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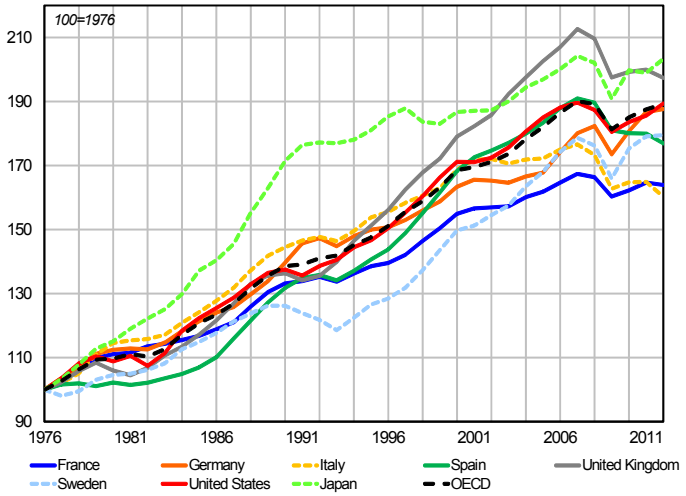
How to account for the drop-off in France's per capita GDP in the last 40 years?

- Between 1975 and 2012, France's per capita GDP rose more slowly than the average for OECD countries, particularly as compared to the United States and, to a lesser extent Germany and Northern Europe. France ranked above the OECD average in 1975, but as a result of this slower growth, now ranks lower than most of the major developed economies except Italy and Spain.
- The underlying factors in France's relative decline can be identified through a growth accounting approach to the various components of per capita GDP: working-age population, labour force participation rate, unemployment rate and per capita productivity.
- In terms of working-age population, France's demographics over the period temporarily penalise its per capita GDP performance compared to other countries. However, demographics are expected to become a positive factor in the future, when today's under-15 population reaches working age. In terms of the labour force participation rate particularly among youth and older workers, France lags even farther behind most comparable OECD economies for the entire period. This is especially true with respect to Germany and the Northern European countries, which France also trails in terms of the labour participation rate among women. As for unemployment, the French unemployment rate has exceeded the average unemployment rate of the OECD economies since the mid-1980s.
- When it comes to productivity, the trend is milder. Through the early 1990s, France was increasing its lead in terms of per capita productivity on the strength of its high hourly productivity. Since the 1990s, however, the relative stagnation of France's hourly productivity coupled with the steady decline in the number of per capita hours worked have had a negative effect. As a result, the other OECD economies (particularly the United Kingdom and the Northern European countries) have caught up in terms of per capita productivity and the United States has widened its lead.
- All in all, per capita GDP growth in France in the past 40 years has lagged an average of 0.4 points behind that of the OECD countries with demographics subtracting 0.1 points and the employment rate (labour force participation and unemployment rates) subtracting 0.2 points. For the period as a whole, per capita productivity has had no adverse effect on the growth deficit. However, since the mid-1990s, French hourly productivity gains have no longer been sufficient to offset the decline in the number of hours worked. The lower per capita productivity accounts for the bulk of the growth deficit relative to the OECD average over the past twenty years (0.5 points).
- This analysis highlights the various objectives that France must pursue in order to raise its per capita GDP. These match the priorities defined in the country's national reform programme: increase the labour force participation rate, especially among older workers; curb structural unemployment; support gains in hourly productivity (e.g. through innovation, competitiveness, flexicurity, vocational training).

Trend in per capita GDP in the major OECD economies (in constant purchasing power parities)



Source: OECD, DG Trésor calculations.

MINISTÈRE DES FINANCES ET DES COMPTES PUBLICS

MINISTÈRE DE L'ÉCONOMIE DU REDRESSEMENT PRODUCTIF ET DU NUMÉRIQUE

1. What factors explain why France was trailing the other major OECD economies in per capita GDP in 2012?

1.1 A growth accounting approach to France's per capita GDP gap relative to the other major OECD economies in 2012

Taking **Purchasing Power Parities** (PPP) into account is essential for any international comparison of per capita GDP levels because PPPs can accommodate price differences between countries in order to compare productivity levels.

To get a snapshot of differences in per capita GDP in any given year within a given group of countries, we use current PPPs as the conversion factor.[1] Thus in 2012, France's per capita GDP is very close to the OECD average[2] (see Table 1), but this masks significant differences between countries. To better understand these differences, the growth accounting approach can be used to analyse the per capita GDP as follows:

Per capita GDP = Share of population of working age x Employment rate x Labour productivity per worker x Adjustment for people over 65 (1)

Where Employment rate = (1 - Unemployment rate) x Labour force participation rate.

