LABOR SHARES IN SOME ADVANCED ECONOMIES

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ABSTRACT

We study the joint impact of three measurement issues in the empirical literature on the labor share:(i) start and end periods for the empirical analysis; (ii) accounting for self-employment; and (iii) accounting for residential real estate income. When we correct for these three potential biases, we do not find a general decline in the labor share in our sample of advanced economies. In that respect the behavior of the US labor share after 2000 presents a puzzle.

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1. Introduction

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. Karabarbounis and Neiman (2014) argue that the decline in the labor share is global and mainly driven by a decline in the relative price of investment goods. 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. The common wisdom in recent macroeconomic research appears to be 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.*"

In this short note we challenge the accepted wisdom of a general labor share decline outside the United States. We do not find a systematic trend in labor shares in most countries and we emphasize three important biases that have plagued the existing literature: (i) starting periods for the empirical 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 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). As unemployment continued to increase during the 1980s, wages stagnated, and the labor share fell. We find that the labor share reverted to its long run value, but the transition involved some overshooting in some countries.

The first bias, then, is that 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. Empirical studies that

takes the period 1973-1983 as a starting point are therefore likely to find a spurious decrease in the labor share. This is of course a common issue in estimating trends when positions in the business cycle are not the same at the beginning and at the end of the sample. What is special here is that the labor share cycle is long, large, and common to many countries, especially in Europe.

The second and third biases have already been studied in the literature. Elsby *et al.* (2013) focus on self-employment in the U.S. and conclude that a third of the decline in the headline measure of the labor share is an artifact of statistical procedures used to impute the labor income of the self-employed. Rognlie (2015) shows that much of the increase in the capital share in the US comes from the housing sector. Gutiérrez (2017) and Gutiérrez and Piton (2019) show that non-housing gross labor share remained stable in Europe and declined only in the US. Importantly, Gutiérrez and Piton (2019) show that the common approach of using data from non-financial corporate sector is not enough to remove all housing income in several countries.

Our contribution is to address the three issues together and to provide a long run analysis of labor shares in France and the United States. For France and the United-States we are able to construct measures of the labor share for the entire post-war period. Taking into account the three biases mentioned above, we don't observe any structural decrease of the labor share in France. If anything, we find that the labor share has increased slightly over the last two decades in France. We observe a decrease in the labor share in the U.S., but it is not a secular decline. The U.S. labor share shows no trend until 2000 but declines sharply between 2000 and 2015.

We then extend our analysis to the Euro Area (EA) and eight additional developed countries: Belgium, Denmark, Germany, Italy, The Netherlands, Spain, Sweden, and the United Kingdom. For the EA and these countries we 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 for the EA. We conclude that there has not been a global decline in the labor share in advanced economies. These results are consistent with those of Rognlie (2015) for G7 economies and with OECD (2018) when we consider the same set of countries. Our treatment of various sectors of the economy differs from these studies however, so our results are not directly comparable.

Measuring the evolution of the labor and capital shares is important for understanding the underlying driving forces behind long term growth and the distribution of income. For instance, Karabarbounis and Neiman (2014) argue that the driving force is the decline in the relative price of investment goods. This decline has happened in the US and in Europe, so this theory predicts

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declines in both regions. Elsby *et al.* (2013) suggest 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. Offshoring is also a global phenomenon, although its intensity might vary by country. Autor *et al.* (2017) suggest that the driving force is technology that creates winner-takes-all dynamics. They show that the decline of the labor share corresponds to the growth of firms with low labor share technologies, especially in the digital economy. They argue that this can happen when information technology makes consumer demand more elastic. Aghion *et al.* (2019) relates the growth of large firms with a high productivity and a low labor share to a decrease in the cost of running a large number of product lines. This decrease in costs comes from the use of information and communication technologies (ICT). These explanations apply to Europe as well as the US, since the growth of ICT and of intangible capital is global. If labor shares dynamics differ between Europe and the US, then, this would suggest that another factor also plays a role. Gutiérrez and Philippon (2019) and Philippon (2019) argue instead that declining competition explains some of the decline in the US labor share. They show that barriers to entry have increased and antitrust enforcement has weakened in the US relative to Europe. This explains the increase in corporate profits in the US and the decline in the labor share in the US, but not in Europe.

The rest of our paper is organized as follows. Section 2 describes a simple theoretical model to organize the discussion of the three biases. Section 3 describes the data and methodology. Section 4 presents our empirical analysis for ten developed countries, first over a long period of seven decades for France and the US, and after for the ten countries over a shorter period of two decades. Section 5 concludes.

2. Theoretical discussion

2.1. Labor Share in Production

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

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

We assume that firms are price takers in factor markets, 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 is:

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

Firms set up the markup so that:

$$P = \mu\chi$$

Monopoly power is a standard assumption in macroeconomic models, but its implications are similar to those of monopsony power in the labor market (Azar *et al.*, 2017; Benmelech *et al.*, 2018) or on two-sided platforms. Cost minimization implies that the capital labor ratio satisfies:

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

and profit maximization implies:

$$\mu\frac{W}{P} = [(1-\alpha)\frac{Y}{N}]^{\frac{1}{\eta}}$$

and similarly for capital, $\mu\frac{R}{P} = (\alpha\frac{Y}{K})^{\frac{1}{\eta}}$. The labor share is defined as:

$$\Lambda = \frac{WN}{PY}$$

$$= \frac{(1-\alpha)^{\frac{1}{\eta}}}{\mu}(\frac{Y}{N})^{\frac{1-\eta}{\eta}}$$

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:

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

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

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

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

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. In the case of a Cobb-Douglass production function we have $\eta = 1$ and therefore

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

The labor share can decline because of higher markups ($\mu \nearrow$) or because of capital bias technology ($\alpha \nearrow$). When $\eta \neq 1$, changes in factor prices also affect the labor share. Karabarbounis and Neiman (2014) assume that $\eta > 1$ and argue that R has decreased. In that case the increase in W/R implies a large demand for K relative to N 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 and 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 empirical consensus is a value below one for the elasticity of substitution. This elasticity might hide important heterogeneity across workers, however. In particular, capital might be a better substitute for unskilled labor than for skilled labor, which means that the Karabarbounis-Neiman argument might still be relevant even if the average elasticity is below one.

