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The Labor Share in the Long Term: A Decline?

Gilbert Cette*, Lorraine Koehl** and Thomas Philippon***

Abstract – We challenge the accepted wisdom of a global secular decline in the labor share. A simple theoretical model is proposed to highlight the main factors of change in the labor share. We document three issues in the existing literature: (i) starting periods for the empirical analysis; (ii) accounting for self-employment; and (iii) accounting for residential real estate income. An empirical analysis is carried out since the post-war period for France and the United States, and since the 1990s for ten developed countries and on a six-country “euro area”. How the three questions above are addressed is crucial to the diagnosis. When the biases that may arise with the three issues mentioned above are eliminated, the labor share in the market sector does not show a general downward or upward trend. The choice of period has a huge impact, as does the treatment of real estate services, whose inclusion or not in the value added can result in significantly different trends.

JEL Classification: D33, D24, J33

Keywords: labor share, labor cost, value added sharing

Reminder:

The opinions and analyses in this article are those of the author(s) and do not necessarily reflect their institution's or Insee's views.

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The evolution of the labor share plays a central role in economics. Following Kaldor (1957), economists have viewed the relative long-term stability of the labor share as an important stylized fact. In recent years, however, the stability of the labor share has been challenged. The common wisdom is that there has been a global and gradual decline in the labor share over the past 30 or 40 years. For instance, Grossman *et al.* (2017) motivate their recent paper by writing that “*unlike several of the other explanations for the decline in the labor share, ours does not rely on considerations that are specific to the United States. The shift in aggregate factor shares has been seen in the data for many countries, especially among the advanced countries*”. The IMF (2017) and OECD (2018) also mention that the labor share has been on a downward trend in a large majority of developed countries since the early 1990s.

Why would the labor share decline? Karabarbounis & Neiman (2014) contend that the decline in the labor share is global and mainly driven by a decline in the relative price of investment goods. This explanation hinges on an elasticity of substitution between labor and capital above 1. The empirical consensus, however, is a value below 1 for the elasticity of substitution, as we review below. Another issue is that the drop in the price of investment goods occurred mainly in the early 1980s and the 1990s, while the labor share, especially in the United States (US), only dropped in the 2000s, at the time where the relative price of investment was more stable. For Acemoglu & Restrepo (2018) also, technological factors could contribute to a decrease of the labor share, as “*automation increases output per worker more than wages and reduce the share of labor in national income*”.

Elsby *et al.* (2013) emphasize offshoring of the labor-intensive component of the US supply chain as a leading potential explanation of the decline in the US labor share over the past 25 years. The threat of offshoring would also have contributed to a decline in union density and to labor’s bargaining power.

Autor *et al.* (2017) argue that the labor share decline could be the consequence of the growth of firms with low labor share technologies, especially in the digital economy. These firms might have low marginal costs and might gain market shares if consumer demand becomes more elastic. For Aghion *et al.* (2019) the

growth of large firms with a high productivity and a low labor share is related to a decrease in the cost of running a higher number of product lines. This decrease in costs comes from the use of information and communication technologies (ICT).

Our main point is to challenge the accepted wisdom of a general decline in the labor share. We show that there has been no systematic trend in the labor shares in most countries and we emphasize three important biases that have plagued the existing empirical literature: (i) the starting period chosen for the analysis; (ii) accounting for self-employment; and (iii) accounting for residential real estate income.

Let us start with the first bias: the starting points for the time series. Before the literature on the surprising decline in the labor share, there was a literature on the surprising increase in the labor share. The labor share increased during the stagflation of the 1970s, especially in Europe. As Blanchard (1998) notes, there was an increase in both unemployment and the labor share in the 1970s. This situation is commonly interpreted as a “wage push”, as wages failed to adjust to the slowdown in underlying productivity growth. Following the oil shocks of the 1970s, countries that were net importers of oil and gas experienced an adverse change in their terms of trade. Several factors explained the size and the duration of the “wage push”: the reliance on oil and gas importations, the dual indexation of wages on consumption price and of prices on labor costs, and the impact of unemployment on wage dynamics (the Phillips curve). Unemployment continued to increase during the 1980s, pushing wages down and leading to a sharp decline in the labor share. The labor share mostly reverted to its long run value, but the transition involved some overshooting as firms adopted labor saving technologies. The labor share in many European countries was above its steady state value in the late 1970s, and it was bound to revert to its long run average. Any empirical analysis that takes the period 1973-1983 as a starting point is likely to find a spurious decrease in the labor share. Another aspect linked to this first bias is that labor share analyses have to take into account that the position in the business cycle at the beginning and at the end of the sample might be different, which could also affect the change in the labor share.

The two other biases have already been studied in the literature. For instance, Elsby *et al.* (2013) show that the imputation of the labor income

for the self-employed explains about 1/3 of the measured decline in the labor share in the United States. Rognlie (2015) or Gutiérrez (2017) explain the impact of the real estate sector in detail.

Our analysis starts with France and the United States, for which we are able to construct measures of the labor share for the entire post-war period. When the three biases mentioned above are corrected, we do not observe any structural decrease of the labor share in France; if anything, we find a slight increase over the last two decades. In the United States, we observe a decrease in the labor share, but it is not a secular decline: the labor share shows no trend until 2000 but declines sharply between 2000 and 2015.

We then extend our analysis to a six-countries “Euro Area” (including France, Belgium, Germany, Italy, the Netherlands, Spain) and ten developed countries: France, United States, Belgium, Denmark, Germany, Italy, the Netherlands, Spain, Sweden, and the United Kingdom. Here, the analysis can only start in the 1990s. We find a decline in the labor share in four countries, an increase in five countries and a quasi-stability in the “Euro Area” and one country – so no global decline in the labor share. These results are consistent with those of Rognlie (2015) on the G7 economies and of Gutiérrez (2017). They are also broadly consistent with OECD (2018) for the same set of countries and total economy, but not directly comparable beyond that, because their approach to the business sector is narrower.¹

The rest of our paper is organized as follows. Firstly, we describe a simple theoretical model to frame the discussion of the three biases. The next section provides the empirical analysis, first over a long period of seven decades for France and the United States, and after for the ten countries over a shorter period of two decades. The last section concludes.

A Simple Theoretical Framework

Labor Share in Production

Consider a standard CES production function with capital K and labor N :

$$Y = \left[(1 - \alpha)^{\frac{1}{\eta}} N^{\frac{\eta-1}{\eta}} + \alpha^{\frac{1}{\eta}} K^{\frac{\eta-1}{\eta}} \right]^{\frac{\eta}{\eta-1}}$$

where Y is the production, η is the substitution elasticity between capital and labor, and α is a parameter of distribution.

We assume that firms are price takers in the factor market, i.e., they take the wage W and the rental rate R as given when choosing how much capital and labor to hire. On the other hand, we assume that firms have market power when they sell their output, so that they charge a markup μ of price over marginal cost. The marginal cost of production χ is:

$$\chi = \left[(1 - \alpha)W^{1-\eta} + \alpha R^{1-\eta} \right]^{\frac{1}{1-\eta}}$$

Firms set their markup so that:

$$P = \mu\chi$$

This is a standard assumption in macroeconomic models, but we note that there is increasing evidence of monopsony power in the U.S. labor markets (Azar *et al.*, 2017; Benmelech *et al.*, 2018). Two-sided platforms (e.g. Amazon) can also have monopsony power over merchants.