The working-age population is defined herein as the 15-64 year age bracket. The employment rate, unemployment rate and labour force participation rate all pertain to the same age bracket. For this reason, the right side of the accounting equation must be multiplied by an **adjustment factor** equal to the ratio of total employment to employment in the 15-64 age category, because the labour productivity per worker is determined based on total employment. The adjustment factor measures the share of the per capita GDP gap that can be explained by employment among the over-65 population.

Table 1: Growth accounting breakdown of the gap in per capita GDP (at current PPPs) between France* and other OECD countries in 2012 *

	D	a	(1-u)	P	CC	Per capita GDP
Canada	7.5	10.6	3.4	−12.6	2.5	11.4
Germany	3.2	9.0	5.4	−5.3	1.1	13.5
Sweden	0.3	13.3	2.2	−12.9	13.3	16.1
United Kingdom	2.0	8.9	2.3	−18.3	1.6	−3.4
United States	4.2	3.2	2.1	26.0	4.5	40.0
Japan	−1.9	4.2	6.1	−19.8	7.8	−3.5
Italy	−0.2	−8.9	−0.9	0.3	2.1	−7.6
Spain	4.8	6.2	−18.8	−3.3	−0.7	−11.9
Netherlands	3.4	12.2	5.9	−5.3	1.1	17.4
Denmark	1.2	11.0	2.8	0.4	0.5	15.9
Finland	1.6	6.4	2.6	−15.4	10.8	6.0
Total OECD	**3.1**	**0.0**	**2.0**	**−8.3**	**3.1**	**−0.1**

Source: OECD.

*D= Share of 15-64 yr olds in the total population ; a=Labour force participation rate ; u=Unemployment rate ; P=per capita productivity of labour ; AF= Adjustment factor (total employment/employment of 15-64 yr olds)
How to read: in 2012, per capita GDP (at current prices and PPPs) in Germany was 13.5% higher than per capital GDP in France. The labour force participation rate is deemed to account for 9 points of this gap.

The United States' very significant lead (per capita GDP is 40% higher) can thus be explained primarily by the country's sharply higher labour productivity. The other countries show a less significant gap relative to France. The difference between Northern European countries (Netherlands, Denmark, Sweden, Finland) and France **are due primarily to higher labour force participation rates** that France can only partly offset through its higher per capita productivity. **The gap relative to Germany can be explained primarily by a lower labour force participation rate and to a lesser extent, by a lower unemployment rate.** In the comparison with Japan, France's higher productivity offsets its significant deficit in the labour force participation rate. Finally, the economies of southern Europe (Italy and Spain) post lower per capita GDP than France (–8% and –12% respectively). This can be explained mainly by the weak labour force participation rate in Italy and the high unemployment rate in Spain. **To sum up, compared to the average of OECD countries, France's higher per capita productivity fully compensates for its temporarily unfavourable demographics** (see below) **and its weak labour force participation and unemployment rates.**

1.2 Youth and older worker categories account for the negative impact that the labour force participation rate has on France's lag in per capita GDP

Analysing the contribution of the **labour force participation rate** according to gender and age bracket gives a clearer idea of the causes of France's per capita GDP gaps relative to the key European economies in particular (see Table 2).

(1) Comparing per capita GDP levels among different countries calls for converting GDP values initially expressed in the national currency into a common unit of account known as the "purchasing power standard," which can reflect both the exchange rates and price levels in each country. Current purchasing power parities (PPPs) are used to calculate the relative price structure to be able to compare the volumes of goods and services produced and consumed in the different countries in any given year. PPPs are used for example when studying differences in the living standard for a given year (t).
However, current PPPs are not suited to analysing the relative change in the living standard in different countries over a given period, because the change in GDP values determined using current PPPs reflects changes both in volume and prices. In this case, it is better to reason in terms of constant PPPs.

(2) Given the margin of error that applies to estimates of living standards and current purchasing power parities, the difference between France and the OECD is not materially different from zero.