The second issue is that the timing of the decrease in the relative price of investment does not match the timing of the decrease in the labor share. Figure 1 presents the growth rate of the investment price deflator relative to the GDP price deflator in the US. We focus on the U.S. here because the

National Statistical Institute has done substantial work to measure the prices of various investment goods. We see that the relative price of investment has been decreasing for several decades, but this decrease was stronger in the 1980s and 1990s, while, as we show later, the US labor share only declines in the 2000s, at a time when the relative price of investment was more stable.

Figure 1. Growth rate of investment deflator relative to GDP deflator in the US (%)
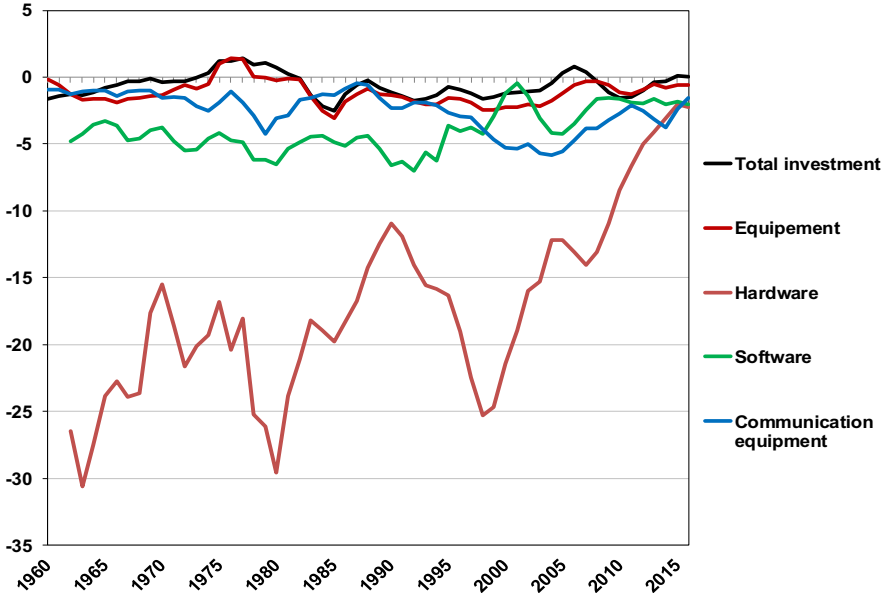

Source: Author's calculation from US BEA data.

These growth rates are smoothed using a three-year moving average. Total investment price includes construction price, which is not represented in this Graph.

The third issue relates to the behavior of the capital-output ratio over the period shown in the Figure 2. We observe that the capital ratio in value is quite-stable over the long 1949-2017 period, despite the decline of the relative price of equipment, which suggests a substitution elasticity close to one.

Figure 2. Ratio of Equipment Capital to GDP in the US
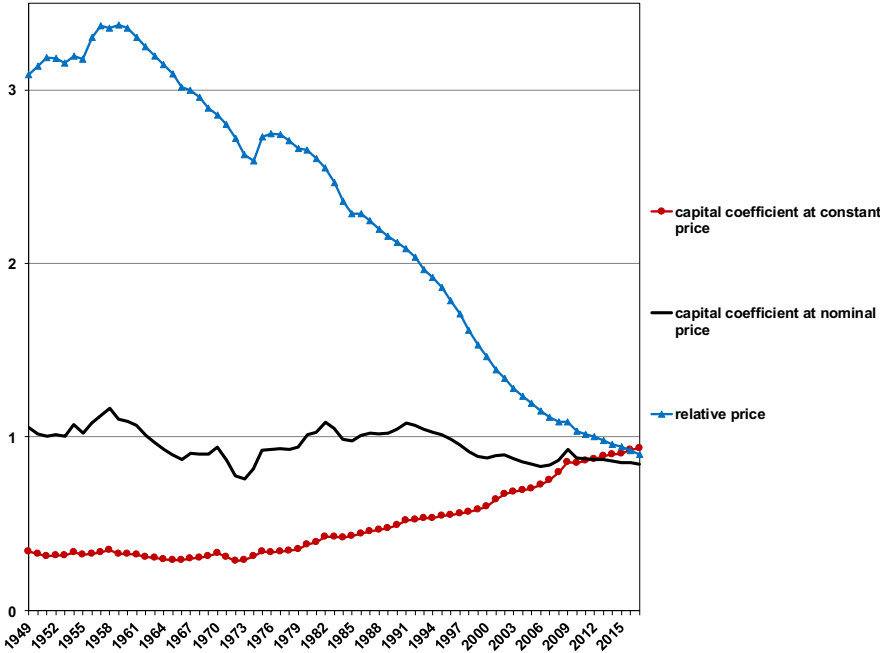
Source : GDP in constant price, investment and GDP price: National accounts – BEA; Equipment capital in constant price: Bergeaud, Cette and Lecat (2016) calculation, from national accounts – BEA investment data. See www.longtermproductivity.com.

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 in the short run. 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). We will see that this can also explain the dynamics of the labor share in Germany during the 2000s.