Cost minimization implies that the capital labor ratio satisfies:

$$\frac{K}{N} = \frac{\alpha}{1 - \alpha} \left(\frac{W}{R} \right)^{\eta}$$

and profit maximization implies:

$$\mu \frac{W}{P} = \left[(1 - \alpha) \frac{Y}{N} \right]^{\frac{1}{\eta}} \text{ and similarly } \mu \frac{R}{P} = \left(\alpha \frac{Y}{K} \right)^{\frac{1}{\eta}}$$

The labor share is defined as:

$$\Lambda = \frac{WN}{PY} = \frac{(1 - \alpha)^{\frac{1}{\eta}} \left(\frac{Y}{N} \right)^{\frac{1-\eta}{\eta}}}{\mu}$$

This shows how the labor share depends on the output/labor ratio. Using the production function, we can express this ratio as a function of the capital/labor ratio:

$$\frac{Y}{N} = \left[(1 - \alpha)^{\frac{1}{\eta}} + \alpha^{\frac{1}{\eta}} \left(\frac{K}{N} \right)^{\frac{\eta-1}{\eta}} \right]^{\frac{\eta}{\eta-1}}$$

Finally, we can use the cost minimization condition to obtain:

1. Specifically, they exclude real estate income and also other activities as agriculture, mining and quarrying, education, health and social services. The share in the business sector of these excluded activities changes over time and differs between countries.

$$\left(\frac{Y}{N}\right)^{\frac{1-\eta}{\eta}} = \frac{1}{(1-\alpha)^{\frac{1}{\eta}} + \alpha^{\frac{1}{\eta}} \left(\frac{K}{N}\right)^{\frac{\eta-1}{\eta}}}$$

$$= \frac{1}{(1-\alpha)^{\frac{1}{\eta}} \left(1 + \frac{\alpha}{1-\alpha} \left(\frac{W}{R}\right)^{\eta-1}\right)}$$

We therefore have the following expression for the labor share:

$$\Lambda = \frac{1}{\mu} \frac{1}{1 + \frac{\alpha}{1-\alpha} \left(\frac{W}{R}\right)^{\eta-1}} \quad (1)$$

Equation (1) allows us to summarize many theories about the labor share. The Cobb Douglas assumes that $\eta = 1$. In that specific case:

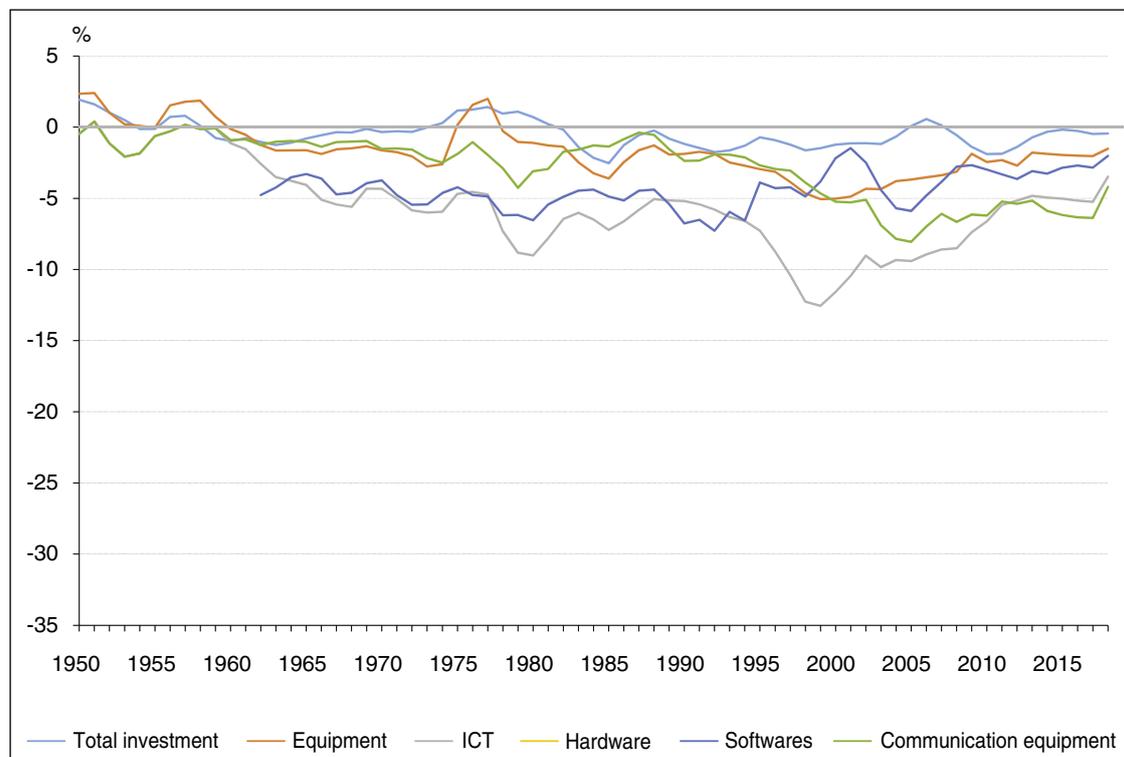
$$\Lambda = \frac{1-\alpha}{\mu}$$

The labor share can decline because of higher markups (μ increases) or because of capital bias technology (α increases). When the substitution elasticity differs from 1, changes in factor prices change the labor share (see relation 1).

Karabarbounis & Neiman (2014) assume that the substitution elasticity is greater than 1 ($\eta > 1$) and argue that R has decreased. In that case the increase in the cost ratio of labor to capital W/R implies a large demand for capital relative to labor and a drop in the labor share. There are three issues with this explanation. One issue is that empirical estimates of the substitution elasticity usually find values in the range of 0.4-0.8 (see for instance the literature survey and original estimates on plant level US data from Oberfield & Raval (2014), or Raval (2019), or the recent meta-analysis from Knoblach *et al.* (2019), using estimates from 77 studies on the US economy). The assumption of a substitution elasticity greater than 1 does not get much support in the literature.

The second issue is that the timing of the decrease in the relative price of investment does not match the timing of the decreased in the labor share. Figure I presents the growth rate of the investment price relative to the GDP price in the US. We focus on the US here because the Bureau of Economic Analysis (BEA) has done substantial work to measure the prices of

Figure I
Growth rate of the investment price relative to the GDP price in the US, 1950-2017



Notes: The growth rates are smoothed using a three-year moving average. Total investment price includes construction price, which is not represented.
Sources: Bureau of Economic Analysis. Authors' calculations.

various investment goods. We see that the relative price investment has been decreasing for several decades, but this decrease was stronger in the 1980s and 1990s, while, as we show later, the labor share only declines in the 2000s.

The third issue is related to the evolution of the capital coefficient over the period shown in Figure II. We observe that the capital coefficient in value is quite-stable over the long 1949-2017 period, despite the decline of the equipment relative price, which suggests a substitution elasticity equal to 1. We could even consider a light decline of this capital coefficient in value, when the relative price of investment goods is declining substantially, which would suggest a substitution elasticity below one.

Another strand of literature argues that η is small at least in the short to medium run. A wage push could then increase the labor share at this time horizon. Formally, W/R goes up, firms cannot substitute much capital, and so the labor share increases. This can help explain the dynamics of the labor share in Europe in the 1970s (Blanchard, 1998).

