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The change in the labour share in value added in advanced economies

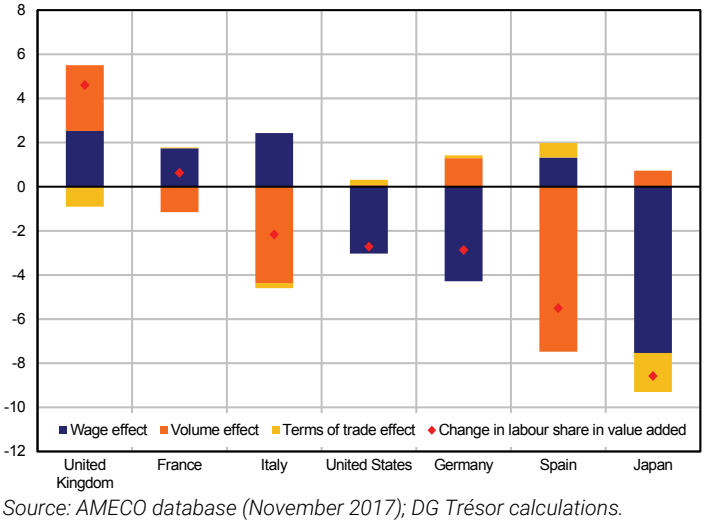
- Analysis of how the value added is shared between production factors provides insight into trends in inequalities and private consumption. The division reflects both relative changes in the volumes of capital and labour, and the relative trends in compensation per unit of capital and labour. "Distributable surplus" is a helpful concept for studying the division of value added; it is the share of real GDP growth–arising primarily from productivity gains–available to improve unit (hourly) compensation of labour, and unit compensation of capital.

- Since the 1990s, the labour share in value added has declined in most leading OECD countries, generally to the benefit of higher profit margins, except in France where the labour share has been broadly stable, and the United Kingdom where it has increased. In countries where the labour share has fallen, the decline is attributable to two effects, namely increased capital intensity and low growth in real wages. The magnitude of these effects differs across countries; increased capital intensity is particularly pronounced post-financial crisis in Italy and Spain, whereas low real wage growth has had a greater effect in Germany, the United States and Japan.

- In the long run, on average, the distributable surplus is allocated essentially to raising real wages. The observed slowdown in real wages is accordingly due in part to slower productivity gains in most of the large advanced economies, reducing the distributable surplus and therefore the rate of growth of real hourly wages. However, since the mid-1990s, part of the distributable surplus has also gone to the remuneration of capital in Germany, the United States and Japan, rather than to increasing workers' hourly compensation. This has not been the case in France, where the entire surplus has gone to workers' hourly compensation.

- The decline of the labour share in value added may have multiple causes. Technical progress may induce substitution of capital for labour. Increasing exposure to trade and international competition may encourage the relocation of labour-intensive stages of production processes; it may also lead to a reduction in employees' bargaining power, thereby exerting downward pressure on wages. Further, in some countries, a rise in firms' market power may have dampened the trend in real wages.

Change in labour share from 1994 to 2015 (percentage points)



Source: AMECO database (November 2017); DG Trésor calculations.
Scope: Total economy.

Interpretation: In Italy from 1994 to 2015, the labour share in value added fell by 2.2 points; this includes the negative 4.4-point impact of increased capital intensity (the volume effect) and the positive 2.4-point impact of real wages growing faster than the distributable surplus (the wage effect). The domestic terms of trade (DTT) effect was weak in the period.

1. The labour share has fallen in most advanced economies

1.1 Since the 1990s, the labour share has declined in most advanced economies

How value added is divided between workers and owners of capital has been a major issue in recent economic debates,[1] whether in relation to the significant increase in inequalities in many countries[2] or regarding trends in private consumption. Since the mid-1990s, the labour share in value added[3] has fallen in most leading OECD countries,[4] except the United Kingdom, where the labour share has risen, and France, where it has remained virtually stable (see Table 1). The biggest declines in the labour share since the mid-1990s have been in Japan and Spain, followed by Germany, the United States and Italy.

This has been counterbalanced by an opposite change in the margin rate (the capital share in value added for the total economy), which has increased in most countries, except the United Kingdom, Italy and France. The share of value added allocated to indirect taxes has also risen in most countries, particularly Spain and even more notably in Italy,[5] but remained largely unchanged in France over the period.

Table 1: Change in the value added sharing, in nominal terms, 1994-2015 (%)

Country	Labour share	Capital share	Indirect taxes
France	0.6	−0.4	−0.2
Germany	−2.9	1.6	1.3
Italy	−2.2	−1.6	3.8
Spain	−5.5	3.5	2.0
United Kingdom	4.6	−5.8	1.2
United States	−2.7	6.4	−3.7
Japan	−8.6	6.5	2.1

Source: Ameco database; DG Trésor calculations.
Scope: Total economy.