In the long run, technology can also change. A prime example is automation. For Acemoglu and Restrepo (2018), automation increases productivity more than wages, which reduces the labor share. They argue that "*automation increases output per worker more than wages and reduce the share of labor in national income*". Martinez (2018) builds an interesting model where capital and labor are complementary ($\eta < 1$) and the aggregate production function resembles a CES, 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 $\eta < 1$ can lead to a lower labor share.

2.2. Discussion of the three biases

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 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 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 but it is not difficult to understand how these frictions play out. 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 η is less than one – the empirically relevant case as we have discussed – an increase in *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 will 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. We show below that this effect is large in the case of France and Germany. Any labor share using the period 1975-1985 as a starting point will find a spurious decline in the labor share.

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 pension and insurance funds. Their compensation is usually well measured.

For self-employed workers, on the other hand, we do not have a direct measure of their wage, and 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 other workers. This issue matters especially when the share of self-employment varies over time or across countries.

Real estate

The last issue is 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 implement this correction and we show that labor share changes differ depending on whether or not we remove real estate services from value added. A second issue is that, 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 sector/industry level. This point is analyzed in detail by Gutiérrez and Piton (2019).

3. Data and methodology

Data sources

We chose the data sources that yield the longest time series. For France and the US, 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 STAN from the OECD, 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 compute the labor share as the ratio of the compensation of employee (D1)[1] over value added at factor costs, which is gross value added (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

The income of self-employed workers creates problems for calculating the labor share. The 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 and it includes both capital and labor incomes. We need to make assumptions in order to distinguish the compensation for labor services from the returns to capital.

The 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, in particular because of the decline in the employment share of farming: the share of self-employed workers in the total employment has decreased from 39% in 1949 to 13% in 2017.

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. For the US, the nomenclature changes during our sample 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

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1 Classification from the ESA 2010.

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%.

Branches of activities

The labor share has been calculated on different fields: first for the entire economy (all branches of activities, including the government); second for the business sector[2]; third for the business sector excluding real estate services. These indicators are corrected as described above for self-employed workers. For France and the US, we calculate two other indicators: for the business sector without corrections for self-employment to show the impact of these correction; and also for non-financial companies (NFC). The NFC scope does not include self-employed workers in France and the United States, but this is not always the case in other countries (see Pionnier and Guidetti, 2015).

We consider the following branches as non-business ones: Public administration and defense services, Compulsory social security services (Section O)[3], Education services (Section P); human 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, human health services are evaluated[4] as a non-business branch in France but as a business branch in the USA. Applying same definition for non-business sector provides a coherent field for international comparisons.

Definition of imputed rentals

In real estate services, a significant part of reported production comes from imputed rentals: in France, in 2015, rentals make up for 97% of the total value added of real estate services, with 61% consisting of imputed rentals. National accounts use rents paid to landlords to estimate the value of real estate services. For owners who occupy their own dwellings the convention is to assume that they pay a (virtual) rent to themselves. Without this correction it would be difficult to compare GDP across countries with different levels of home ownership. On the other hand, the correction creates measurement issues.

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2   We consider here and in the whole paper "business sector" as equivalent to "market sector".
3   Classification NACE Rev.2
4   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.

There is also an important distinction between residential and non-residential real estate. Residential real estate is considered final consumption and is counted as part of value added. On the other hand, when a firm rents a building, it is considered an intermediate consumption of real estate in the process of production.

4. Empirical results

In this section, we study trends in the labor shares of ten developed countries for which the data allow us to analyze the biases mentioned in the previous section. 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.[5] For France and the United States, data used to build labor share indicators are directly available from their National Statistical Institute from the end of the 1940s. For this reason, we start by looking at the long run evolution of labor shares in these two countries.

4.1. Long term trends in France and the United States

We compare five measures of the labor share in France and the US over the period 1949-2017. The first covers the whole economy. Its main advantage is to be exhaustive. But its disadvantage is to include non-market activities. Public administration services account for roughly a quarter of GDP in the two countries at the end of the sample and are estimated according to specific international accounting conventions using a factor cost approach.

Our four other measures focus on the business sector: one with and one without corrections for self-employed workers; one for the business sector excluding real estate activities; and one for non-financial corporation (NFC). This last measure excludes self-employment[6] and financial corporations for which the estimation of value added depends on different accounting conventions. This NFC measure is the cleanest, but it covers about half of the GDP at the end of the period in the two countries.

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[5]   In 2017, these six countries represented 86% of the GDP of the whole Euro Area.
[6]   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 and Guidetti, 2015). For this reason, we do not calculate and analyse its evolution for other developed countries in the next section.

The labor share in France

Figure 3-A presents the five labor share measures for France. It illustrates the three biases mentioned earlier.[7]

Our preferred measure uses the business sector, corrected for self-employment, and excluding real estate services. This measure is reassuringly similar to the one for the non-financial corporate sector, and neither one shows a trend over the long sample. There are, however, large medium run cycles.

The rise and fall of the labor share between 1973 and 1985 highlight the issue of the starting period. The oil shocks of the 1970s triggered a large increase in price and wage inflation. From the mid-1980s, the strategy of "competitive disinflation" ("*désinflation compétitive*") implemented by the French Government managed to reduce wage inflation. In doing so, however, it also decreased the labor share. The labor share settled about 2 points below its pre-1973 average until 2008. Over the past 3 years it has remained at its long-term average.