In the long run, technology can also change. A prime example is automation. For Acemoglu & Restrepo (2018), automation increases

productivity more than wages, which reduces the labor share. Martinez (2018) builds a model where capital and labor are complementary ($\eta < 1$) and the aggregate production function resembles a constant elasticity of substitution (CES) production function, but with endogenous weights influenced by automation. Opening trade to low wage countries can also lower the equilibrium wage (at least for low skilled workers) and, assuming $\eta < 1$, can lead to a lower labor share.

Three Biases

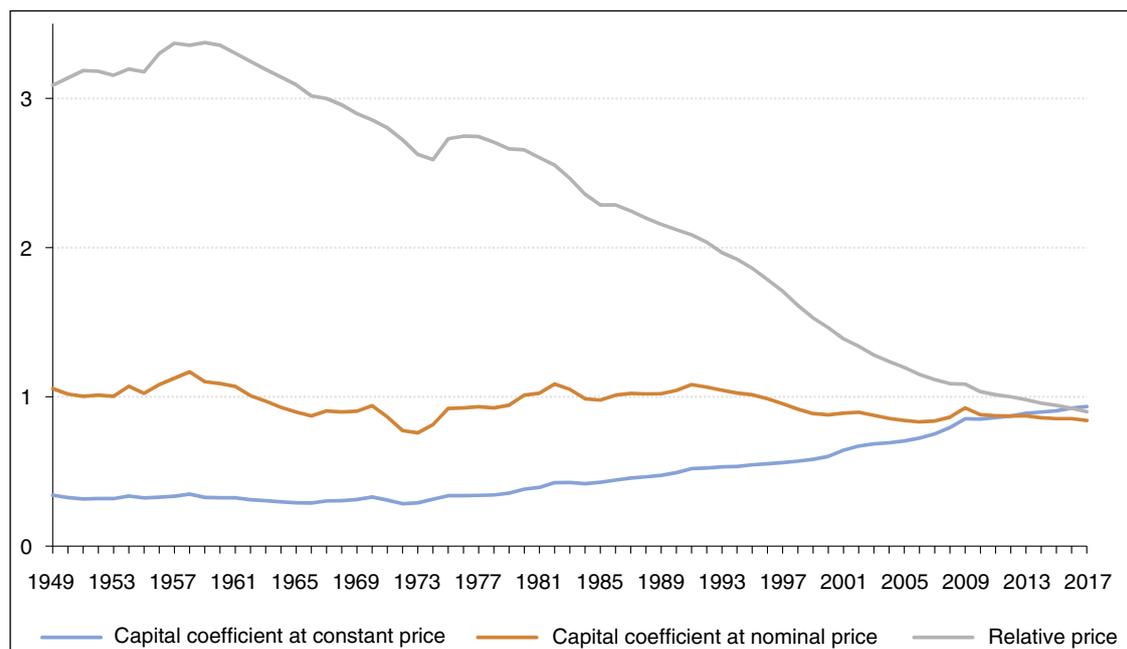
We now emphasize three issues in empirical estimates of trends in labor shares.

Initial Period

Most international studies of labor share focus on trends, not on levels. Comparison of levels across countries is complicated because of differences in industrial composition and in the statistical methodologies. In fact, we discuss two such issues below. As a result, most studies shy away from level comparisons and focus on trends.

The problem with trends is that they depend on the choice of the initial period. If shocks are

Figure II
Capital coefficient (ratio capital / GDP) – Equipment



Sources: GDP in constant price, investment and GDP price: National accounts – BEA; Equipment capital in constant price: Bergeaud *et al.* (2016) calculations from National Accounts – BEA investment data. See www.longtermproductivity.com

small, this is not an issue. But when shocks are large, this can create severe biases.

Equation (1) assumes away adjustment costs and transition dynamics. To be more precise, consider a model with nominal rigidities. Following Blanchard (1998), let us define a “wage push” as wage inflation in excess of underlying labor productivity growth. When prices are rigid in the short term, a wage push leads to a lower markup μ . This increases the labor share. In addition, if the substitution elasticity is less than one – the empirically relevant case as we have discussed – an increase in the ratio W/R also increases the labor share.

These effects can be large, but they are temporary. If one takes the period after the wage push as the starting point, then simple mean reversion can create the illusion of a decline in the labor share, while in fact the labor share is simply returning progressively to its initial steady state.

Self-Employment

The second issue is self-employment. The labor share of employees is easier to estimate than that of self-employed individuals (Elsby *et al.*, 2013). Workers who are on the payroll of employers earn wages as well as employer contributions to pensions and insurance funds. Their compensation is usually well measured.

For self-employed workers, on the other hand, it is usually difficult to distinguish labor and capital income. The usual way to deal with the issue is to assume that self-employed workers earn the same wage as employees in their industry (see Box). We follow the literature, but we note that the adjustment can be biased since it assumes that self-employed workers are identical to employees. This issue matters especially when the share of self-employment varies over time or across countries.

Real Estate

The last issue is capital income from real estate. In the model above, K represents capital used by firms to produce goods and services. It does not include residential real estate. In National Accounts, however, income from residential real estate is counted as capital income.

The proper way to account for real estate income depends on the question we want to answer. Real estate capital income is indeed a form of capital income, and it has important redistributive effects within and across generations. If we are interested in the dynamics of wealth inequality, we must clearly include real estate capital.

On the other hand, if we seek to understand the impact of technology, trade, or market power, we should carefully remove residential capital income from our measures. The theories discussed above emphasize the evolution of productive capital and predict how value added is shared between labor compensation and profits. To assess the impact of automation, AI, trade, unionization, oligopoly rents, or monopsony power, we must use a measure of capital income that does not include real estate income.

There are in fact two levels of bias. First, at the country level, residential rentals are part of value added, with rentals imputed for owner occupied dwellings. This can clearly create a bias when the value added of real estate over GDP changes. A solution is to compute the labor share excluding the real estate sector. We make this correction but however, we have to keep in mind that another one which is not done could be considered. In many countries, business firms own real estate and earn rental income. This rental income is not part of payment to productive capital and creates a bias in the measurement of the labor share even at the level of the manufacturing sector.

Labor Share Developments in Ten Developed OECD Countries

In this section, we look at the labor share trends in ten developed OECD countries for which available data allow us to analyze the biases mentioned in the previous section (see also Box). These ten countries are Belgium, Denmark, France, Germany, Italy, The Netherlands, Spain, Sweden, the United Kingdom and the United States. We also look at the labor share trends in a reconstituted “Euro Area” comprising Germany, France, Italy, Spain, the Netherlands and Belgium.² For France and the United States, data used to build labor share

2. In 2017, these six countries represented 86% of the GDP of the whole Euro Area.

BOX – DATA AND DEFINITIONS

Data Sources

We chose the data sources that yield the longest time series. For France and the United States, we use data from the National Statistical Institutes – Insee and the BEA respectively – and we can go back as far 1949. For the 8 other countries, we use the OECD STAN database, which provides data from different dates but, at least from 1995, for all countries. The data come primarily from annual National Accounts and are available via Eurostat for European countries. The OECD fills in some missing information, especially in early years and for detailed levels, so it may not reflect exactly National Accounts publications.

Labor Share Calculation Methodology

We first compute the labor share (unadjusted) as the ratio of employees' compensation (D1)^(a) to value added at factor costs, which is gross added value (B1G) minus taxes (D29) and subvention (D39) to production. In the case of France, however, the National Accounts allow us to separate taxes on wages and workforce from other taxes on production, and then we consider taxes on wages as part of labor costs.