Table 2: Breakdown of the contribution of labour force participation rate to the gap between OECD countries and France in per capita GDP in 2012

	Contribution of the labour force participation rate to the GDP gap by:	15-24 yrs		25-54 yrs		55-64 yrs	
		Men	Women	Men	Women	Men	Women
Canada	10.6	3.8	4.2	−1.3	−0.5	2.5	2.0
Germany	9.0	3.3	1.7	−0.3	−0.6	3.1	1.9
Sweden	13.3	1.1	2.7	−0.1	1.7	4.0	3.8
United Kingdom	8.9	5.0	3.4	−0.8	−2.1	2.3	1.1
United States	3.2	2.3	2.7	−2.2	−4.1	2.5	2.1
Japan	4.2	0.9	0.8	0.9	−4.8	4.9	1.5
Italy	−8.9	3.3	−0.7	−2.0	−8.0	0.3	−1.8
Spain	6.2	6.0	0.7	−0.5	−1.4	1.5	−0.1
Netherlands	12.2	4.2	4.9	−0.3	−0.5	2.9	0.9
Denmark	11.0	3.2	4.1	−1.3	0.6	2.6	2.0
Finland	6.4	0.7	2.4	−1.4	0.3	1.6	2.9
Total OECD	**0.0**	**2.3**	**1.3**	**−1.0**	**−5.4**	**2.2**	**0.7**

Source: OECD.

How to read: In 2012, Germany's labour force participation rate is deemed to account for 9 points of its per capita GDP gap with France, of which 3.3 points pertains to men in the 15-24 age bracket.

The labour force participation rate breakdown **according to gender** shows the deficit among men to be the predominant cause of gaps relative to the United Kingdom, Japan, Germany and the Netherlands, whereas the labour force participation rate deficit among women is the more significant factor in the gap relative to the Northern European countries (Sweden, Denmark, Finland) and Canada. However, the lower labour force participation rate among women is also significant relative to most other countries, particularly Germany. In contrast, Italy's lower labour force participation rate compared to France stems almost entirely from its lower labour force participation rate among women.

Concerning the labour force participation rate according to age bracket, France lags far behind in the youth and older worker categories compared to all the other countries of interest except Italy. The contribution of the youth bracket appears significant especially in Germany, where apprenticeship programmes facilitate combining work and study. Older workers also make a significant contribution, particularly in Japan. In contrast, the labour force participation rate in the 25-54 age bracket contributes more to high per capita GDP growth than in the other countries studied with the exception of Sweden. It is noteworthy that Italy's low labour force participation rate centres essentially on women, but also on this 25-54 age bracket.

2. How to account for the decline in France's per capita GDP relative to the other major OECD economies for the period 1975-2012?

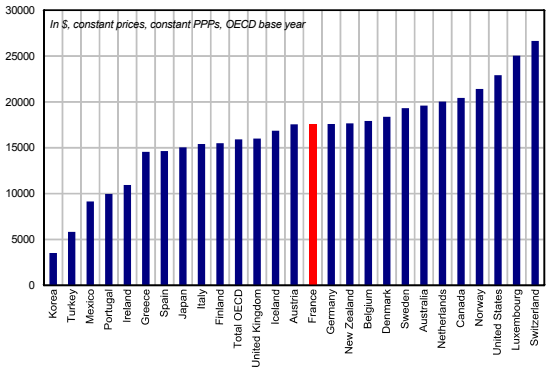
2.1 Per capita GDP trends from 1975 to 2012

In France, per capita GDP (determined at constant prices and purchasing power parities) rose less than the OECD average rate over the period 1975-2012. It is better to reason in terms of constant relative prices in order to measure the relative changes in per capita GDP over time and calculate growth rates. Constant PPPs will thus be used.

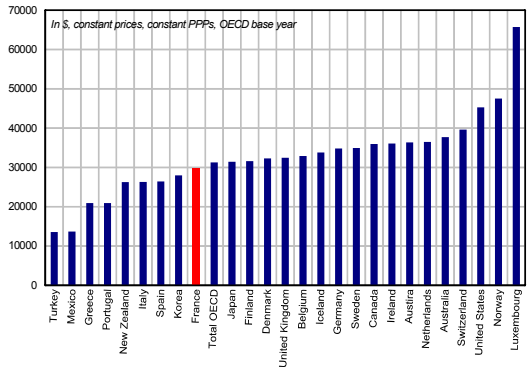
In 2012, per capita GDP was lower in France than in the United States, Germany and all the Northern European countries; it was slightly below the OECD average (see Charts 1). This situation contrasts with France's position in 1975, when the country ranked well above the OECD average for per capita GDP.