One potential explanation of these trends is the sectoral composition of the economy. Since the 1960s, some low labour-intensive activities in the services sector have expanded (e.g., financial intermediation) while high labour-intensive industries (e.g., textiles) have contracted. The composition effect was particularly pronounced in Spain and Italy, where the decline in the labour share appears to be explained largely by the specific dynamics at work in the non-market, property and financial services sectors), but elsewhere it plays only a marginal role. Apart from these specific sectors, the composition effects between manufacturing and services appear to have played only a minor role in the decline of the labour share.[6]

1.2 The changes in the labour share reflect changes in wages and in capital intensity

The change in the division of value added between production factors exhibits sensitivity to the relative changes in the volumes of capital and labour, and to relative changes in compensation per unit of input. The decline of

(1) See OECD (2012), "Labour Losing to Capital: What Explains the Declining Labour Share?" in OECD Employment Outlook 2012, OECD Publishing, and IMF (2017), "Understanding the Downward Trend in Labour Income Shares," *World Economic Outlook*.
(2) See V. Cohen, L. Rabier and L. Shimi (2017), "Globalisation, growth and inequality: implications for economic policy," *Trésor-Economics* No. 210. "The increase in income inequalities [in many advanced countries] also reflects the downtrend in the share of labour income in value added in most countries (but not in France) and the concurrent growth of capital, whose income goes mainly to higher-income households."
(3) The labour share in value added is understood here as the share of GDP in nominal terms allocated to the compensation of employees and the self-employed. GDP is decomposed into the capital income share (gross operating surplus and mixed income exclusive of non-wage labour income), the labour income share (including non-wage income of the self-employed), and indirect taxes. Because the accounting equality cannot be reconstituted from the data available for the United States, the tax variable serves as the balancing item.
(4) The data used relate to Germany, Spain, France, Italy, the Unites States, the United Kingdom and Japan, and are drawn from the European Commission's AMECO database published in November 2017.
(5) In Italy, the sharp increase in indirect taxes observed in 1998-from 12.4% of GDP in 1997 to 15.3% the following year-is explained by the introduction of the IRAP (regional tax on productive activities); this is a tax on net value added of businesses and the self-employed, which replaced a number of direct taxes (local income tax, tax on company assets, municipal tax on businesses and the self-employed).
(6) See C. Schwellnus, A. Kappeler and P.-A. Pionnier (2017) "Decoupling of wages from productivity: macro-level facts," *OECD Economics Department Working Papers* No. 1373.

the labour share in value added can thus be decomposed into two principal effects (see Box 1): (i) labour compensation may grow less rapidly than technical progress (wage effect); and (ii) the production process may become more capital intensive (volume effect), with a capital stock that grows more rapidly than effective labour (i.e., the quantity of labour taking account of technical progress).

Under the simple theoretical framework of the Solow model, in a balanced growth regime, per capita value added and per capita capital both grow at the rate of technical progress; this corresponds to a volume effect equal to zero in the decomposition described above.

The concept of "distributable surplus" enables us to identify the effects involved in wage trends. The distributable surplus is defined as the share of GDP growth available to increase the compensation per unit of the production factors (real hourly remuneration of labour, or real unit return on capital, thus excluding changes in the volume of the factors).[7] It comprises (i) total factor productivity (TFP) gains[8] and (ii) the change in domestic terms of trade (DTT), defined as the ratio of the value added price index to the domestic demand index, which can be viewed as a levy by the rest of the world.[9] In accounting terms, the surplus is distributed between workers (employees and self-employed),[10] through changes in their compensation, and holders of capital, through changes in the return on capital. A portion also goes to general government through changes in taxes on products and production.

Box 1: Decomposition of changes in the labour share into wage effect and volume effect

Let $\dot{x}$ denote the rate of growth of any variable x, Δ the difference operator between two years, α_x the share of each factor x (capital *K*, labour *L*, indirect taxation *I*) in value added (by construction, the sum of the α_x terms is unity), p_{GDP} the GDP deflator, p_{DD} domestic demand prices, *Y* real GDP, *L* the number of hours worked, *K* the stock of capital, *w* the nominal hourly wage (including for self-employment), r_b the gross real interest rate (i.e., the ratio of gross operating surplus to the volume of capital, deflated by the price of domestic demand, which corresponds to the sum of the net real interest rate and the rate of capital depreciation).

To decompose changes in the labour share in value added, we assume that the production function is Cobb-Douglas with constant returns to scale and uses two inputs (capital and labour) valued at factor cost, that is, adjusted for the change in indirect taxes and subsidies *I*.[a] It accordingly takes the form:[b]

$$\dot{Y} = \frac{\alpha_L}{1-\alpha_I}\dot{A} + \frac{\alpha_L}{1-\alpha_I}\dot{L} + \frac{\alpha_K}{1-\alpha_I}\dot{K}$$

with $\alpha_L + \alpha_K + \alpha_I = 1$ and where $\alpha_L \dot{A} = \dot{TFP}$ represents the growth of technical progress.

a. These are taxes on products and production net of subsidies (D2 less D3 in the national accounts). This is equivalent to the assumption that indirect taxation falls equally on capital and labour.

b. The elasticity of output to labour (commonly denoted by α) is here assimilated to the labour share in value added α_L: because α is not directly observed in the data, the calculations use the labour share in value added (which is observed). Because $\alpha = \alpha_L$ only under pure and perfect competition, this is an approximation. To estimate the potential growth rates of the euro area member states, the European Commission also considers α to be fixed, and equal to α_L (see K. Havik *et alii* (2014), "The Production Function Methodology for Calculating Potential Growth Rates & Output Gaps", *Economic Papers* 535). The Commission uses the value α_L =0,63, which was the average labour share in the EU-15 over the period 1960-2003, for all Member States.