Self-Employment Adjustment

As the self-employed worker income include income from labor and capital income (mixed income), measuring the self-employed's compensation is a common problem in calculating the labor share. National accounts provide a breakdown of value added at factor costs into employees' compensation, gross operating surplus, and mixed income at various levels of aggregation (industries, sectors, and the entire economy). Mixed income is the income of self-employed workers, but to separate in it compensation for labor services from payment to capital needs some conventional choices.

One usual way to separate the labor and capital shares in self-employed mixed income is to assume that self-employed workers earn the same gross hourly wages as employees in the same industry. These adjustment matter especially when the structure of employment between paid and independent workers changes. For instance, in France, the number of self-employed workers has decreased since the Second World War (their share increased from 39% of total employment in 1949 to 13% in 2017), in particular because of the decline in the agricultural employment.

Here, we compute the average hourly gross wage for employee at the detailed industry level, and we apply it to self-employed workers. We use seventeen various industries for France, seventeen for the US in the later years and twelve for the earlier ones, and thirty-four for all the other countries. In the US, the classification has changed over the considered period, going from the 1972 Standard Industrial Classification (SIC) systems to the 1987 one in 1987, and then to North American Industry Classification System (NAICS) in 1997. In consequence, the labor share curve is discontinuous in 1997 and 1987, without restatement. For these two years, we computed the labor share using two sets

of data, and then we fitted the trend from the earlier year to the value given by the earlier set of data. These adjustments go from -2.7% to +3.9%.

Scope

The labor share has been calculated on different fields: first, on the total economy (all the branches of activities), second on the business sector^(b), then on business sector minus real estate services. These indicators are corrected as described above for self-employed workers. For France and the US, we have also calculated to other labor share indicators: the first on the business sector without any self-employment worker correction, to show the impact of such correction, and also on non-financial companies (NFC). The NFC scope does not include self-employed workers in France and the United States, which is not always the case for other countries (see Pionnier and Guidetti, 2015).

Are considered as non-business branches the following ones: Public administration and defense services, Compulsory social security services (Section O)^(c), Education services (Section P); health and social work services (Section Q), Arts, entertainment and recreation services (Section R); Other services (Section S) and Private households as employers (Section T). This definition has been applied to all countries rather than considering non-business sector on a case-by-case basis, even though there are differences. For example, health services are considered^(d) as a non-business branch in France but as a business branch in the USA. Applying the same definition for non-business sector provides a coherent field for all sectors.

Definition of Imputed Rents

In National Accounts, renting a dwelling to a person is equivalent to producing a housing service, for which rent is the remuneration. By convention, it is considered that owner-occupiers provide this housing service to themselves; the notion of imputed rent refers to the rent they would pay for that dwelling. A significant part of the production of real estate service corresponds to these imputed rents: in France, in 2015, rents make up for 97% of the total added value of real estate services, with 61% consisting in imputed rents alone.

Without this correction, it would not be relevant to compare GDP between countries with different rates of home ownership. On the other hand, the correction creates measurement issues.

(a) Classification from the ESA 2010.

(b) We consider here and in the whole paper "business sector" as equivalent to "market sector".

(c) Classification NACE Rev.2.

(d) Market and non-business branch is a distinction based on the evaluation method in national account. A service or product is considered as non-market if it is free or sold at a non-economic significant price (less than 50% of the cost). In this case, the value of the production is estimated as the sum of production costs.

indicators are directly available from Insee (the French National Statistical Institute) and the BEA over a very long period, dating back at least from the late 1940s. For this reason, we look first at the labor share evolution over a long period in these two countries, then over a shorter period (since the mid-1990s) at the evolution of the labor share in the eight other developed OECD countries.

Long Term Focus on France and the United States

Five labor share indexes are built and compared for the two countries over the whole period 1949-2017. The first indicator is built on the whole economy. Its main advantage is to be exhaustive. But its disadvantage is to include the non-market activities, which mainly correspond to the public administration representing about a quarter of the total in the current period in the two countries, and whose calculation, dictated by strict international accounting conventions, is very specific and relies mainly on a cost approach. The second indicator is built on the business sector and avoids this difficulty. The third indicator is also built on the business sector, but without any correction concerning self-employed workers in contrast to the two previous indicators and the next one, with the aim of illustrating how large this correction is. The fourth indicator is built on the business sector excluding real estate activities (which represent 16% of the business sector value added at the end of the period in the two countries) for the reasons indicated in the previous section. Finally, the last indicator is built on the scope of non-financial corporations (NFC) excluding self-employment³ and financial corporations, for which the value added evaluation is fragile and strongly influenced by international accounting conventions. This NFC scope has the greatest precision and is the least influenced by accounting conventions, but only covers about half of the GDP at the end of the period in the two countries.

The Labor Share in France

Figure IV-A presents the five labor share indicators for France. The case of France illustrates perfectly the three biases mentioned in the previous section.⁴

Concerning the first bias, we see that the diagnosis of the labor share trend depends largely on the initial period. Over the last decades,

the labor share in the total economy or in the business sector exhibits no clear trend from the end of the 1980s, and on the contrary exhibits a clear decrease from the end of the 1970s or the early 1980s. The two oil shocks of the 1970s provoked a wage push and, as a consequence of price inertia, a dramatic increase of the labor share. From the mid-1980s, the strategy of “competitive disinflation” (*désinflation compétitive*) implemented by the French Government managed to slow down the wages and to help a decrease in the labor share. This strategy was successful and, from the end of the 1980s, the labor share seemed to have reached a new equilibrium which lasted two decades, until the financial crisis emerged in 2008. The French story suggests that to evaluate the trend of the labor share, the initial period must be chosen before or after (but not during) a labor share temporarily changed by specific large shocks, as for instance the two oil shocks of the 1970s and the following ten year adjustment.

Concerning the second bias, it appears that the correction for self-employment largely impacts the level and the trend of the labor share in France. The non-corrected labor share indicator is lower and grows more rapidly than the corrected one. The growth gap comes from the continuous decrease of the share of self-employed in total employment, which went from about 39% to about 10% between the end of the 1940s and the early 2000s (see Figure V). Then it remained quite stable until the end of the 2000s and then it increased slightly by about 1 percentage point, as a result of the creation of a specific status of “self-entrepreneur” (*auto-entrepreneur*) in 2008. From these changes in the share of self-employed in total employment, the gap between the corrected and the non-corrected labor share indicators decreased from about 25 percentage points at the end of the 1940s to about 5 percentage points in the early 2000s then remained relatively stable after. It therefore seems necessary to consider corrected indicators to analyze the trends of the labor share.

Concerning the third bias, it appears that removing real estate services totally changes the diagnosis of the trend of the labor share. Except for the long decade affected by the oil shocks from the mid-1970s to the mid-1980s,

3. The fact that the NFC scope does not include self-employed workers is specific to a few countries, such as France and the United States (see Pionnier & Guidetti, 2015). For this reason, we do not calculate and analyse its evolution for other developed countries in the next section.

4. Of these three possible biases, the two first were recently analyzed by Cette & Ouvrard (2018).

the labor share in the business sector (including real estate services) exhibited a decreasing trend until the financial crisis in 2008, followed by an increase afterwards. From the end of the 1940s to the financial crisis, the decrease was about 12 percentage points and the following increase until the current period has been about three percentage points. Excluding real estate services, the business sector labor share indicator shows a totally different evolution, with very large fluctuations around a quite stable level of about 70%. From the end of the 1940s to the first oil shock, it fluctuated around this stable level, then it was above during the long decade from the mid-1970s to the mid-1980s, then it was below for two decades until the financial crisis of 2008; since then it has fluctuated again around this stable level. The gap between the two labor share indicators comes from the increasing share of real estate services in the total value added, from about 3.5% at the end of the 1940s to about 16% in 2008, this share remaining quite stable afterwards (see Figure VI). For NFCs, the diagnosis is very similar to that in the business sector excluding real estate services.