The lowest line in Figure 3A shows the large impact of the self-employment correction. The non-corrected labor share indicator is lower and grows more rapidly than the corrected one. The discrepancy comes from the fact that the share of self-employed in total employment has decreased continuously from about 39% at the end of the 1940s to about 10% in the early 2000s (see Figure 4). It has remained stable since then, with a slight increase slightly by about 1 percentage point because of the creation of a specific status of auto-self-employed ("*auto-entrepreneur*").
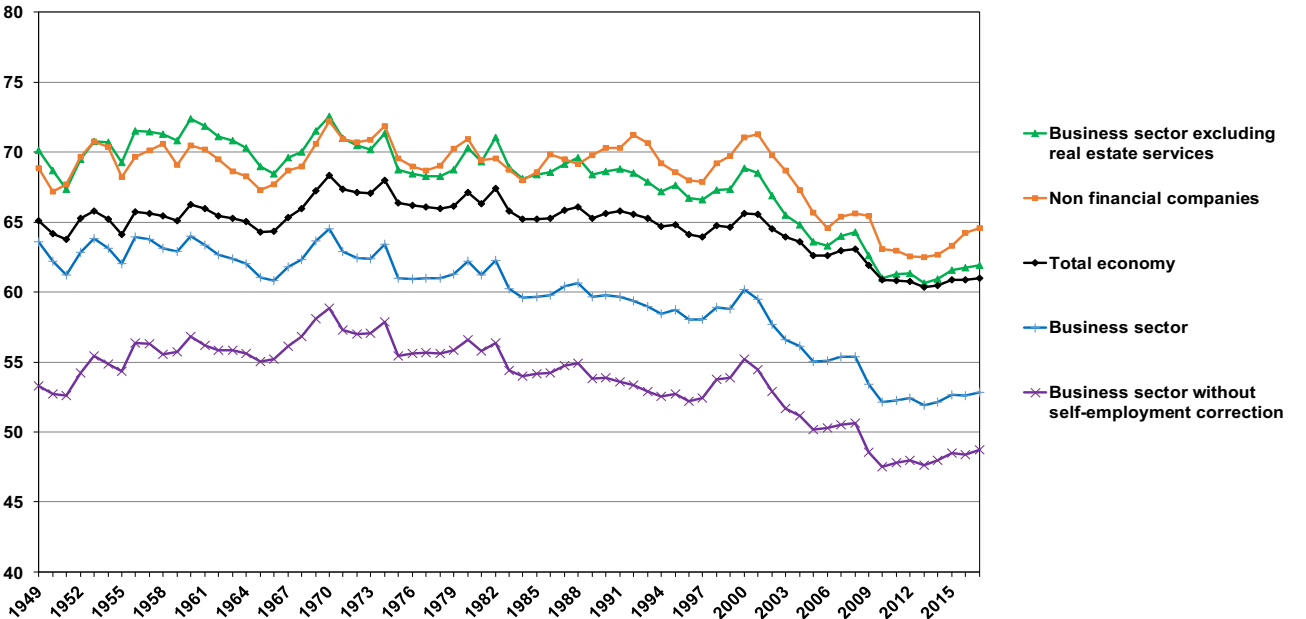
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[7] See Cette and Ouvrard (2018) for an early analysis along these lines.

Figure 3. Labor share – In % of the value added
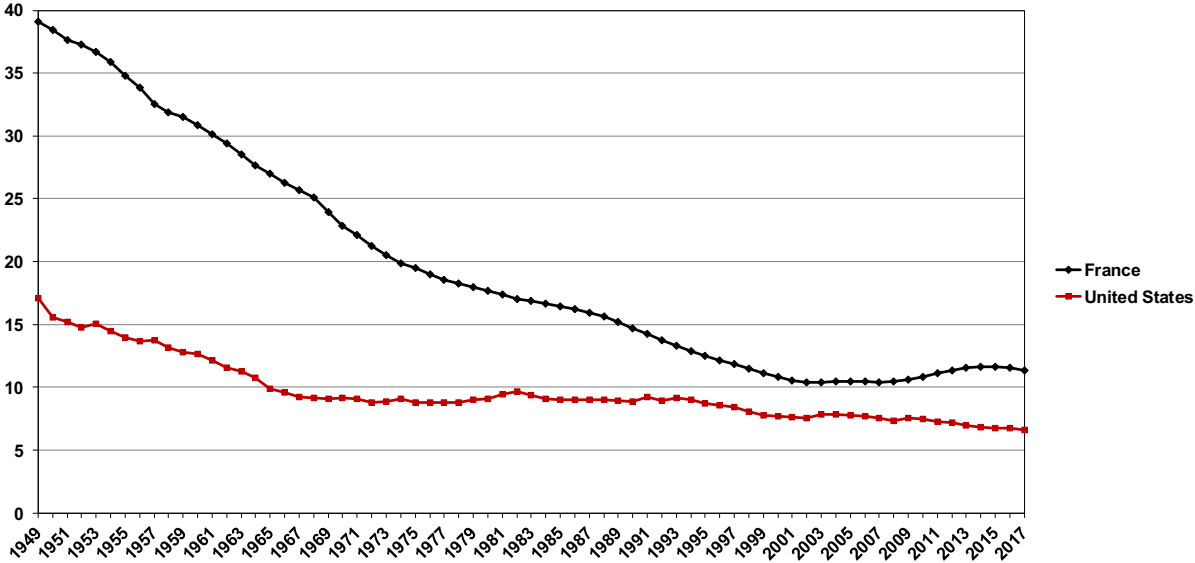
A – France
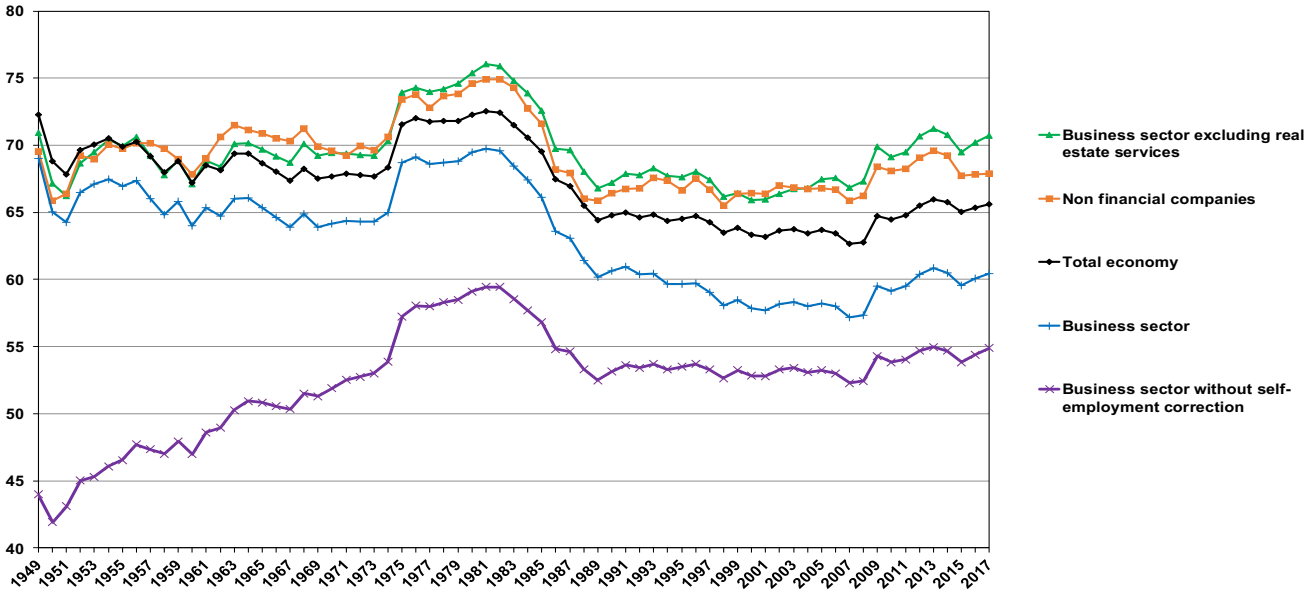
B – United States