Chart 1: Trends in per capita GDP (constant prices and PPPs) in OECD member countries

Per capita GDP in 1975



Per capita GDP in 2012

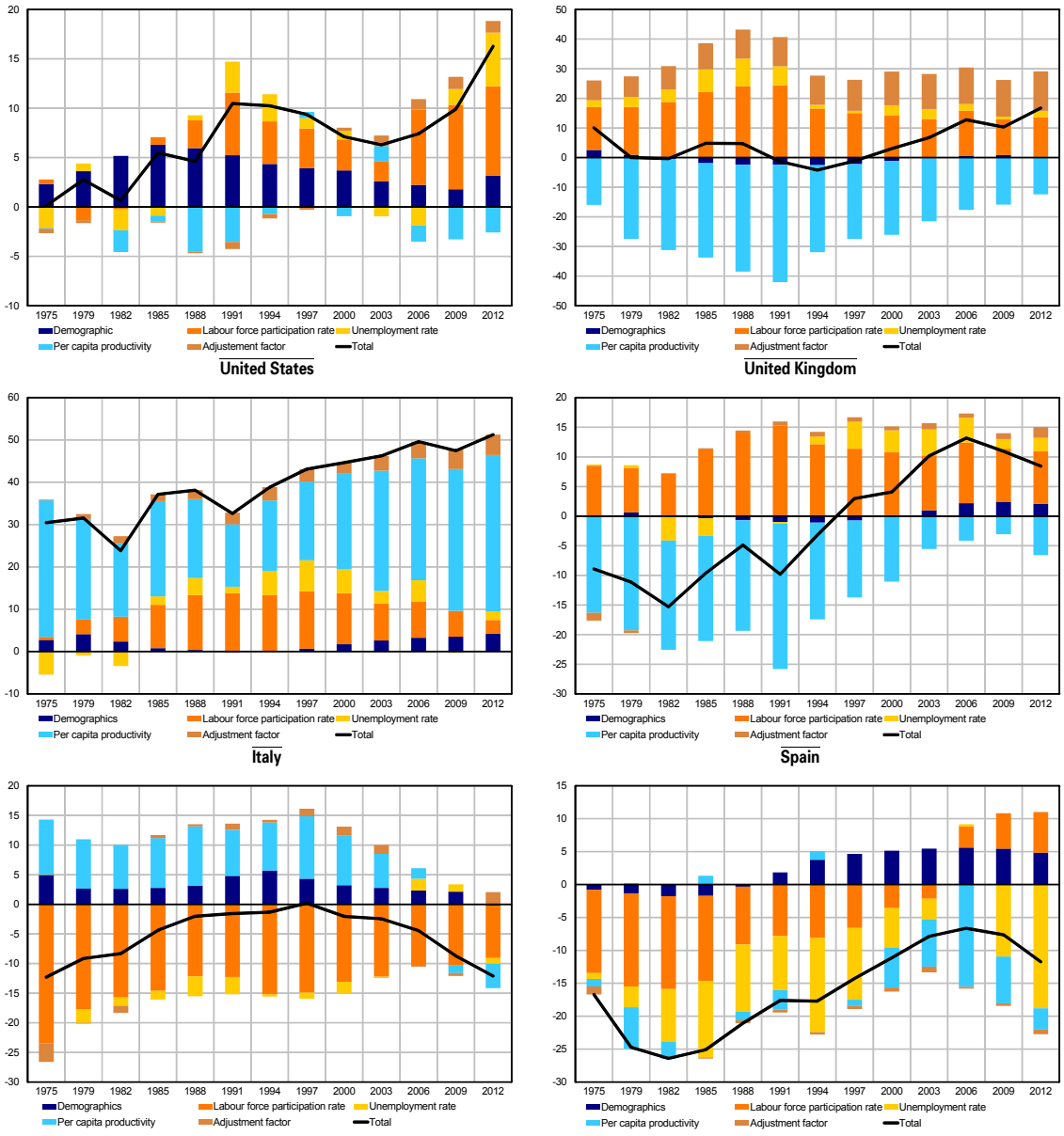


Source: OECD, DG Trésor calculations.

2.2 Changes in the contributions of the various components to France's gap in per capita GDP relative to the other OECD countries

The following charts show how the various components of per capita GDP have contributed to France's lag since 1975.

Chart 2: Contributions to the gap in per capita GDP (constant prices and PPPs) relative to France [a]



Source: OECD, DG Trésor calculations.