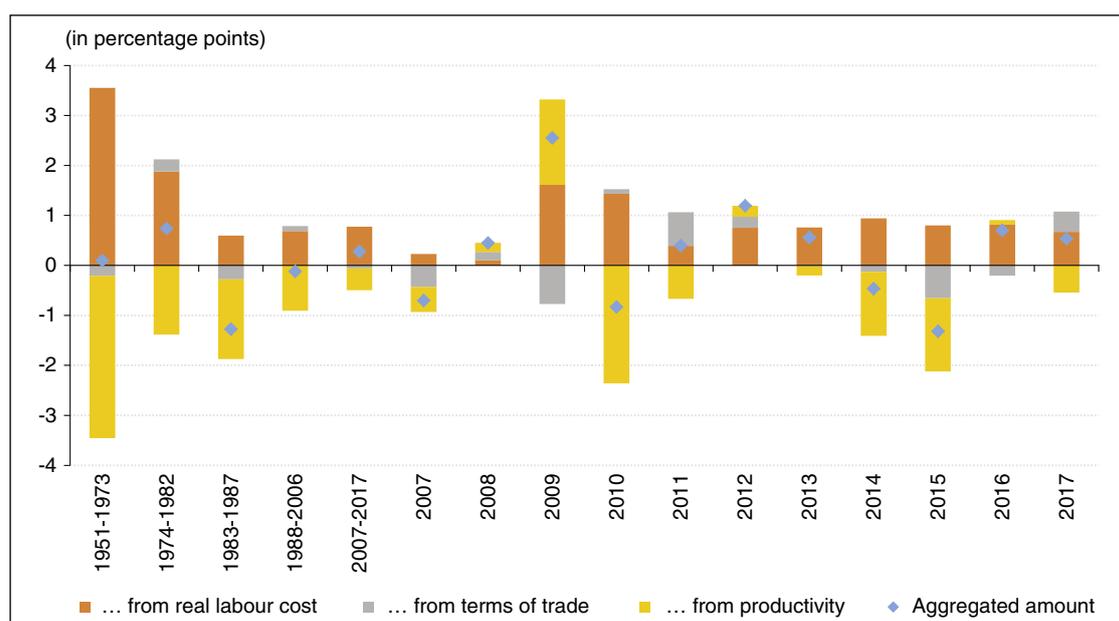
The trends of the labor share in France thus appears very sensitive to the three biases, and their correction seems necessary to establish a diagnosis. From the preceding, it appears that in France the diagnosis after correction is that the labor share has experienced large fluctuations

around a quite stable level over a very long period of seven decades from the end of the 1940s. But a false diagnosis of an increase in the labor share could be made without the correction of self-employment and, in contrast, an opposite false diagnosis of a decrease could be made without excluding real estate services or choosing the initial period in the decade from the mid-1970s to the mid-1980s.

To better understand the evolution of the labor share, we use an accounting analysis to break it down between the contributions of apparent labor productivity, terms of trade and real labor cost.⁵ Figure III presents these three contributions to the evolution of the labor share in the business sector excluding real estate services in France from early 1950s to 2017. During this period, real labor costs contribute positively to the evolution of the labor share, while productivity tends to contribute negatively, in the same order of magnitude. While terms of trade contribute positively or negatively, depending on the conjuncture, and from times to times significantly, it does not explain a large part of the evolution of the labor share. The increase in the labor share from 1973 to 1982 reflects

5. That is, with the notation adopted above, $(WN)/(PY) = (W/Pc) (Pc/P) (Y/N)^{-1}$ where Pc is the household final consumption price. The apparent labor productivity is defined as (Y/N) , terms of trade as (Pc/P) and real labor cost as (W/Pc) .

Figure III
Contributions to labor share variations in the business sector excluding real estate services



Sources: Insee, National Accounts. Authors' calculations.

real labor costs increasing at a higher rate than apparent labor productivity. This situation was reversed in the 1980s, resulting in a sharp drop of the labor share. From 1988 to 2016, the labor share is relatively stable. The sharp increase in 2009 is explained by the positive contribution of real costs and productivity and the decrease and increase observed since are caused by the discrepancies between the contributions of real labor costs and apparent labor productivity. From this accounting analysis, we can conclude that in the short term the evolution of the labor share reflects from times to times the condition of terms of trade, for example in 2007 or 2015, but mainly the difference in the contributions of apparent labor productivity and real labor costs. The increase in the labor share over the period 2007-2017 comes from a higher growth of labor costs than of productivity growth.

The Labor Share in the United States

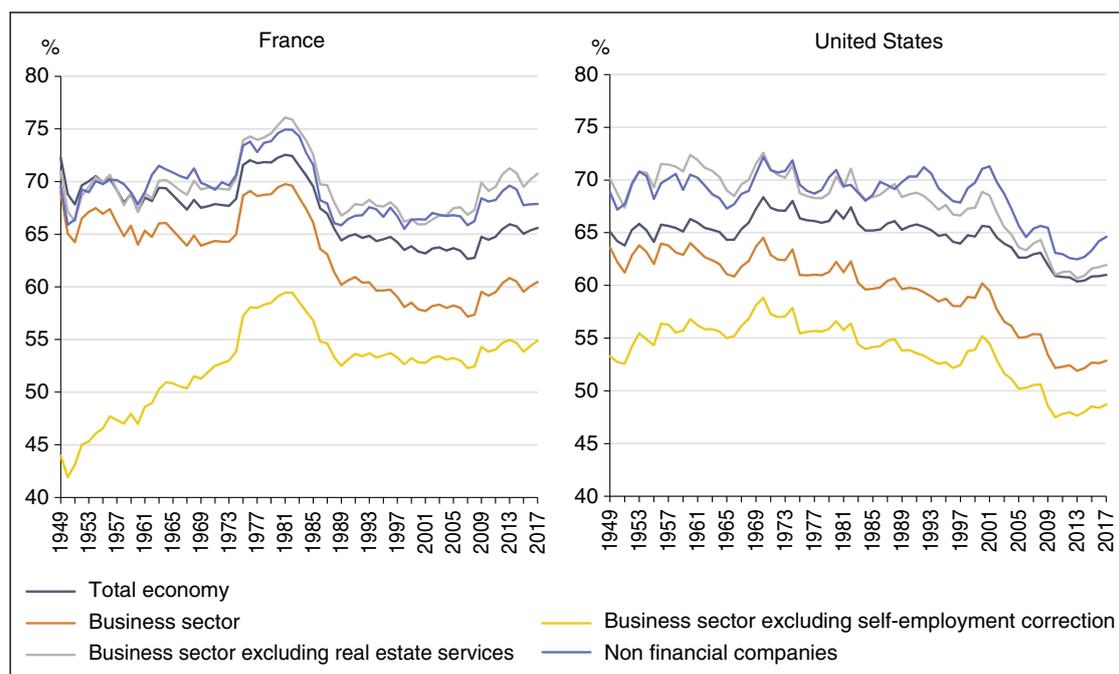
Figure IV-B presents the five labor share indicators for the US. These five indicators exhibit similar trends over the whole period: stability from the end of the 1940s to the early 1970s, then a decrease until the financial crisis, in 2009, and then quasi-stability. The three biases appear to be a lot smaller in the US than in France, for particular reasons.