Sources: Author's calculation from national accounts.

Finally, the gap between our preferred series and the "business sector" shows the impact of real estate services. If we do not correct for real estate, the labor share in the business sector exhibits a

large downward trend until 2008. The cumulative decline of 10 percentage point is entirely due to the increase in residential real estate income. The share of real estate services in total value added has increased from about 3½% at the end of the 1940s to about 16% in 2008.

The correction of the three biases changes the diagnosis regarding the labor share in France. Over a long period of seven decades, from the end of the 1940s until 2018, the labor share has experienced medium run fluctuations around a stable level.

Figure 4. Share of self-employed workers in the total employment – In %

Sources: Author's calculation from national accounts.

The labor share in the United States

Figure 3-B presents the five labor share indicators for the US. The biases are less severe than in France, for several reasons. Concerning the timing bias, the oil shocks of the 1970s did not have a significant impact on the labor share indicators in the US. One potential reason is that the US is a large producer of oil and gas, so the oil shocks were mainly a transfer from energy-using sectors towards the domestic oil and gas sector. The share of the 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. In France, by contrast, it was a negative terms of trade shock from domestic sectors towards foreign oil producers.[8]

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[8] This explanation is discussed by Baghli, Cette and Sylvain (2003).

Concerning the self-employment bias, it matters early in the sample from 1949 to 1970 when the uncorrected share has a trend while the corrected indicator remains stable. The reason is that the share of self-employed in total employment decreased from about 17% to about 9% during this sub-period (see Figure 4). The large decrease in self-employment observed in France until the early 2000s happened earlier in the US.

Figure 5. Share of real estate services in the total value added – In %
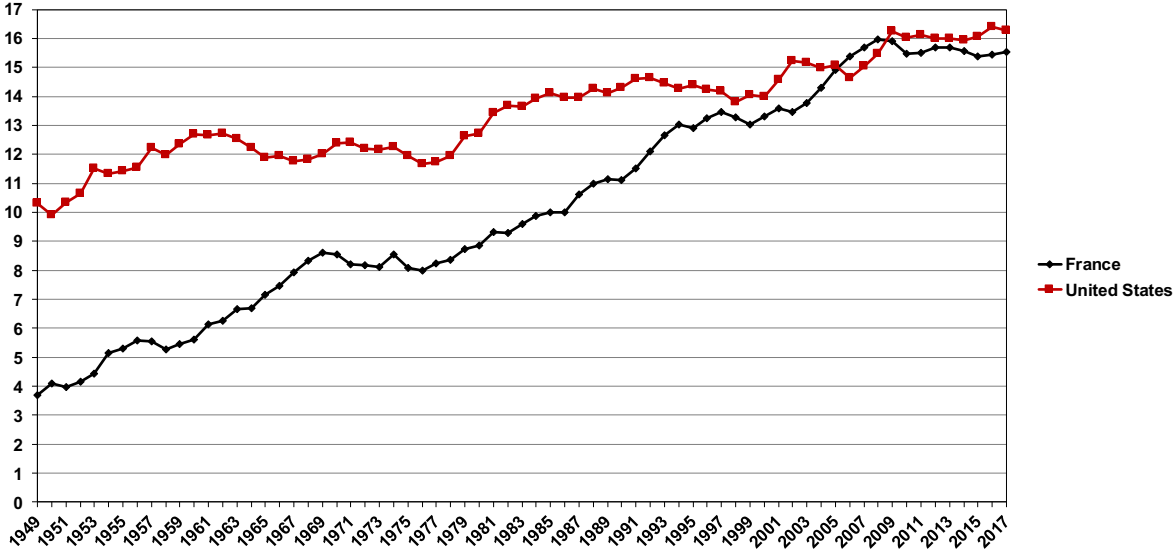
Sources: Author's calculation from national accounts.