(7) The methodology developed here is based on the model in *Trésor-Economics* No. 189, "Composition and allocation of the distributable surplus in France since the crisis" by A.-S. Dufernez and L. Le Saux (2017).

(8) Total factor productivity (TFP) growth is defined as the increase in output that is not explained by the increase in the volume of production factors (the number of hours worked, and the stock of capital, adjusted for the volume change in indirect taxes). TFP growth incorporates everything that can improve the combination of labour and capital in the production function, e.g., innovation and improvements in the labour supply.

(9) For example, an acceleration in import prices, particularly energy prices, when passed on in higher domestic demand prices, causes a decline in the terms of trade and therefore reduces the distributable surplus.

(10) Non-wage labour income is subtracted from the gross operating surplus and mixed income, and added to wages under the assumption that per capita income is the same for wage earners and non-wage earners. Due to data availability considerations, this assumption differs slightly from the assumption employed by Dufernez and Le Saux (2017), in that it results in a higher capital share for France.

We are interested in the labour share (the share of compensation for hours worked *wL)* in nominal GDP $p_{GDP}Y$, expressed as a growth rate. This share depends on the differential between the trend in real wages and the trend in hourly productivity, and the two terms are each compared to the rate of growth of technical progress, which is their theoretical rate of growth on the Solow equilibrium path:

$$\dot{\alpha}_L = \left(\frac{\dot{wL}}{p_{GDP}Y}\right) = \left[\frac{\dot{w}}{p_{GDP}}\right] - [\dot{Y} - \dot{L}] = \left[\left(\frac{\dot{w}}{p_{GDP}}\right) - \dot{A}\right] - [\dot{Y} - \dot{L} - \dot{A}]$$

Writing capital intensity $k = \frac{K}{AL}$, the change in the labour share is thus decomposed into two parts:

$$(1) \quad \Delta\alpha_L = \left[\alpha_L\left(\frac{\dot{w}}{p_{GDP}}\right) - T\dot{F}P\right] - \left[\alpha_L \frac{\alpha_K}{1-\alpha_I}\dot{k}\right] = \left[\alpha_L\left(\frac{\dot{w}}{p_{GDP}}\right) - T\dot{F}P\right] + \underbrace{\frac{\alpha_K}{1-\alpha_I}\left[T\dot{F}P - \alpha_L\left(\frac{\dot{K}}{L}\right)\right]}_{\text{Volume effect}}$$

This first decomposition enables us to identify a volume effect, which is capable of explaining a shift in the value added sharing: a steady decline in capital intensity on the balanced growth path of the Solow model could explain an increase in the labour share. Similarly, a decline in the labour share can be explained by effective labour[c] growing at a slower rate than capital.

The first term in this decomposition also highlights the role of wages: if real compensation of labour (at GDP prices) grows faster than technical progress–which is the prevalent pattern in a balanced growth regime–then wage growth tends to increase the labour share in value added. This term can be clarified by examining it in the context of domestic demand prices and introducing the concept of "distributable surplus." The distributable surplus, defined as the portion of GDP growth available to increase real compensation per unit of input, is made up of gains in total factor productivity *TFP* and the change in the domestic terms of trade *DTT*, and is written:

$$\begin{aligned} distributable\ surplus &= T\dot{F}P + D\dot{T}T \\ &= \left[\dot{Y} - \alpha_L\dot{L} - \alpha_K\dot{K} - \alpha_I\dot{Y}\right] + \left[\dot{p_{GDP}} - \dot{p_{DD}}\right] \end{aligned}$$

Substituting into equation (1) the distributable surplus and domestic demand prices, we obtain the following equation in which the change in the labour share in value added is expressed as the sum of the following three effects:

$$(2) \quad \Delta\alpha_L = \underbrace{\left[\alpha_L\left(\frac{\dot{w}}{p_{DD}}\right) - \underbrace{\left(T\dot{F}P + D\dot{T}T\right)}_{distributable\ surplus}\right]}_{\text{Wage effect}} + \underbrace{(1-\alpha_L)\left(\frac{\dot{p_{GDP}}}{p_{DD}}\right)}_{\text{DTT effect}} + \underbrace{\frac{\alpha_K}{1-\alpha_I}\left[T\dot{F}P - \alpha_L\left(\frac{\dot{K}}{L}\right)\right]}_{\text{Volume effect}}$$

The wage effect depends on how the distributable surplus is allocated in the economy; it is redistributed between capital, labour and indirect taxation as indicated in the following equation:

(3) *distributable surplus* = increase in real unit compensation of capital
+ increase in real unit compensation of labour
+increase in taxation of products and production

$$= \alpha_K * \dot{r}_b + \alpha_L * \left(\frac{\dot{w}}{p_{DD}}\right) + \alpha_I * \left(\frac{\dot{I}}{Y\ p_{DD}}\right)$$

Equation (2) enables us to isolate two effects, in addition to the volume effect:

- The wage effect corresponds to the difference between the surplus allocated to labour and the total distributable surplus. The wage effect is therefore positive if the surplus distributed to labour is greater than the total surplus, and negative if the unit compensation of capital (and/or taxation) absorbs part of the surplus.
- "The "domestic terms of trade" effect improves the compensation of the factors of production, at domestic demand prices, if production prices rise faster than domestic demand prices. In the long run, however, this effect is negligible compared to the wage effect and the volume effect.

c. "Effective labour" is the actual quantity of labour adjusted for technical progress (AL).