How to read: In 2012, per capita GDP (at constant prices and PPPs) was 16.3 points higher in Germany than in France. France would gain 3.2 points of GDP if the 15-64 age bracket represented the same share of total population as in Germany, 9 points of GDP if France had the same labour force participation rate, 5.4 points of GDP if France had the same unemployment rate and 1.2 points of GDP if France had the same ratio between the total employment rate and the 15-64 age bracket employment rate (adjustment factor). Conversely, France would lose 2.6 points of GDP if it had the same per capita productivity as Germany.

a. Not all the countries mentioned hereafter are featured on these charts, but the data is available on request.

Several conclusions can be drawn from these trends:

- Over the entire period of interest, **France's demographics penalise its per capita GDP, in that the working age (15-64) share of its population is generally smaller than is the case in the major OECD economies.** This gap stems essentially from the under-15 age bracket, whose share in total population declined more slowly in France than the OECD average for the period 1975-2012. **In the future**, once these cohorts reach working age, **the new demographics should have a favourable impact** on France's per capita GDP relative to the other OECD countries, where populations are ageing more. For example, demographics is having an increasingly unfavourable impact in Germany. According to the projections of the Ageing Working Group, France's ratio of working-age population to total population should exceed that of Germany by around 2030.

- **Between 1975 and 2012, the drop-off in France's per capita GDP relative to Germany can probably be explained by the labour force participation rate trend.** In addition, Spain's labour force participation rate has contributed positively to its per capita GDP relative to France since the mid-2000s and is helping the country catch up in terms of this metric. Finally, since the early 1990s, the employment rate among the over-65 age bracket (with the adjustment factor) may be observed to have contributed significantly to the gap in per capita GDP relative to all the OECD countries.
- Over the period, **the unemployment rate accounts for a variable share of the per capita GDP gap relative to France** depending on the country, but does not have a clear-cut impact on the change in that gap over time. Only the Southern European economies (Spain and Italy) posted a negative contribution by the unemployment rate on average over the period. In Spain, the very sharp deterioration since the start of the economic crisis accounts for most of the country's loss of per capita GDP relative to France.
- On average, over the period as a whole and with respect to the economies of interest here, **France shows a significant lead in per capita productivity. However, the situations before and after the early 1990s show sharply contrasting dynamics.** For example, the gradual erosion of France's relative advantage on the productivity front explains its widening gap in per capita GDP compared to some of the Northern European countries (United Kingdom and Sweden) during the 1990s. In parallel, the United States, United Kingdom and Sweden have widened their per capita GDP lead relative to France since the early 1990s, driven primarily by a more dynamic productivity trend. In the case of Italy, per capita productivity contributed to an improved position in terms of per capita GDP during the 1990s, but productivity appears to have dropped off to the French level during the 2000s.

On the whole, the euro-zone economies (Germany, Spain, Italy, the Netherlands) all improved their labour force participation rates relative to France. The corollary to this is a relatively less favourable (or, in the case of Germany, identical) change in per capita productivity, which may be due partially to the presence of less productive workers in the labour force. Conversely, the countries whose productivity has improved relative to France since the early 1990s have not seen any favourable relative change in their labour force participation rate over the period.

To sum up, France's lower rank from 1975 to 2012 in terms of per capita GDP can be attributed primarily to its deteriorating employment rate (labour force participation rate among the 15-64 age bracket, unemployment rate and employment rate of people over 65), and, to a lesser extent, to the demographic factor. The erosion of France's lead in per capita productivity, particularly with respect to the United States and the Northern European countries (except Germany) has been a dominant factor in France's relative decline over the past 20 years.

3. The slower growth in France's per capita GDP since 1993 can be explained by unfavourable trends in hourly productivity and number of hours worked.

Trends in per capita productivity may reflect changes in both the number of hours worked and hourly productivity. The number of hours worked has not been factored into the multilevel gap analysis performed to date due to potential doubts about the homogeneity of these series in an international comparison. It can therefore be worthwhile to supplement the multilevel gap analysis with **a growth rate analysis**.

We consider the variation of the components of per capita GDP (at constant prices and purchasing power parities in France and other major euro area economies since 1976 (the first year for which all the data are available). If we take the same breakdown of per capita GDP as above:

Per capita GDP = Share of population of working age x Employment rate x Labour productivity per worker x Adjustment factor for people over 65