Concerning the real estate bias, it is smaller than in France because the share of real estate services in total value added increased by about 6 percentage points (from about 10% to about 16%) between 1949 and 2017 while the increase was about twice as large in France (see Figure 5). The corrected labor share fluctuates around a stable level of about 70% from the end of the 1940s to the early 2000s. It then decreases by about 5 percentage points.

The decrease in the US labor share coincides with three other evolutions in the US economy: industry concentration and profits have increased, while net investment has fallen relative to output. Covarrubias, Gutiérrez and Philippon (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.

4.2. Labor shares in eight developed countries and the Euro Area

We look now at the labor share in 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, the United Kingdom. We construct labor shares for the business sector and the business sector excluding real estate services.[9] The indicators are adjusted for self-employment mixed income. The trends do not change when financial activities are removed from our calculations. The first and last observations differ across countries, so we cannot always analyze the timing bias. We look also at the labor share at the level of a reconstituted Euro Area (EA) defined as Germany, France, Italy, Spain, The Netherlands and Belgium.

Figure 6 presents the labor share indicators for the eight new countries. The first main finding is that there is no obvious trend in the data. Some countries have increasing shares (UK, SWE, ESP), some decreasing shares (NLD, Belgium). The other ones are ambiguous. Detailed comparisons are difficult because the sample periods differ from one country to the next, but some of the issues we discussed for France are readily apparent. First, all countries with long term data show the rise and fall of the labor share in the 1970s and 1980s to varying degrees. Germany and The Netherlands look similar to France. In Italy the process seems to drag on for longer.

Germany displays this pattern twice, the second time being during the reunification between East and West Germany. The reunification led to an initial increase in the labor share, consistent with the political decision not to devalue the East German currency and to implement large fiscal transfers from the West to the East. The decrease happens in the early 2000s following the Hartz labor market reforms. Burda and Steele (2016) show that these reforms created a positive labor supply shock (a reversed wage push). With a capital-labor elasticity of substitution less than one this implies a fall in the labor share. However, if we take a long-term perspective, we see that the overall labor share in Germany was 68.5% in 2015 versus 69.2% in 1970. Over 45 years, then, the labor share in Germany has moved by only 70 basis points.
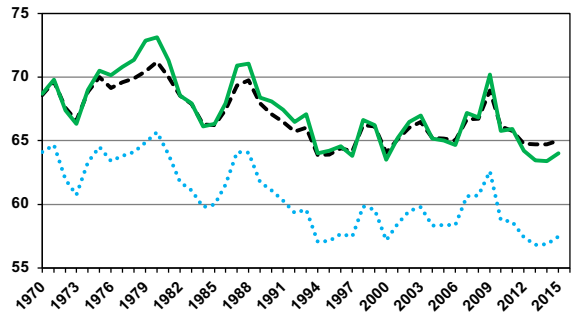
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[9] We do not present the labor share for the whole economy. Its level is always higher than that in the business sector, but the trends of the two indicators are similar in the eight countries.

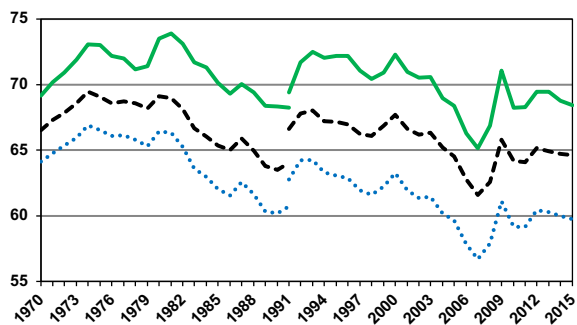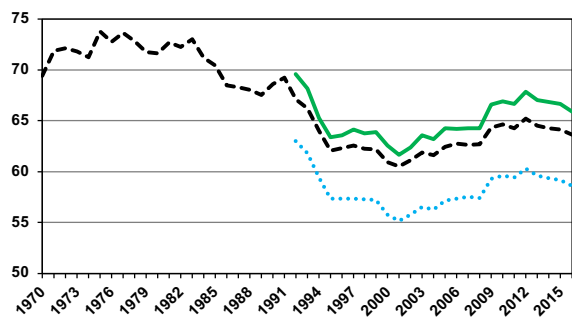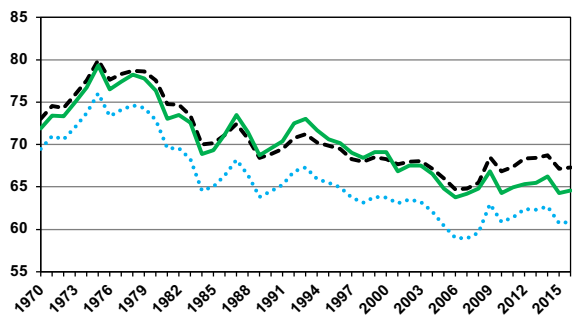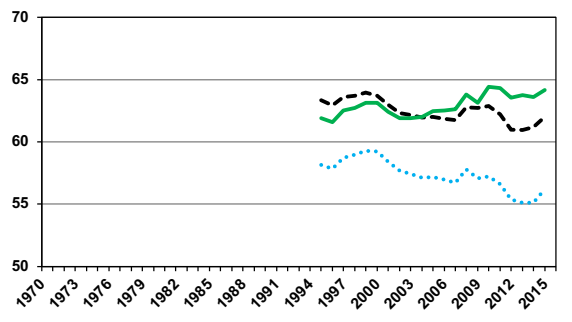**Figure 6. Labor shares – In % of the value added**

