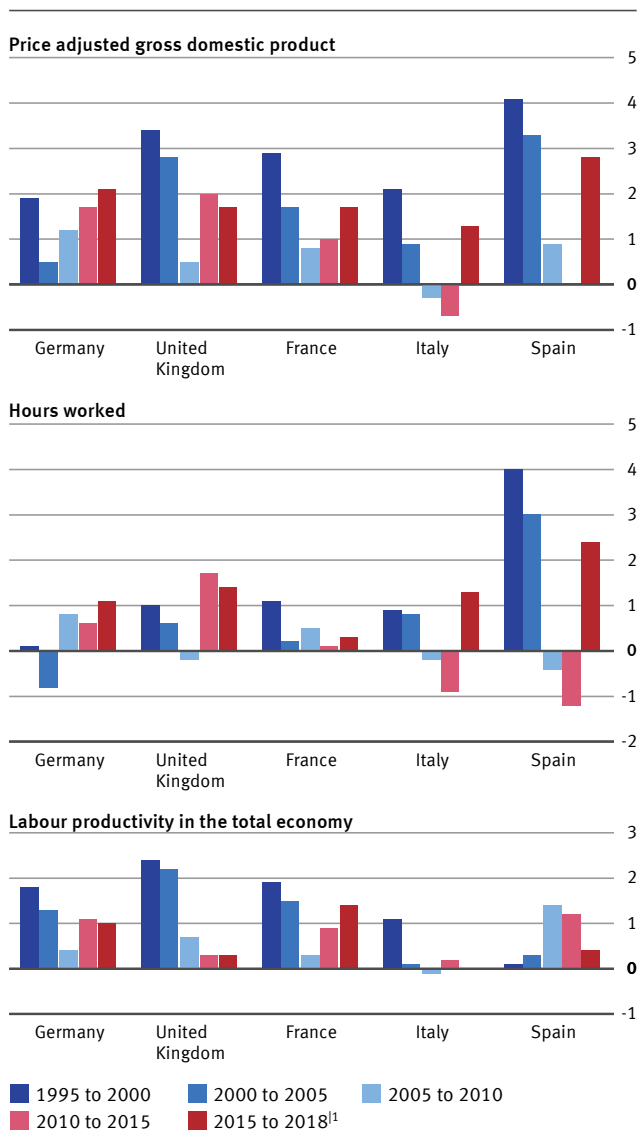
[↘ Figure 7](#) illustrates this by showing the two components separately. For each interval and country shown, the trend in labour productivity in the total economy indicated at the bottom of Figure 7 can be derived by subtracting the two components shown above using the given formula.

The example of Germany demonstrates how different developments can lead to similar results. For example,

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Figure 7

Gross domestic product, hours worked and labour productivity in the total economy
Annual average change in five-year intervals, percent



1 Due to data constraints, the last interval only covers three years because, except for Germany, no data were available for the countries of comparison at the time of going to press.

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the comparatively high labour productivity growth rates in the 1995-2000 and 2000-2005 periods are due, in the former case, to solid economic growth with no increase in the total hours worked, while in the latter case they are the result of a decline in employment⁹ accompanied

9 Fittingly, the winner of the “Unwort des Jahres” (“Euphemism of the Year”) award in 2005 was “Entlassungsproduktivität” (“redundancy productivity”).

by subdued economic activity. Since then, economic growth and the total hours worked have been developing positively, although this has led on balance to a slowdown in productivity growth. What distinguishes Germany from some of the other countries is the relatively small rates of change in both variables.

Developments in the United Kingdom are characterised by the fact that, at the beginning of the observation period, high economic growth was accompanied by moderate increases in employment, which led in turn to high productivity growth. Subsequently, however, there was a lower increase in gross domestic product, while the total hours worked rose significantly. As a result, labour productivity growth came to a virtual standstill after 2010.

The development of labour productivity in France is largely determined by economic growth, whereas there was no significant increase in the total hours worked after 2000. This distinguishes France from Germany and the United Kingdom, and also explains the acceleration in productivity growth in contrast to the general trend since 2010.