Concerning the first bias, the oil shocks of the 1970s did not have a significant impact on the labor share indicators, contrary to France. The reason is that the US was at this period a major producer of petrol and gas, so that the oil shocks have mainly involved a transfer from energy user sectors to the petrol and gas producer sector, not as in France where the transfer went from all sectors to petrol and gas foreign country producers.⁶ The share of petrol and gas extraction in the total value added increased in the US from about 1% in the early 1970s to a maximum of 4% in the early 1980s, to fall back to 1% in the early 1990s.

Concerning the second bias, we observe that the self-employment correction has an effective impact on the labor share indicators mainly before the early 1970s, and not really afterwards: during this sub-period 1949-1970, the business sector uncorrected labor share indicator increased by 5 percentage points when the corrected indicator remained quite stable. The reason is that the share of self-employed workers in total employment decreased from about 17% to about 9% during this sub-period, to remain stable thereafter until the early 1990s and then to decrease again very slightly, to

6. This explanation was already given by Baghli et al. (2003).

Figure IV
Labor share as a percentage of the value added



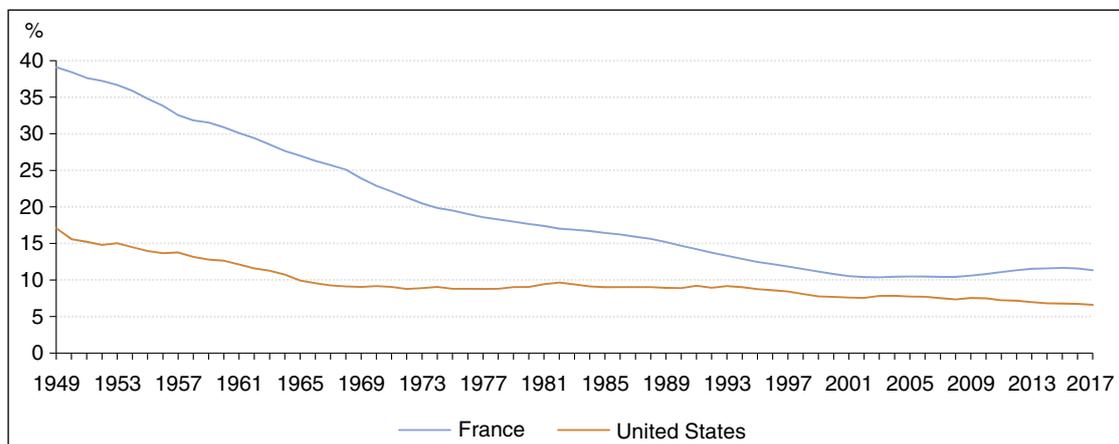
Sources: Insee and BEA, National Accounts. Authors' calculations.

about 7% until the current period (Figure V). The large decrease of the self-employed worker share in total employment observed in France until the early 2000s happened mainly before the Second World War in the US.

Concerning the third bias, it appears that the impact of real estate services on the labor share trend is a lot smaller in the US than in France. The reason is that, over the whole 1949-2017 period, the share of real estate services in the total value added increased by about 6 percentage points (from about 10% to about 16%) when the increase was about twice as high in France (Figure VI). This is why, contrary to France, excluding real estate services reduces the decrease of the business sector labor share

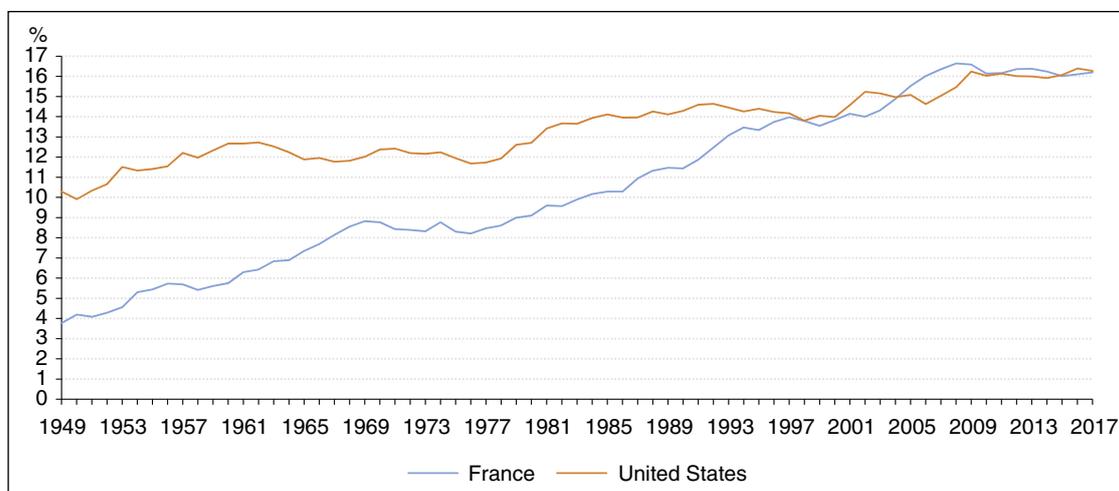
but does not reverse or even cancel it. From its maximum in 1970 to its current level in 2017, the business sector labor share indicator decreased by about 12 percentage points (from 64.5% to 52.5%) for the uncorrected indicator and by about 10 percentage points (from 72% to 62%) for the corrected one. Nevertheless, for the non-financial companies, the labor share has fluctuated around a stable level of about 70% from the end of the 1940s to the early 2000s, to decrease thereafter by about 5 percentage points until the current period, this decrease being observed only before 2010. So, the labor share decrease seems confirmed in the US, but mainly during the first decade of the century, this orientation being less obvious before and after.

Figure V
Share of self-employed workers in the total employment



Sources: Insee and BEA, National Accounts. Authors' calculations.

Figure VI
Share of real estate services in the total value added



Sources: Insee and BEA, National Accounts. Authors' calculations.

Thus, the diagnosis on the labor share trend differs for France and the US. When we take into account the three biases, it appears that, in France, we do not observe any structural decrease and we could even consider that the labor share would have increased over the last two decades.

In the US, we observe a decrease after 2000. This decrease in the US labor share coincides with three other evolutions in the US economy: an increase in industry concentration, an increase in profits, and a fall in investment relative to output. Covarrubias *et al.* (2019) discuss the relative importance of competition, barriers to entry, technology, and trade. Trade plays an important role in manufacturing. Overall, however, the evidence suggests that an increase in market power in most industries in the 2000s explains the dynamics of concentration, profits, investment, and the labor share. Market power comes from rising barriers to entry, weak antitrust enforcement, and lobbying by incumbents.

The Labor Share Developments in the “Euro Area” and in Eight Other Developed Countries

We look now at the labor share orientation for eight other developed countries for which data from the STAN OECD database is available with enough details to build our indicators: Belgium, Denmark, Germany, Italy, the Netherlands, Spain, Sweden and the United Kingdom. We compare the labor share evolution from the earliest possible year, and at least from 1995, to the current period for the business sector and the business sector excluding real estate

services. As value added sharing between labor and capital does not really make sense in the public sector (see above), we don’t comment here upon the labor share orientation in the total economy.⁷ Since the orientation of the labor share does not change when financial activities are excluded from the value added, we don’t comment here upon the corresponding indicator. The indicators presented below are adjusted for self-employment. Depending on the country, the last observation corresponds to 2015, 2016 or 2017. We look also at the labor share at the level of a six-countries “Euro Area” comprising Germany, France, Italy, Spain, the Netherlands and Belgium.