Belgium
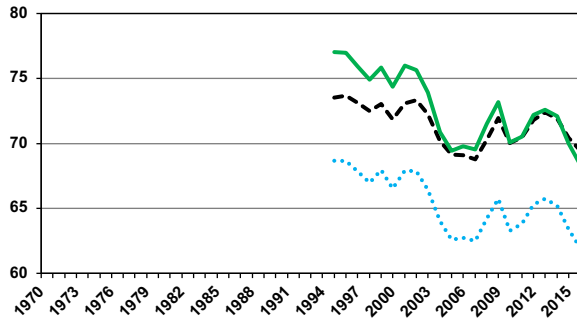
Denmark

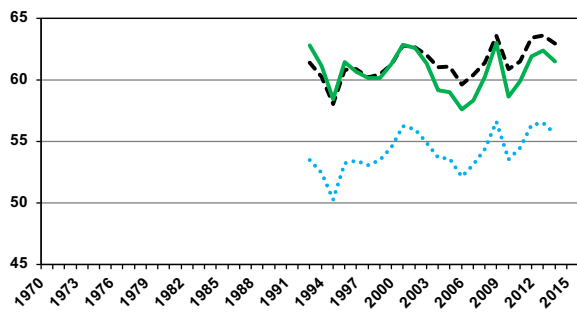**Germany**

Italy

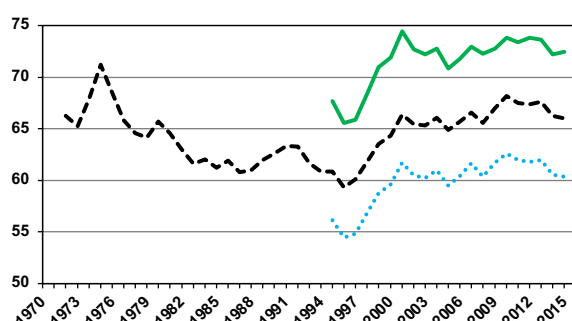
The Netherlands
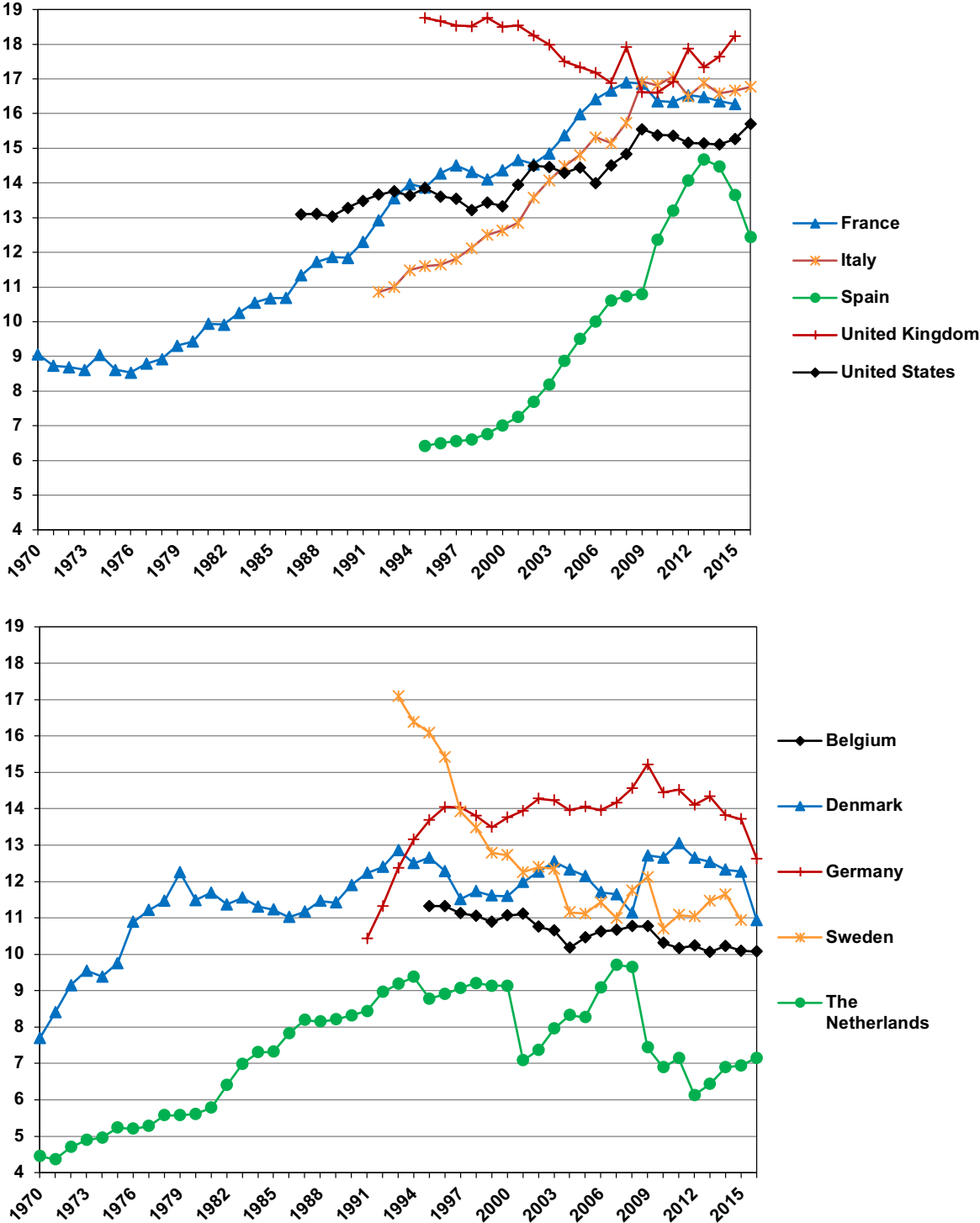

Spain

Sweden

United Kingdom

—— Business sector excluding real estate services.   – – Total economy. •••• Business sector.