In the theoretical model, on a balanced growth path, the real return on capital is constant, so real wage growth is driven by productivity gains[11] and the distributable surplus is allocated in full to increasing labour compensation (the variation in the terms of trade being zero); this corresponds to a wage effect equal to zero in our decomposition. Each factor's share in value added is constant in the model, contrary to the observations in most advanced countries since the mid-1990s. To identify the origin of the variations observed, one can analyse (i) changes in the distributable surplus and how it is allocated between the production factors per unit of input (analysis of the wage effect), and (ii) the relative change in the amounts of capital and labour (analysis of the volume effect). The wage effect and volume effect may therefore be interpreted as the deviations between the observed changes in wages and capital intensity, respectively, and the predicted values along the steady state growth path of the theoretical model.

2. The slowdown in wages reflects the slowdown in productivity in all countries studied, as well as a shift to higher compensation of capital in certain cases

2.1 The decline in distributable surplus and in productivity gains since the 1990s has had an adverse impact on wage growth

Since the mid-1990s, the annual distributable surplus has declined significantly due to weakening productivity growth in all the countries examined. The domestic terms of trade are found to have had little influence on the long-run average. The distributable surplus thus declined from an average of approximately one point of GDP per year in the period 1995-2001 to roughly 0.5 points of GDP per year in the 2000s (see Table 2).

On average over the long run, as predicted by the growth models, the surplus was allocated essentially to higher labour compensation, with only a small portion allocated to capital and taxes.[12] Accordingly, in the seven OECD countries studied, the slowdown in productivity gains since the start of the 1990s has led to a fall in the surplus available to improve the compensation of factor inputs and therefore a slowdown in real hourly wages.

Table 2: Sources of the annual distributable surplus and average allocation per sub-period and per country over the entire period 1995-2015, in the seven OECD countries studied (points of GDP)

		Productivity gains(a)	Change in domestic terms of trade (b)	Distributable surplus = (a)+(b) =(c)+(d)+(e)	Share of surplus going to		
					labour (c)	capital (d)	indirect taxes (e)
Arithmetic mean of the 7 countries	1995-2001	1.1	−0.1	1.0	0.8	0.2	0.1
	2002-2008	0.5	−0.2	0.3	0.4	−0.1	0.0
	2009-2015	0.3	0.1	0.4	0.5	−0.1	0.1
1995-2015	France	0.6	0.0	0.6	0.7	−0.1	0.0
	Germany	0.8	0.0	0.8	0.6	0.1	0.1
	Italy	0.1	−0.1	0.0	0.1	−0.3	0.2
	Spain	0.1	0.1	0.1	0.2	−0.2	0.1
	United Kingdom	0.9	−0.1	0.8	0.9	−0.2	0.1
	United States	1.0	0.0	1.0	0.9	0.3	0.0
	Japan	0.9	−0.3	0.7	0.3	0.3	0.1

Interpretation: In the period 2002-2008, the distributable surplus came to 0.3 point per year on average in the seven countries; this included 0.5 point linked to TFP growth and −0.2 point linked to the change in the terms of trade. The labour share was 0.4 point per year on average and the capital share was −0.1 point per year.
Source: Ameco database; DG Trésor calculations.
Scope: Total economy.

(11) See P. Cahu (2009), "Distributable surplus and share-out of value added in France," *Trésor-Economics* No. 59.
(12) Except in Japan, where the labour share and capital share were equal, on average, over the period.

2.2 Return on capital has absorbed the shocks to the distributable surplus, except in the two English-speaking countries

The distributable surplus varies from year to year depending on the state of the economy. In particular, while the terms of trade have a limited effect in the long run, they contribute strongly to the volatility of the surplus, due to their sensitivity to energy prices. Periods of rapidly rising oil prices are associated with a fall in the terms of trade, and therefore of the surplus, and vice versa. For example, the surplus was negative in all seven countries examined during the 2008-2009 crisis, primarily due to the negative contribution by productivity, and then again in 2011 and 2012 in certain countries due to the rise in energy prices.

Because of the downward rigidity of wages, economic shocks to the distributable surplus are mainly absorbed in the short term by compensation of capital, which exhibits greater sensitivity in the short term than labour to the distributable surplus in most of the leading OECD countries, except the United Kingdom and the United States (see Table 3); this is probably explained by a lower level of employment protection and a lower degree of coverage by collective agreements in both countries, and also, in the United States, by a relatively low rate of trade union membership.[13] A sharp drop in the share of the surplus distributed to capital was thus observed in all seven OECD countries during the 2008-2009 crisis, and to a lesser extent in the euro area countries during the 2011-2012 crisis.