Italy experienced no major productivity gains, except in the period from 1995 to 2000. The total hours worked and economic growth counterbalance each other, albeit with reversed polarity depending on the period. Italy was the only country to record a decline in gross domestic product and total hours worked between 2005 and 2015.

Spain had the highest rates of change in the components. Especially in the years 1995 to 2005, there was considerable progress both in total hours worked and gross domestic product, but there was no overall increase in labour productivity. The same applies for the most recent period from 2015 to 2018. Only in the period 2005 to 2015 was there an increase in productivity, but this was due to a decline in the total hours worked combined with weak economic growth.

3

Analysis of causes

The scientific community has conducted numerous analyses – with very different emphases – of the causes of the declining productivity growth. We focus below on three explanatory theories: tertiarisation of the economy, increasing decoupling of the labour market and production, and finally the question of whether there are measurement problems in the calculation of productivity.

3.1 Tertiarisation of the economy

The structural shift in economic activity towards the service sector is often identified as the central reason for the slowdown in productivity performance in Germany and other countries (Duernecker et al., 2017). It is assumed that most activities in the service sector tend to offer less potential for productivity growth (Lang et al., 2019) than does industry. In many cases, production processes in the service sector are likely to be more labour-intensive and lend themselves less readily to technological substitution.

In fact, there are lower productivity increases overall in the service sector in Germany than in manufacturing. This applies, for example, to personal services that are less dependent on economic cycles, such as care services or education. If there is an increasing shift in the value added focus towards less productive service branches, this will also slow down the rate of labour productivity growth in the total economy (German Council of Economic Experts, 2015).

With regard to employment, the service sector has gained significantly in importance, while that of the industrial sector has declined. One of the likely causes is the increasingly global division of labour. Measured in terms of unit labour costs, labour in German industry is relatively costly by international comparison (iwd, 2018), which is why enterprises have concentrated on highly specialised products and their final manufacture. Less productive processes upstream in the value chain have often been outsourced to countries with lower wage levels, which has a positive impact on labour productivity. However, this process evidently came to an end in 2009

with the economic and financial crisis. Since then, German enterprises have shown greater reluctance to set up production abroad and have once again increased their domestic vertical range of manufacture (German Council of Economic Experts, 2015).

Overall, the proportion of the German workforce working in the service sector rose from 65.9% in 1995 to 74.5% in 2018, with the proportion of total hours worked rising from 64% to 72%. This was facilitated by labour market reforms, which also changed the significance of the different forms of employment. Especially between 1999 and 2006, there was a significant increase in the share of marginal employment in the total economy (Mai/Schwahn, 2017b). Most marginal employees are to be found in the service sector. The importance of part-time employment in Germany has also increased immensely since German unification. Part-time employment tends to be more common in the service sector due to the greater ease with which working time can be split.

The increased importance of services can explain some of the slowdown in productivity growth in the total economy. However, as discussed in the second chapter, the development of productivity in the service sector is not uniform. Thus, tertiarisation of the economy is not universally inhibiting the development of labour productivity.¹⁰

3.2 Decoupling of labour market and production

In 2009, in the midst of the great economic crisis, there was increased public and academic debate about the “German job miracle” (Herzog-Stein et al., 2010). Economic output was 5.7% down on the previous year, while employment actually increased by 0.2%. In general, gross domestic product is regarded as a classic coincident indicator, whereas the development of employment is seen as a lagging short-term economic indicator. This means that there is a delay in staff being released or taken on within the economic cycle, depending on whether orders and business are bad or good. However, enterprises reacted to the poor general eco-

¹⁰ Shift-share analyses by some economic research institutes, such as the German Institute for Economic Research (DIW Berlin), have concluded that this only has a very small effect on labour productivity (Brenke, 2019).

economic situation in 2009 not by reducing their workforce (Mai, 2010), but rather by introducing flexible measures such as adjustments in working hours and short-time working. Since then, increasing reference has been made to the decoupling of the economy from the labour market (Klinger/Weber, 2019).

In fact, there is only a weakly positive linear relationship between the development of employment and that of the gross domestic product in Germany over the entire observation period (1995 to 2018).¹¹ In contrast, the situation is completely different in most European countries. In Spain, for example, there is an extremely strong correlation between economic performance and employment. In Germany it is noticeable that the correlation has weakened again since the economic crisis. Other factors, such as those described below, thus eclipse the relationship between economic performance and the labour market.