Break in German series is due to reunification. Sources: Author's calculation from STAN OECD database.

Real estate services have the expected impact. They lower the uncorrected labor share in all countries, and lead to a downward trend in countries that experience a boom in real estate. The most striking example is of course Spain, as we see in Figure 7a.

Figure 7 (a,b). Share of real estate services in the business sector value added – In %
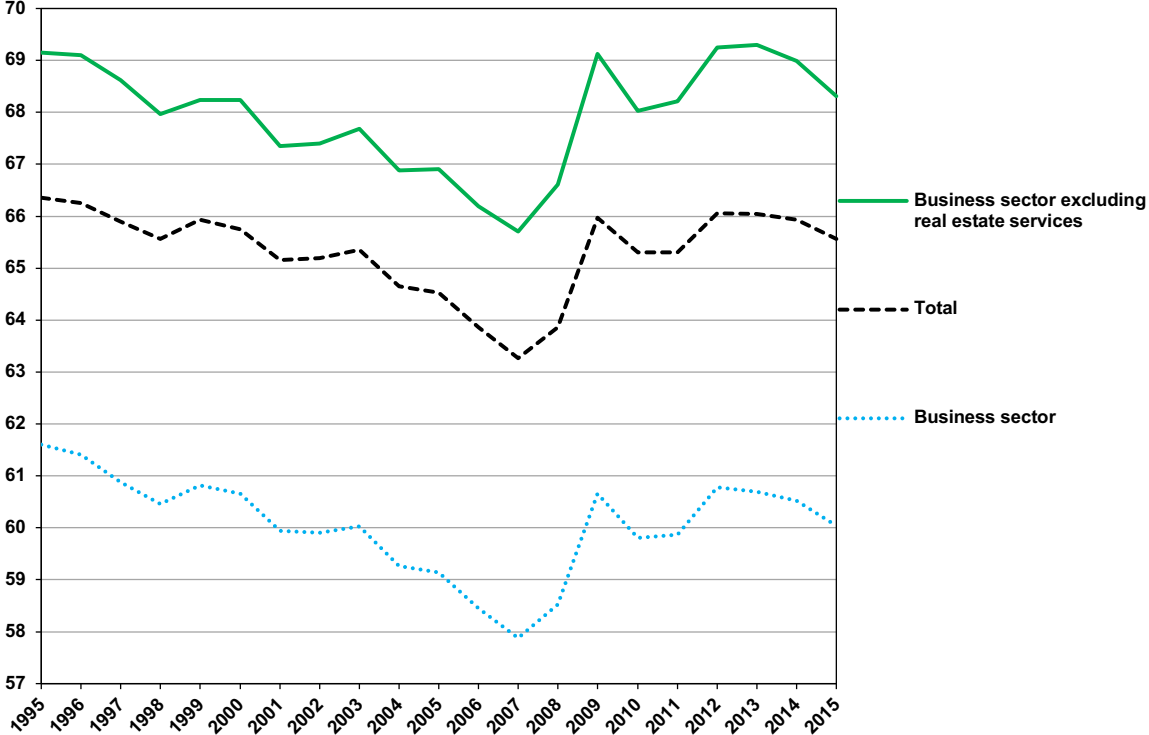

Source: Author's calculation from the STAN OECD database.

Spain has such a large boom-bust cycle in real estate income that it changes the sign of the trend in the labor share from 1995 to 2016. The share of the real estate services in the business sector value added increased from 6.4% to almost 15% at the peak before decreasing to 12.4% at the end of our sample. As a result, the uncorrected labor share drops by about 2 percentage points while the corrected one increases by 2 percentage points. In Belgium, The Netherlands and Sweden the share of real estate services in business sector value added has been stable or slightly decreasing over the past 20 years (Fig 7b).

In Figure 8, we create an indicator for the Euro Area including Germany, France, Italy, Spain, The Netherlands and Belgium. In 2017, these six countries represented 86% of Euro Area GDP. When real estate services are removed from value added, we find that the EA labor share does not have a trend.

Figure 8. Labor share in the Euro Area – In % of the value added

Euro Area includes Germany, France, Italy, Spain, The Netherlands and Belgium. Sources: Author's calculation from the STAN OECD database.

The last point to emphasize is the convergence in levels towards a labor share of 0.65. This is also important to interpret the historical data. The Netherlands is the country with the largest decline in

the labor share since the 1970s, but it started from a very high level. Spain has an increasing labor share, but it started from a relatively low level. In both cases the countries seem to head towards a labor share of 0.65.

5. **<u>Conclusion</u>**

We highlight the relevance of three potential biases in the empirical literature on the evolution of the labor share: (i) starting periods that correspond to peaks or troughs of medium run cycles; (ii) accounting for self-employment; and (iii) accounting for residential real estate income. When we correct for these three potential biases, we do not find a general decline in the labor share in our sample of advanced economies. An important point is that the evolution of the US labor share -- which remains constant until 2000 and then decreases by about 6 points – is not shared by European countries.

The medium run cycles suggest the need for more research on the impact of cost push shocks and labor market reforms. Accounting for self-employment creates difficulties for comparisons in levels across countries. Whether real estate income should be included or not depends on the question at hand. If one wishes to study inequality or household finance, then obviously one should include real estate income. On the other hand, if one wishes to understand the consequences of technological change, trade, unionization, the relative price of equipment goods, the role of intangible assets or the consequences of monopoly power, then one should exclude real estate income to focus on capital used by firms in production.

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