Table 3: Share of the variance of distributable surplus absorbed by real compensation of labour, capital and taxation

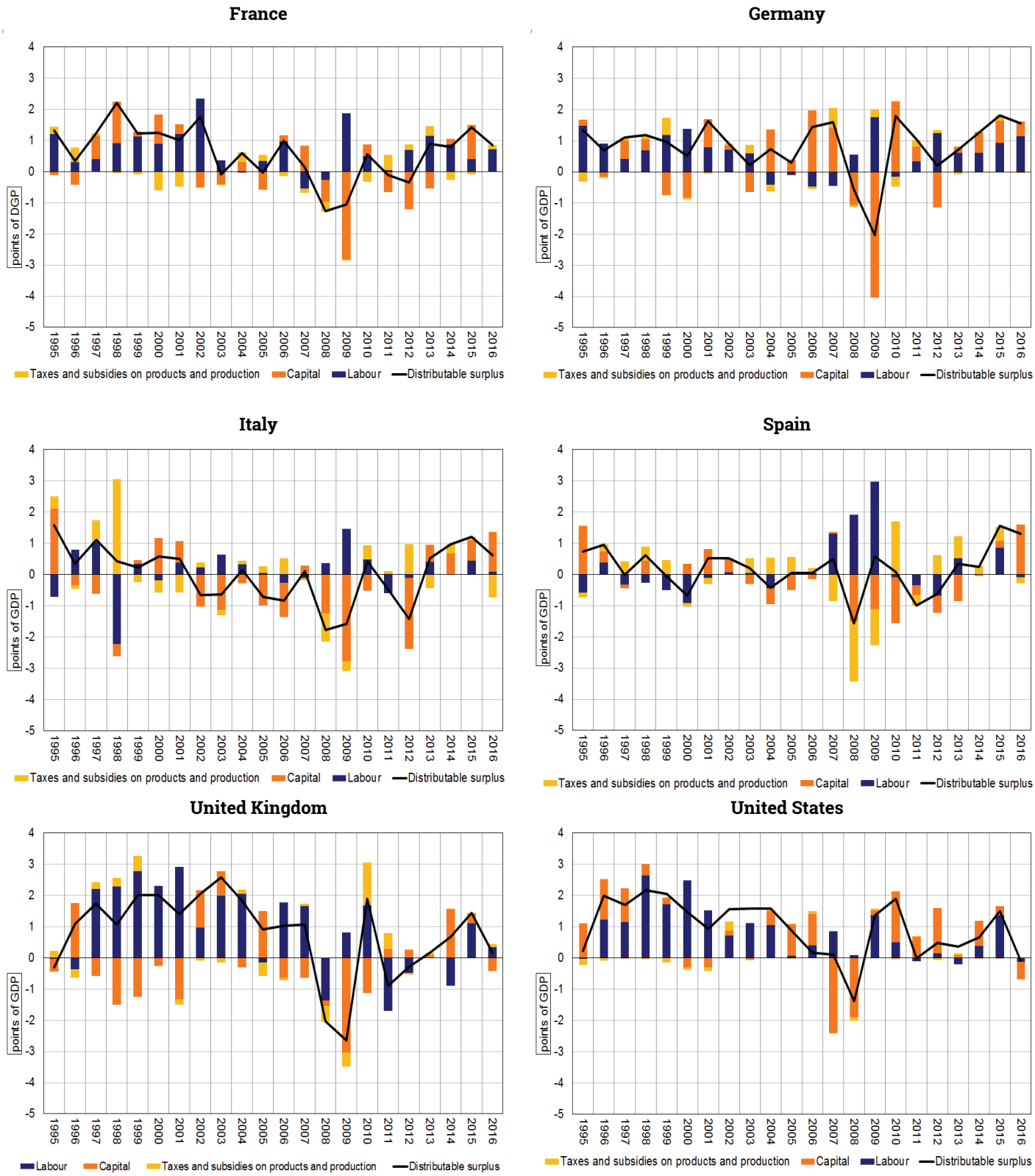
	Labour 1995-2015	Capital 1995-2015	Taxation 1995-2015
France	29%	75%	−4%
Germany	−30%	133%	−3%
Italy	−14%	101%	12%
Spain	18%	51%	31%
United Kingdom	68%	23%	9%
United States	61%	47%	−8%
Japan	13%	86%	1%

Interpretation: In France from 1995 to 2015, 75% of the volatility of the distributable surplus was absorbed by changes in the real return on capital, versus only 23% in the United Kingdom.
Source: Ameco database; DG Trésor calculations.
Scope: Total economy.

In Italy, unlike the other countries, the total surplus was negative from 2002 to 2012 (except in 2004, 2007 and 2010); this mainly impacted compensation of capital, which fell on average, while compensation of labour continued to post low growth. As a result, the capital share in value added for the total economy declined sharply over the 2002-2012 period, but picked up sharply from 2013, with the improvement in the surplus allocated mainly to the increase in compensation of capital (see Chart 1).