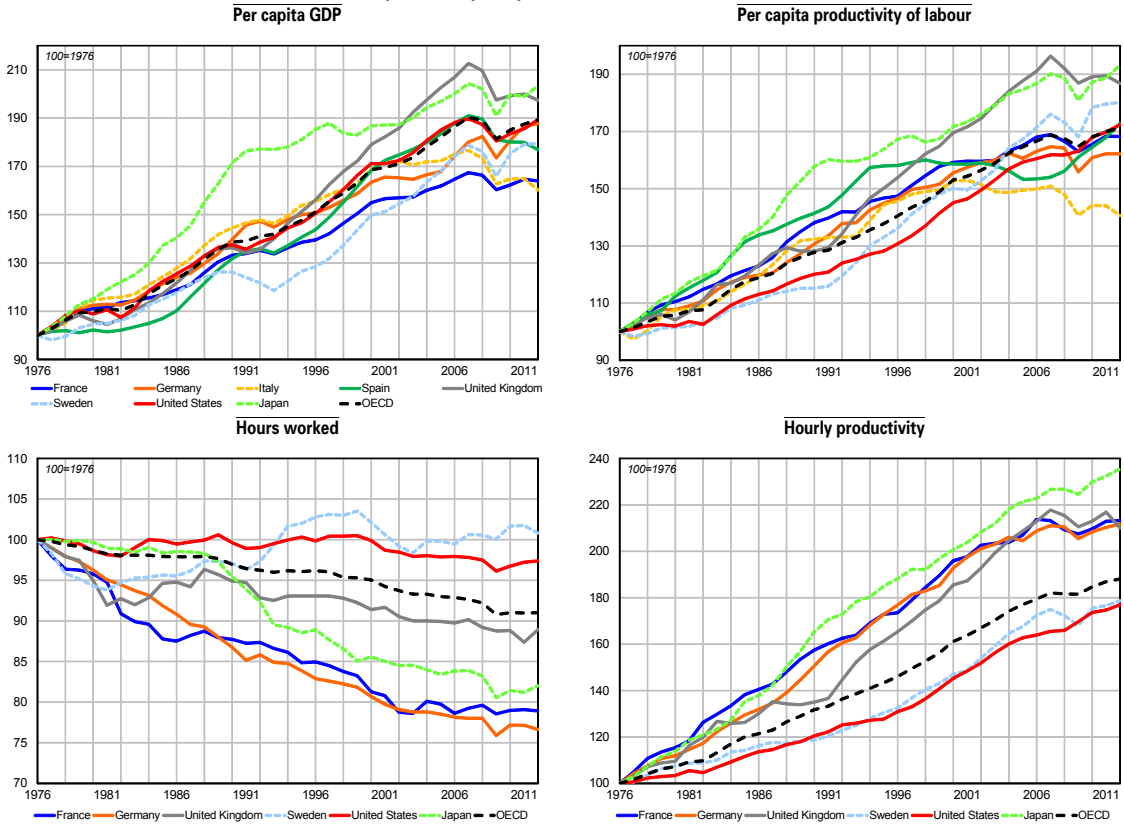
Per capita productivity can be broken down as:

Productivity per worker = Hours worked per worker x Hourly productivity (2).

Since 1976, per capita GDP has been less dynamic in France than in most of the other countries of interest: France (along with Italy) had the weakest growth over the period 1976-2012 (see Charts 3). The variation in per capita GDP shows less sensitivity to economic cycles in France than in other comparable economies: thus, the economic and financial shock of 2008-2009 was less brutal in France than in Italy, Spain, the United Kingdom and Japan. Moreover, although France posted higher per capita productivity gains than the OECD average until the early 1990s, that trend has since reversed, which confirms the multilevel gap analysis of productivity (see above).

Charts 3 and Table 3 also reflect the impact of France's decision to curtail the number of hours worked. The negative contribution to the growth rate differential was offset by the vitality of hourly productivity. Among the economies of interest here, Germany has also experienced a significant reduction in the number of hours worked, probably as a result of the rising prevalence of part-time work since the early 1990s. On the whole, per capita productivity has remained relatively dynamic in France and Germany compared to the other OECD countries.

Chart 3: Trend in components of per capita GDP in OECD member countries (base 100=1976)



Source: OECD, DG-Trésor calculations.

On the whole, Table 3 below also confirms the multilevel gap analysis performed earlier. Since 1976, France's per capita GDP growth has been lower than that of the OECD countries by 0.4 points as an annual average. This slower growth in wealth is a result of demographics, which accounts for 0.1 point, and the employment rate (labour force participation rate and unemployment rate), which accounts for 0.2 points. In addition, France's hourly productivity gains offset its decline in the number of hours worked over the entire period. The contribution of per capita productivity to the average annual gap in growth relative to OECD countries ends up being nil. The negative difference in the number of hours worked has become particularly significant with respect to the United States and Sweden, whereas Germany has reduced the number of hours worked even more than France.