Figures VIII and IX present the evolution of the labor share indicators respectively in the “Euro Area” and in the eight countries. The table below presents the main results from the comparison. We have included France and the United States in this Table, to enlarge the comparison. As much as the comparison is possible (and on comparable period), the orientation of the labor share over the period in the different countries seems consistent in the total economy as well as in the business sector with the one described in recent international analyses, as for instance IMF (2017) or OECD (2018).

It appears that over the period, the labor share increased more or decreased less when real estate services are removed from the value added than when they are kept, in the “Euro Area” and in seven of the ten considered countries. The three exceptions are Belgium, the Netherlands

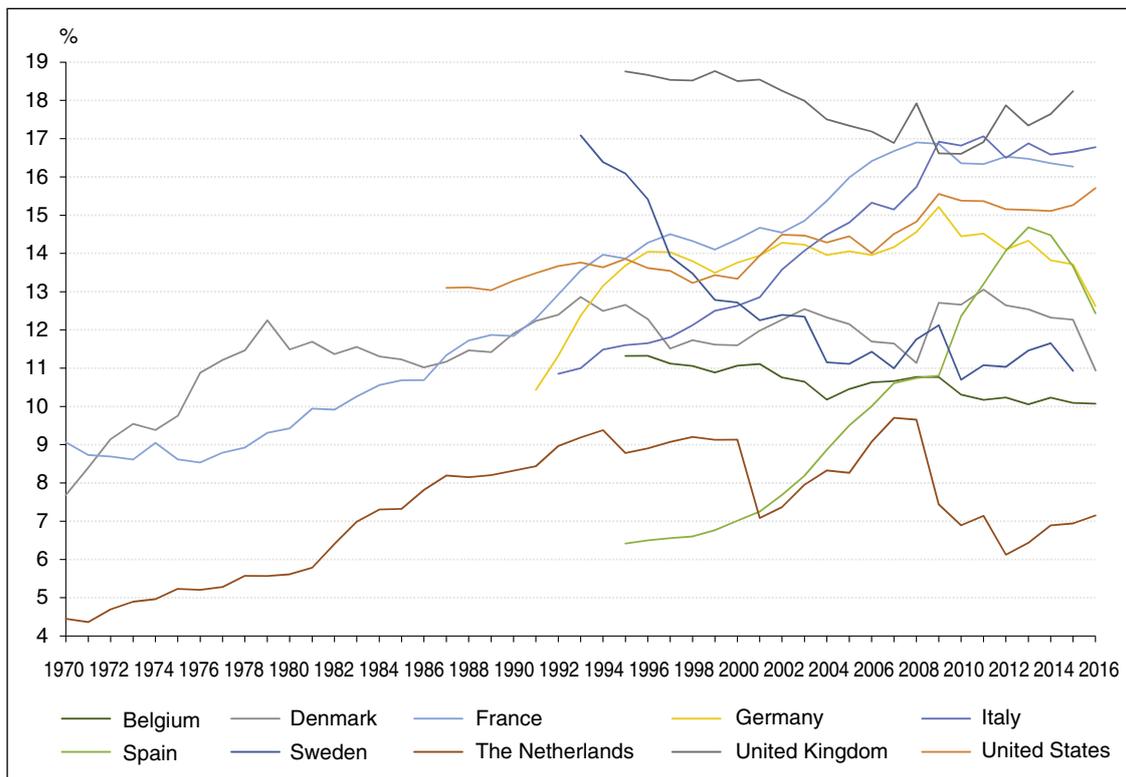
7. The labor share is always higher in the total economy than in the business sector, but the trends of the two indicators are similar in the eight countries (see Figure IX).

Table
Labor share orientation in the business sector, from the earliest year to the current period

		With real estate services		
		Decrease	Stability	Increase
Without real estate services	Decrease	Belgium Denmark Germany Netherlands United States		
	Stability	“Euro Area” France		Sweden
	Increase	Spain	Italy	United Kingdom

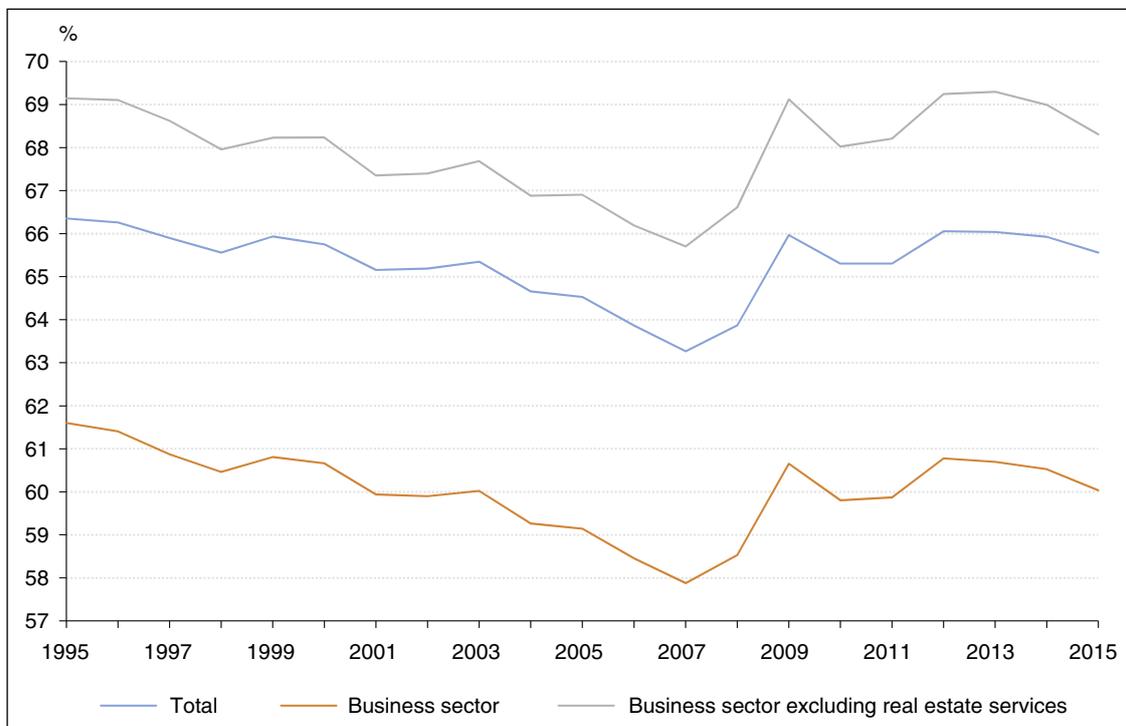
Notes: We consider that the labor share increases (decreases) if the slope of the linear trend over the available period is above (below) 0.025 (-0.025) percentage point per year. The periods considered in this table correspond to those of Figures IV and IX: 1949 to 2017 for France and the United States; 1970 to 2016 for Denmark and the Netherlands; 1992-2016 for Italy; 1993 to 2015 for Sweden; 1991-2015 for Germany; 1995-2015 for Spain and the United Kingdom and 1995-2016 for Belgium.