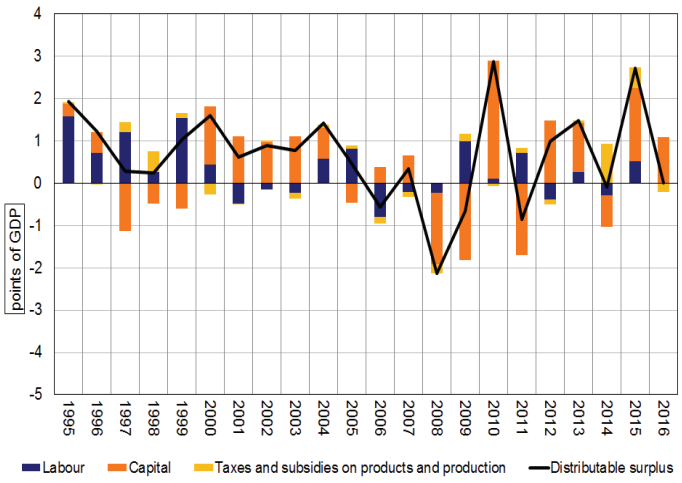
(13) *OECD Employment Outlook 2013*: The indicator of the strictness of employment protection of workers with regular contracts against individual dismissal (EPR) shows that "the United States stands out as the least regulated country in this area. Most other English-speaking common-law countries (Canada, New Zealand and the United Kingdom) as well as Hungary also appear to have unrestrictive regulations for individual dismissals." See also *OECD Employment Outlook 2012* (*op. cit.*).

Chart 1: Allocation of the distributable surplus in seven leading OECD countries, 1995-2016 (%)



Source: AMECO database; DG Trésor calculations. Scope: Total economy.

Japan



Source: Ameco database; DG Trésor calculations. Scope: Total economy.

2.3 Over the 20-year period, labour failed to capture the entire surplus in some countries

Economic shocks affecting the domestic terms of trade or TFP, and therefore the size of the distributable surplus, can be cushioned in the short term by changes in the capital share; other factors can also change the division of the distributable surplus, e.g., measures to promote wage restraint or that contribute to restoring corporate profit margins may increase the share distributed to capital and reduce the labour share. The allocation of the surplus can also be affected temporarily during periods of strong changes in real interest rates, which affects the return per unit of capital.

Since the mid-1990s, despite the fact that virtually the entire surplus, on average, has gone to increase labour compensation, a portion of the surplus has been allocated to compensation of capital (and indirect taxes); the cumulative impact can be relatively large in certain countries. The sum of the surpluses distributed to capital over twenty years is positive in Germany, the United States and Japan; this means that the increase in compensation of capital has absorbed a portion of the distributable surpluses at the expense of labour (therefore indicating a negative wage effect on the labour share in value added). On the other hand, the sum of the surpluses distributed to capital is negative in Italy, Spain, the United Kingdom and France, and the surpluses distributed to labour have exceeded the sum of the distributable surpluses (indicating a positive wage effect on the labour share in value added).

3. The decline of the labour share reflects different situations across countries

3.1 Increase in capital intensity in Spain and Italy; and wage growth trailing behind growth in the distributable surplus in Germany, the United States, and Japan

The change in the labour share in value added reflects different situations in each country. Decomposing the change into wage effect and volume effect (see Box 1) makes it possible to identify several groups of countries:

- Among the countries where the labour share has declined:
  - On the one hand, countries where the decline in the labour share reflects an increase in capital intensity (negative volume effect), arising mainly from adjustment of the labour market during and after the financial crisis, as in the case of Italy and Spain[14] (see chart on page 1).
  - On the other hand, countries where the decline in the labour share indicates that labour received less than a 100 percent share of the total surplus, that is, in which real wage growth was lower than growth in technical progress, leading to a negative wage effect, as in the case of Germany, the United States and Japan.
- In France, the increase in capital intensity has been counterbalanced by real wages growing at a higher rate than the total surplus (negative volume effect, but positive wage effect), leaving the labour share in value added virtually stable, or even slightly higher.

(14) In Spain, the negative volume effect arises because the pace of job losses exceeded the pace of the economic slowdown throughout the crisis and into 2013. The wage effect is also negative over the period 1995-2008: average per capita wages fell by 2% in real terms over the period, as substantial immigration exerted downward pressure on wages.

- The United Kingdom stands as an exception: the labour share in value added increased due not only to wage growth (particularly in the period 1995-2001, driven by a declining unemployment rate combined with labour market tensions),[15] but also due to growth in jobs (notably before the 2008 crisis), partly on the strength of substantial immigration, as foreign-born workers as a percentage of total employment increased from 7.2% in 1993 to 16.7% in 2015.

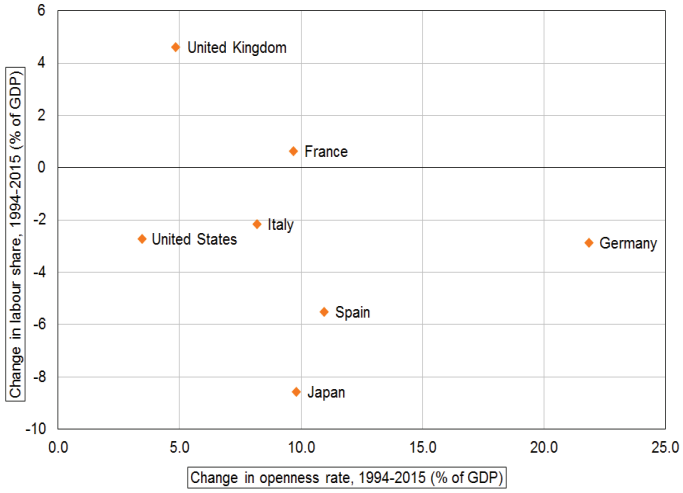
3.2 Technical progress, trade openness and the increase in firms' market power may contribute to the decline in the labour share

Decomposing the changes in value added sharing into wage effect and volume effect makes it possible to determine whether the fall in the labour share of value added is caused primarily by low compensation of employees (wage effect) or by a change in the structure of production in relation to increased capital intensity (volume effect). A number of macroeconomic and structural factors are capable of explaining the decline in the labour share, and may often affect both these channels.