There can be various reasons for such decoupling. On the one hand, major labour market reforms, such as the so-called Hartz laws, are thought to play a role in Germany. The laws on modern labour market services promoted marginal employment and “solo” self-employment, and relaxed existing regulations on temporary work. On the other hand, the development of real earnings, which made the labour factor relatively cheaper especially in the years after the turn of the millennium, was rather restrained compared to previous periods. This, too, is likely to have been a major contributor to the increased employment levels. Here, however, age-related demographic developments are also gaining in importance (Federal Statistical Office, 2019; Fuchs et al., 2019). In 2018 there was a net age-related demographic decline of 290,000 among the labour force (Fuchs et al., 2019). As a result, it is becoming increasingly difficult for enterprises to find suitable employees. Occupational and regional bottlenecks have been worsening for several years now (Federal Employment Agency, 2019). Large birth cohorts (baby boomers) will retire in the foreseeable future and small birth cohorts will arrive on the labour market, meaning that further exacerbation of the bottlenecks is to be expected.

The demographic development and the simultaneous high demand for additional labour are raising the pressure on enterprises to restructure and become more flexible, and are giving rise to a number of factors that are holding back labour productivity. It is striking that during an economic decline such as that in 2009, the workforce adjustment of an enterprise was effected either with a delay, or not at all – unlike in previous recession phases. Academics refer to the “hoarding” of employees. It therefore comes as no surprise that the redundancy rate is now at its lowest level since German unification. On the other hand, people who would not have sought or found a job in other economic cycles are now actively joining the labour force. Overall, demographic developments are contributing to increasing decoupling of the labour market and economic development.

However, academics are also discussing whether changes in the demographic composition towards older employees could actually be sufficient to slow down productivity growth (German Council of Economic Experts, 2019). By the same token, enterprises with older employees might be more likely to persist with less innovative working methods and techniques.

3.3 Statistical measurement problems

Alongside economic factors, statistical challenges and uncertainties may also play a role in explaining the decline in labour productivity growth. This applies in particular to the measurement of price adjusted gross value added (Ademmer et al., 2017). The accuracy of this depends on the nominal values – production values and intermediate consumption – only being adjusted for price changes that are not due to alterations in the quality of the products produced or products consumed in the production process. This is by no means straightforward, especially for products that are subject to rapid technological change. If quality enhancements are erroneously interpreted as price increases, this will result in underestimation of the development of the price adjusted gross value added. This will lead in turn to underestimation of the labour productivity growth. There is much speculation that deflation problems could play a role (Aghion et al., 2019). Yet official price statistics already take account of these challenges through available methods within the existing conceptual framework (Schäfer/Bieg, 2016). In addition, many of the products in question,

11 In the period between 1995 and 2018 the correlation was only 0.26. There is only a marginal increase if a slight delay in the labour market reaction is assumed.

especially those related to information and communication technologies, are largely imported (Ademmer et al., 2017). A distortion of domestic gross value added in the total economy that is significantly responsible for the decline in labour productivity growth therefore seems unlikely, at least in Germany.

4

The role of digitalisation

The slowdown in labour productivity growth comes at a time of multiple, and in some cases disruptive, technological advances. In many areas, comprehensive information technology-based networking is creating completely new organisational forms in production and sales, and innovative business models are challenging established structures. These developments, described by catchphrases such as “Industry 4.0”, “Big Data” or “Internet of Things”, are deemed to hold great potential for increased productivity. It is therefore all the more surprising that digitalisation of the economy is not apparently yielding any significant productivity gains. This “productivity paradox” is not entirely new: even the advent of personal computers in economic life in the course of the “third industrial revolution” in the 1980s did not yield the expected advances in productivity (Solow, 1987).

There are a number of possible explanations for this supposed paradox, most of which support one of the following three theses:

- I. No (additional) productivity growth whatsoever is to be expected from digitalisation.
- II. Digitalisation-related productivity growth exists, but it is not visible in the total economy.
- III. It takes more time before the successes become apparent.