Table 3: Breakdown of the gap of OECD countries relative to France in terms of average annual per capita GDP growth rate since 1976*

	D	a	(1-u)	P of which:	H	Ph	Per capita GDP
Canada	0.1	0.3	0.2	−0.5	0.4	−1.0	0.1
Germany	0.0	0.2	0.2	−0.1	−0.1	0.0	0.4
Sweden	0.0	0.0	0.0	0.2	0.7	−0.5	0.3
United Kingdom	0.1	0.0	0.1	0.3	0.3	0.0	0.5
United States	0.0	0.1	0.2	0.1	0.6	−0.5	0.4
Japan	−0.3	0.2	0.1	0.4	0.1	0.3	0.6
Netherlands	0.0	0.9	0.1	−0.9	0.2	−1.2	0.2
Denmark	0.0	0.0	0.1	−0.2	0.4	−0.6	0.0
Finland	−0.2	0.0	0.1	0.5	0.3	0.2	0.6
Total OECD	**0.1**	**0.1**	**0.1**	**0.0**	**0.4**	**−0.4**	**0.4**

Source: OECD.

*D=Share of 15-64 year olds in the total population ; a=Labour force participation rate; u=Unemployment rate ; P: per capita productivity; H=hours worked; Ph=Hourly productivity.

How to read: between 1976 and 2012, Germany's average annual per capita GDP growth rate is 0.4 points higher than that of France. The labour force participation rate is deemed to account for 0.2 points of that gap.

The 1990s marked a shift as France's per capita productivity gains fell below the OECD average (see Charts 4). Table 4 shows that over the past 20 years, demographics and the employment rate have contributed virtually nothing to France's growth deficit because the contributions tied to the share of working-age population and the labour force participation rate cancel each other out over this period. However, the relative stagnation of France's hourly productivity gains explains why per capita productivity henceforth subtracts from the per capita GDP growth relative to the OECD economies.

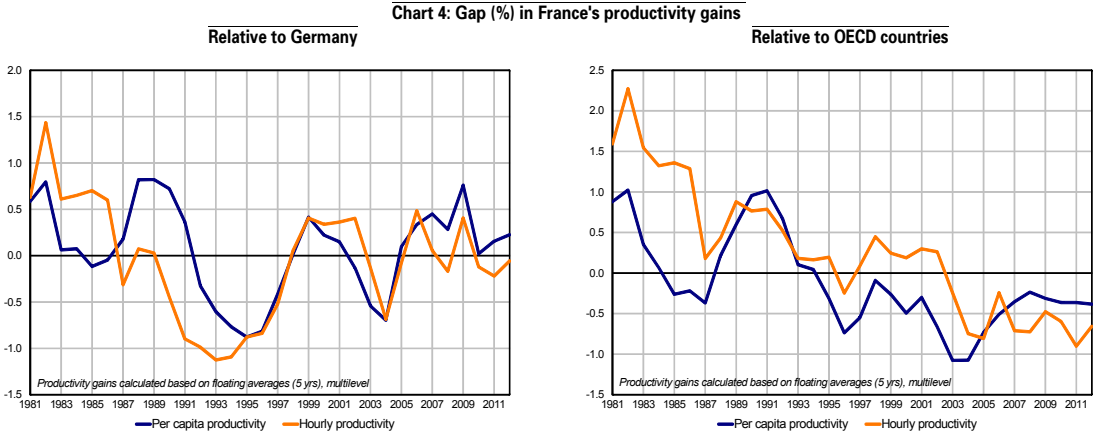
To sum up, the relatively weak per capita productivity gains in France (compared especially to the United Kingdom and Sweden, and to the United States over the past 20 years), have not been offset by a sharp improvement in the labour force participation rate over the period as a whole (especially compared to Germany). In particular, reducing the number of hours worked has not resulted in a more balanced sharing of work in France.

Table 4: Breakdown of the gap of OECD countries relative to France in terms of average annual per capita GDP growth rate since 1990

	D	a	(1-u)	P of which:	H	Ph	Per capita GDP
Canada	0.2	−0.2	0.1	0.1	0.3	−0.1	0.4
Germany	−0.1	0.2	0.1	0.1	−0.1	0.2	0.4
Sweden	0.1	−0.5	−0.2	1.2	0.7	0.5	0.7
United Kingdom	0.1	−0.3	0.0	0.8	0.2	0.6	0.7
United States	0.2	−0.5	0.0	0.8	0.4	0.4	0.5
Japan	−0.3	0.0	0.0	0.0	−0.2	0.2	−0.2
Netherlands	−0.1	0.5	0.2	−0.2	0.3	−0.5	0.6
Deneark	0.0	−0.5	0.1	0.5	0.5	0.0	0.1
Finland	0.0	−0.4	−0.1	0.8	0.2	0.6	0.5
Total OECD	**0.1**	**−0.2**	**0.0**	**0.4**	**0.2**	**0.2**	**0.5**

Source: OECD.