Recent studies have attributed the decline in certain countries' labour share to their opening-up to world trade,[16] which could affect both the volume effect and the wage effect. First, trade openness encourages firms to use more capital and less labour in advanced countries, by relocating labour-intensive segments of their production processes. Further, exposure to international competition can reduce employees' bargaining power, thus affecting real wages (see below). The countries with the greatest reduction in the labour share of value added, e.g., Japan, Spain and Germany, are indeed the countries that experienced the greatest degree of opening-up during the period (see Chart 2).

Some research also points to the role played by technical progress in the decline of the labour share.[17] In particular, the diffusion of information and communication technologies (ICT) has contributed to raising productivity, enabling the automation of some types of low- or medium-skilled jobs involving repetitive tasks, while skilled labour is more complementary to capital. Technical progress (e.g., trade globalisation) can thus induce changes in the national economy production function affecting both the wage and volume components of the change in the labour share.[18]

Chart 2: Change in labour share from 1994 to 2015 as a function of the openness rate in seven leading OECD countries



Source: Ameco database; DG Trésor calculations.

In some countries, the decline in the labour share could also be explained by the weakening of workers' bargaining power. In Germany in the 2000s, capital captured the largest share of the distributable surplus, as efforts were made to restrain wages[19] (see Box 2). The same pattern was observed in Japan from 2000 to 2007.[20] Broadly speaking, workers' bargaining power can be influenced by economic policy and institutions (e.g., minimum wages, the institutional framework of collective bargaining, trade union bargaining power, taxes on labour and distribution policy, and regulatory reforms of markets for labour, goods and services). Increased market power by firms can thus exert downward pressure on the labour share in value added in two ways, by a volume effect and by a wage effect. Weaker competition can enhance employers' bargaining power, and/or enable employers to raise prices of goods and services, to the detriment of wage-earners' purchasing power.[21] It can also affect the total factor productivity trend

(15) The United Kingdom unemployment rate fell from 8.9% in 1995 to 5.2% in 2001, as the OECD (1998, 2000) reported increased difficulty in hiring, reflecting labour market tensions.
(16) See IMF (2017), *op. cit.*
(17) See, e.g., OECD (2012), *op. cit.*
(18) For example, if the elasticity of output to labour (α) were to fall, capital intensity would probably increase (negative volume effect), while the wage effect could work either way (the marginal productivity of labour could either increase or decrease), with the total effect on the labour share being negative.
(19) See D. De Waziers (2017), "Rationale for the new wage momentum in Germany," *Trésor-Economics* No. 202.
(20) The situation in Japan results from firms' deleveraging after the crises of the 1990s, primarily by lowering their wage bill. See M. Ben Yaala (2018), "Is higher wage growth on the horizon in Japan?" *Trésor-Economics* No. 220.
(21) See J. Azar, I. Marinescu and M. Steinbaum (2017), "Labor market concentration," *NBER Working Paper* No. 24147 and E. Benmelech, N. Bergman and H. Kim (2018) "Strong employers and weak employees: how does employer concentration affect wages?" *NBER Working Paper* No. 24307.

and incentives to invest, and therefore capital intensity. Furthermore, the growing prominence of capital-intensive superstar firms in the United States economy could also contribute to reducing the share of aggregate compensation of employees.[22]

Box 2: Wage moderation in Germany and in Spain analysed in terms of distributable surplus and share of value added

Unit labour costs (ULCs) correspond to the wage share in value added multiplied by the GDP deflator:

$$CSU = \alpha_{L,employee} \times p_{GDP}$$

Both in Germany from 1994 to 2007 and in Spain in the aftermath of the crisis (2009-2015), the decline in ULCs was accompanied by a decline in the labour share of value added.

The decline in the labour share, however, is attributable to different factors in each country (see Chart 3):