The first thesis is based on the assumption that the impact of digitalisation on production processes will not be as strong as that of previous technological leaps. The much-vaunted “fourth industrial revolution” would thus not be comparable with the first (machines) or the second (assembly line) industrial revolutions. Or at least its main effect would not be the creation of new products,

but rather the redistribution of market shares (German Council of Economic Experts, 2019).

There are various theoretical explanations which support the second thesis. These include measurement problems (see Section 3.3) which would lead to value added, especially that related to the production of digital products, not being accurately covered using the traditional statistical concepts and methods. Existing productivity gains would thus remain invisible. However, it is often pointed out in this context that, while measurement problems do exist, their impact is not so great as to allow the productivity paradox to be regarded as a purely statistical phenomenon (Ademmer et al., 2017; Ahmad et al., 2017). Similarly, productivity gains induced by digitalisation would also be invisible if at least some of the enterprises were able to exploit such potential but this was overshadowed by other, opposing structural effects – such as the “hoarding” of labour – or by less innovative enterprises.

Supporters of the third thesis assume that while digitalisation is certainly associated with productivity gains, the majority of enterprises still need time to capitalise on these. Accordingly, the economy – especially the digital economy – is currently still in the “installation phase” of digitalisation with high investment costs. During this phase, any successes would be sporadic and limited to individual sectors at best. The “implementation phase”, which would be associated with productivity gains on a broad front, is yet to arrive (van Ark, 2016). Other findings suggest that the (few) enterprises that are already more fully digitalised are quite successful in raising their value creation potential – which would also support thesis 2 (Lang et al., 2019). Many other enterprises see the necessity to invest in digitalisation, but do not yet know how to implement this in a technically and organisationally meaningful way.

5

Conclusion

The development of labour productivity in Germany is losing momentum, in a trend similar to that seen in many other developed economies. This trend was illustrated in this analysis based on the examples of the United Kingdom, France and Italy. Only Spain exhibited

a different trend over the observation period 1995 to 2018. The disaggregated analysis showed that industry, trade, transport, accommodation and food services, and information and communication are the main contributors to the respective slowdown in the total economy. A separate examination of the labour productivity components revealed that comparable productivity development can be the result of very different developments in total hours worked and economic performance.

The causes of the decline in productivity growth are the subject of widespread discussion. This article focuses on the general structural change towards tertiarisation of the total economy, and the decoupling of the labour market and production as possible explanations. The significance of the service sector has increased considerably in terms of employment. A shift towards less productive sectors that are not susceptible to economic cycles is thus also having an impact on the growth rate in the total economy. Another possible cause is the increasing decoupling of the labour market and production. In particular, the growing shortage of skilled staff as the result of demographic developments is contributing to this. On the other hand, it seems unlikely that measurement problems are causing official statistics systematically and significantly to underestimate the price adjusted value added and thus the productivity gains.

The weak productivity development is particularly surprising at the present time, as increasing digitalisation could actually lead to expectations of higher growth rates. This productivity paradox cannot be resolved at the present time. However, there are various indications which suggest that the potential yielded by digitalisation has yet to be realised in the economy.

Measuring productivity and analysing developments and underlying causes remain important tasks that are undertaken by both the German Council of Economic Experts, which the Federal Government has entrusted with the role of the National Productivity Board, and the system of official statistics, for example, in a Task Force of Eurostat, the Statistical Office of the European Union. [u](#)

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Abbreviations

WISTA	=	Wirtschaft und Statistik
JD	=	annual average
D	=	average (for values which cannot be added up)
Vj	=	quarter of a year
Hj	=	half-year
a. n. g.	=	not elsewhere classified
o. a. S.	=	no main economic activity
St	=	piece
Mill.	=	million
Mrd.	=	billion

Explanation of symbols

–	=	no figures or magnitude zero
0	=	less than half of 1 in the last digit occupied, but more than zero
.	=	numerical value unknown or not to be disclosed
...	=	data will be available later
X	=	cell blocked for logical reasons
I or —	=	fundamental change within a series affecting comparisons over time
/	=	no data because the numerical value is not sufficiently reliable
()	=	limited informational value because numerical value is of limited statistical reliability