Chart 4: Gap (%) in France's productivity gains



Sources: OECD, DG-Trésor calculations.

* * * *

Based on this assessment, it is possible to identify the various avenues that France can pursue to raise its per capita GDP. The first step must be for France to resolve its deficit in labour force participation, particularly among older workers. In addition, France must pursue reforms aimed at reducing structural unemployment and supporting gains in hourly productivity (through innovation, competitiveness, flexicurity, vocational training and other measures).

The most recent national reform programme submitted to the European Commission describes reforms aimed at meeting these many challenges. The **Responsibility and Solidarity Pact** is designed to lower the cost of labour and, by cutting the red tape associated with hiring, boost the employment rate across the entire economy, particularly among the categories currently most remote from the job market (youth, unskilled labour, etc.). The recent pension reform passed on 18 December 2013 extends the full-pension contribution period. This move is intended to increase the rate of employment among older workers, thereby increasing the economy's growth potential. Finally, measures to simplify administrative formalities, reforms to enhance competitiveness, the pursuit and expansion of programmes to promote research and innovation (such as the research tax credit, the Investment for the Future programme, tax relief for innovative start-ups) are all aimed at enhancing productivity gains.

Box 1: **How France lost its lead in hourly productivity: analysing the decline in terms of capital intensity and total factor productivity (TFP)**

Trends in the hourly productivity of labour may be analysed from the perspective of total factor productivity (incorporating technical progress, improvements in the production structure or organisation) and capital intensity (number of units of capital per hour worked). Indeed, considering the following Cobb-Douglas function:

$$Y = AK^{\beta}L^{1-\beta} \quad (1)$$

where: Y = total real GDP, L = the labour input (the total number of person-hours worked), K = the capital input, β is the share of the earned rate of return in the added value, we arrive at the following relation (in which the lower case letters refer to annual growth rates):

$$y - l \approx a + \beta(k - l) \quad (2)$$

The gains in the hourly productivity of labour are thus equal to the sum of the gains in TFP plus the growth in capital intensity weighted by the share of earned rate of return in the added value.

A study of Table 5 shows that gains in hourly productivity underwent a general slowdown between the 1990s and 2000s in all OECD countries except the Netherlands, Sweden and the United States. Although it can be attributed primarily to the slowdown in TFP, capital intensity also plays its part, to a varying extent depending on the country (particularly in Sweden, the United Kingdom and Japan). Thinking in terms of gaps relative to France, gains in hourly productivity were the most dynamic during the recent period (2000-2007) in Sweden, Finland, Germany and the United States. Here again, France's relative slowdown in hourly productivity is due essentially to the TFP.

Table 5: Average annual rate of hourly productivity gains, TFP and the contribution of capital intensity to TFP

	Hourly productivit		Capital intensity		TFP	
	1991-2000	2000-2007	1991-2000	2000-2007	1991-2000	2000-2007
France	2.0	1.4	0.8	0.6	1.2	0.8
Canada	2.0	0.8	0.8	0.7	1.2	0.1
Germany	2.0	1.7	0.8	0.5	1.2	1.2
Sweden	2.5	2.5	1.1	0.7	1.4	1.8
United Kingdom	3.1	2.3	1.3	0.9	1.8	1.4
United States	1.8	2.0	0.6	0.7	1.2	1.4
Japan	2.0	1.7	1.4	0.6	0.6	1.0
Italy	1.6	0.3	0.8	0.5	0.8	−0.3
Spain	1.1	0.6	0.8	0.7	0.3	−0.1
Netherlands	1.3	1.6	0.8	0.9	0.6	0.7
Denmark	1.9	1.1	1.2	1.1	0.7	0.1
Finland	3.2	2.4	0.5	0.3	2.6	2.1

Source: DG Trésor.

Camille THUBIN

Nicolas Ferrari strongly urged that this study be published. The author and the editorial team of Trésor-Economics wish to pay tribute to Nicolas and dedicate this issue to him.

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