Figure VII
Share of real estate services in the business sector value added 1970-2016



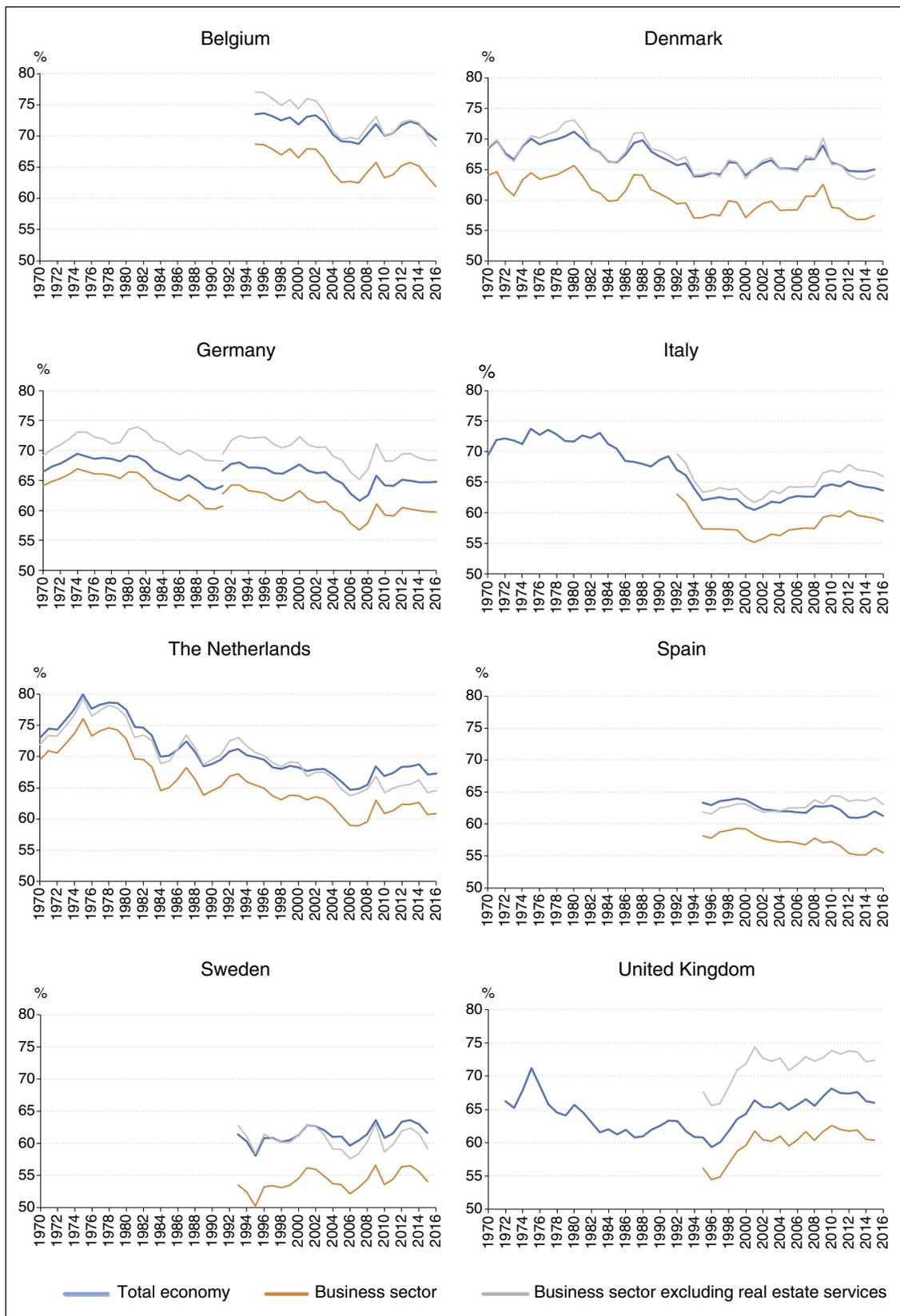
Source : OECD, STAN database. Authors' calculations.

Figure VIII
Labor share in the "Euro Area" as a percentage of the value added



Notes: The Euro Area in this figure includes Germany, France, Italy, Spain, The Netherlands and Belgium. In 2017, these six countries represented 86% of the whole Euro Area's GDP.
Sources: OECD, STAN database. Authors' calculations.

Figure IX
Labor share as a percentage of the value added



Notes: In Germany, the break corresponds to the reunification event.
 Sources: OECD, STAN database. Authors' calculations.

and Sweden. This stems from the fact that in these three countries, the share of real estate services in the business sector value added decreased slightly whereas it increased in the seven other countries (cf. Figure VII). In Spain, the increase was large enough to change the sign of the labor share evolution, this evolution being, from 1995 to 2016, about -2 percentage points with real estate services kept in the value added and +2 percentage points when they are excluded. The share of real estate services in the business sector value added increased from 6.4% to 12.4% over this period in this country, which was the biggest increase observed over the ten countries in our analysis. In France, the labor share evolution changed from a decrease with real estate services kept in value added to a stability without.

For the “Euro Area” and the ten developed countries analyzed here, the orientation of the labor share in the business sector is not a general downward or upward one. With real estate services included in the value added, it is a clear downward trend in the “Euro Area” and in seven countries, a clear upward one in two countries and a quasi-stability in the last country. When real estate services are excluded from the value added, it becomes a clear downward trend in five countries, a clear upward one in three countries and a quasi-stability in the “Euro Area” and in two countries. Then, the usual diagnosis of a general downward orientation of the labor share in developed countries over the last decades is not confirmed for our dataset of ten developed countries and the “Euro Area”. As commented before, even the downward trend is not so clear concerning the US. The relevant correction for real estate services decreases the number of countries for which the labor share orientation is clearly on the decrease.

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This analysis has challenged the accepted wisdom of a general labor share decline. A simple theoretical model was proposed to raise the main factors of labor share changes. The empirical analysis was carried out on a subset of the “Euro Area” and ten developed countries:

Belgium, Denmark, France, Germany, Italy, The Netherlands, Spain, Sweden, the United Kingdom and the United States. For France and the United States we were able to construct measures of the labor share for the entire post-war period. For the “Euro Area” and the ten other countries, the analysis started in the 1990s.

Three important biases appear to have plagued much of the existing empirical literature: (i) the starting periods for the analysis; (ii) accounting for self-employment; and (iii) accounting for residential real estate income. When these three potential biases are set aside, the orientation of the labor share in the business sector does not appear to be a general downward or upward one. With real estate services included in the value added, it is a clear downward one in the “Euro Area” and in seven of the ten countries, a clear upward one in two countries and a quasi-stability in the last country. When real estate services are excluded from the value added, it becomes a clear downward one in five countries, a clear upward one in three countries and a quasi-stability in the “Euro Area” and in two countries.

The evolution of the labor share appears greatly influenced by the starting point chosen. This is particularly striking in Europe, where there was an increase in the labor share following the oil shocks in the 1970s. This increase may lead to interpret a return to the long-term trend being as a decline in the labor share. The second bias concerning the self-employed workers is a recurring question in the calculation of the labor share in value added. The correction we apply is classic, but it is important to keep in mind the extent of the effect this correction may have when the shares of paid and self-employed work vary, either between countries or over time.

Lastly, real estate income is a type of capital income that has important redistributive effects and must be included when analyzing income inequality. But it seems to us appropriate to exclude it to analyze the sharing of value added between labor compensation and profits. Usual explanations of labor share trends (technology, trade, market power, unionization, etc.) have nothing to do with real estate income. And as shown in this paper, excluding real estate income substantially changes the diagnosis on the labor share trends. □

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