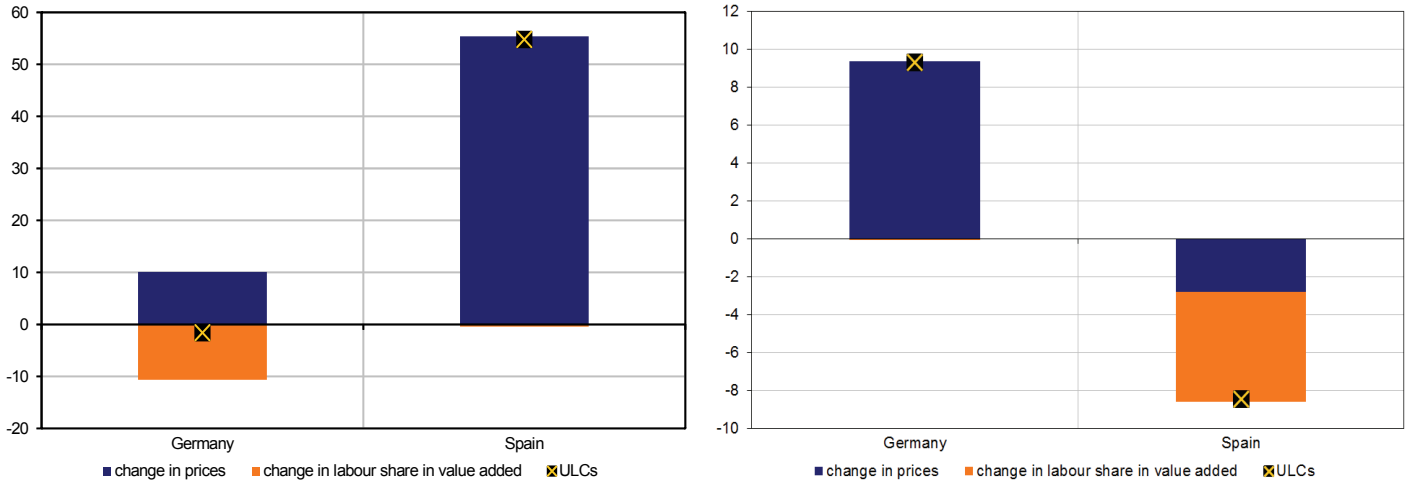
- In Germany, moderate growth in wages relative to the surplus (negative wage effect):

The period before the financial crisis was marked by Germany's policy of wage moderation that aimed to tackle unemployment and improve international competitiveness. Since the end of the crisis, however, the rate of wage growth has increased sharply and contributed to a partial rebalancing of competitiveness across euro area Member States (since 2011, ULCs have risen faster in Germany than the euro area average). Still, the recent increase has not been enough to eliminate the unit labour cost differentials that arose in the euro area from 1995 to 2007.

- In Spain, a drastic alteration of the labour market (negative volume effect):

From early 2008, when employment peaked, to 2013 when net job losses ceased, Spain's economy destroyed close to 20% of total jobs. The unemployment rate rocketed from the trough of 8.3% in 2007 to a peak of 26.1% in 2013. Sector trends-particularly the collapse of the property bubble-played a role, but they fail to explain the full extent of job losses, as employment "over-adjusted" to changes in activity in all sectors of the economy. This may have been caused, in part, by the structural characteristics of the Spanish labour market before the reforms introduced from 2010 through 2012, and notably the influence of the collective bargaining system on wage determination, which may have contributed to making the burden of the adjustment fall mainly on employment numbers, combined with the segmentation of the Spanish labour market.[a]

Chart 3: Decomposition of changes in unit labour costs into price-level changes and changes in the labour share



Source: Ameco database; DG Trésor calculations.

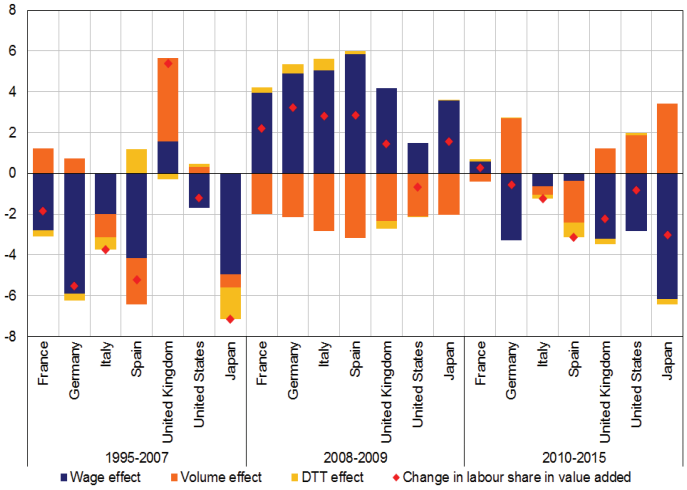
a. See J. Anne-Braun, M. Bogue, C. Gouardo and R. Mathieu (2016), "Spain's labour market reform: an initial assessment," *Trésor-Economics* No. 174.

(22) See E. Hooper and L. Rabier (2018), "Competition and business concentration in the United States," *Trésor-Economics* No. 232.

3.3 The labour share increased during the financial crisis, before declining in all countries except France

Before the financial crisis, the labour share in value added had declined in most major advanced countries (except the United Kingdom). It briefly rebounded in 2008-2009 (except in the United States, see Chart 4), as the simultaneous rise in wages and decline in the total surplus (positive wage effect) offset the increase in capital intensity (negative volume effect as unemployment rose). Starting in 2010, the labour share resumed the pre-crisis downward trend in all seven countries, with the exception of France, where the labour share was broadly stable. Employment picked up relative to capital in Germany, the United Kingdom, the United States and Japan (positive volume effect) but wage growth trailed behind growth in the total surplus (negative wage effect) in all seven countries except France.

Chart 4: Decomposition of changes in the labour share in value added before, during and after the financial crisis (%)



Source: Ameco database; DG Trésor calculations.

Scope: Total economy.

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