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► **To cite this version:**

Gilbert Cette, Lorraine Koehl, Thomas Philippon. Labor share. *Economics Letters*, 2020, 188, pp.108979. 10.1016/j.econlet.2020.108979 . hal-02484249

HAL Id: hal-02484249

<https://amu.hal.science/hal-02484249>

Submitted on 13 May 2020

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Labor share[☆]

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A B S T R A C T

We challenge the accepted wisdom of a global secular decline in the labor share. We document three issues: (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 on the Euro Area (EA) and ten developed countries. When the three issues are set aside, the orientation of the labor share in the business sector appears not to be a general downward or upward one.

JEL classification: D33 D24 J33

Keywords: Labor share, Labor cost, Value added sharing

1. Introduction

Common wisdom is that there has been a global and gradual decline in the labor share over the past 30 or 40 years, at least in a large majority of developed countries (see for instance over numerous papers [Grossman et al., 2017](#); [Karabarounis and Neiman, 2014](#); [IMF, 2017](#); [OECD, 2018](#), ;...).

Different explanations of this decline are given in the literature. The one of [Karabarounis and Neiman \(2014\)](#) hinges on an elasticity of substitution between labor and capital above one and a decline of the investment price. There are two issues with this explanation. One issue is that the assumption of an elasticity of substitution above one 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. In the US for instance, 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.

In the long run, technology change can impact the labor share. For [Acemoglu and Restrepo \(2018\)](#), “automation increases output

per worker more than wages and reduce the share of labor in national income”. [Martinez \(2019\)](#) builds a model where capital and labor are complementary 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), which, with an elasticity of substitution below one, can lead to a lower labor share. [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. [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. 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.

We challenge this accepted wisdom of a general labor share decline.¹ We emphasize three important biases that have plagued

[☆] The views expressed in this paper are the authors' and do not necessarily reflect those of the institutions they belong to.

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¹ For more details, see [Cette et al. \(2019a,b\)](#). In these papers, we show using a theoretical model how a labor share change (and possibly decline) could come from different economic transformations and developments, such as a change (increase) of the markups for instance from product market regulation decisions, or as a technological change (increase in the output to capital elasticity) for instance from the emergence of new technologies (automation and robotization,...). [Cette et al. \(2019\)](#) have shown through an empirical analysis that changes in worker bargaining power (for instance from labor regulation changes) may have an ambiguous impact on the labor share, as they impact in the same direction on both labor productivity and wages.

the existing literature: (i) starting periods for the empirical analysis; (ii) accounting for self-employment; and (iii) accounting for residential real estate income. We analyze the labor share orientation in the Euro Area (EA) and ten developed countries. We find that when these three potential biases are set aside, there has not been a global decline in the labor share. This result is consistent with those of [Rognlie \(2015\)](#) on the G7 economies and of [Gutiérrez \(2017\)](#). It is also consistent with [OECD \(2018\)](#) when we consider the same set of countries.²

Section 2 describes the three biases, Section 3 provides the empirical analysis and Section 4 concludes.

2. The three biases

The first issue is the starting period. 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. This increases the labor share. This effect can be large, but it is 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.

The second issue is self-employment. The labor compensation of employees is easier to estimate than that of self-employed individuals. For self-employed workers, it is 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. We follow the literature, but this 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.

The last issue is capital income from real estate. The capital used by firms to produce goods and services 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. 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. [Rognlie \(2015\)](#) or [Gutiérrez \(2017\)](#) have proposed such correction for the same reasons. We confirm below that labor share developments differ depending on whether we remove real estate services from the value added.

Our preferred indicator to build a diagnosis on the labor share orientation is first built on the business sector. It excludes non-market activities, which mainly correspond to the public administration, representing about a quarter of the total value added in the current period in France and the US. The reason is that the non-market activity value added calculation is very specific, dictated by strict international accounting conventions and relying mainly on a cost approach. Furthermore, this preferred indicator is corrected from self-employed workers (second bias) and removes real estate services (third bias). Finally, we mainly consider the period after possible large phenomena of wage pushes linked to the oil shocks in the 1970s, in countries such as France where such large wage pushes happened (first bias). Starting the analysis from a wage push period (and for instance from the late 1970s in

² But this OECD study analyzes the labor share on different scopes than us: total economy and business sector excluding real estate income and also other activities as agriculture, mining and quarrying, education, health and social activities... The share in the business sector of these excluded activities changes over time and differs between countries. For this reason, [OECD \(2018\)](#) results are not directly comparable to ours.

Data sources³

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.

We compute the labor share as the ratio of the compensation of employee over value added at factor costs, which is gross added value minus taxes and subvention to production.

We assume that self-employed workers earn the same gross hourly wages as employees in the same industry. We compute the average hourly gross wage for employee at the detailed industry level. 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.

The labor share has been calculated on different fields: on the business sector and on business sector minus real estate services. These indicators are corrected for self-employed workers. For France and the US, we have also calculated three other labor share indicators: on the total economy (all the branches of activities), on the business sector without any self-employment worker correction, to show the impact of such correction, and 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](#)).

In real estate services, a significant part of reported production comes from imputed rentals. National accounts consider renting an accommodation to someone as producing a renting service. For owners occupying their own dwelling, the convention is to assume that they pay a (virtual) rent to themselves.

Box I.

France) would wrongly lead us to diagnose a large decline of the labor share over the last decades.

3. Labor share developments in ten developed OECD countries

We look at the labor share trends in ten developed OECD countries for which available data allows us to analyze the biases mentioned above: 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.⁴ For France and the United States, we look at labor share evolution since 1949, and since the mid-1990s in the EA and the eight other countries.

3.1. Long term focus on France and the United States (Figs. 1A and 1B)

Five labor share indexes are built for the two countries. The first indicator is built on the whole economy. Its main advantage is to be exhaustive, but its disadvantage is to include non-market

³ For more details, see the online data appendix on the online site of Economics Letters.

⁴ In 2017, these six countries represented 86% of the GDP of the whole Euro Area.

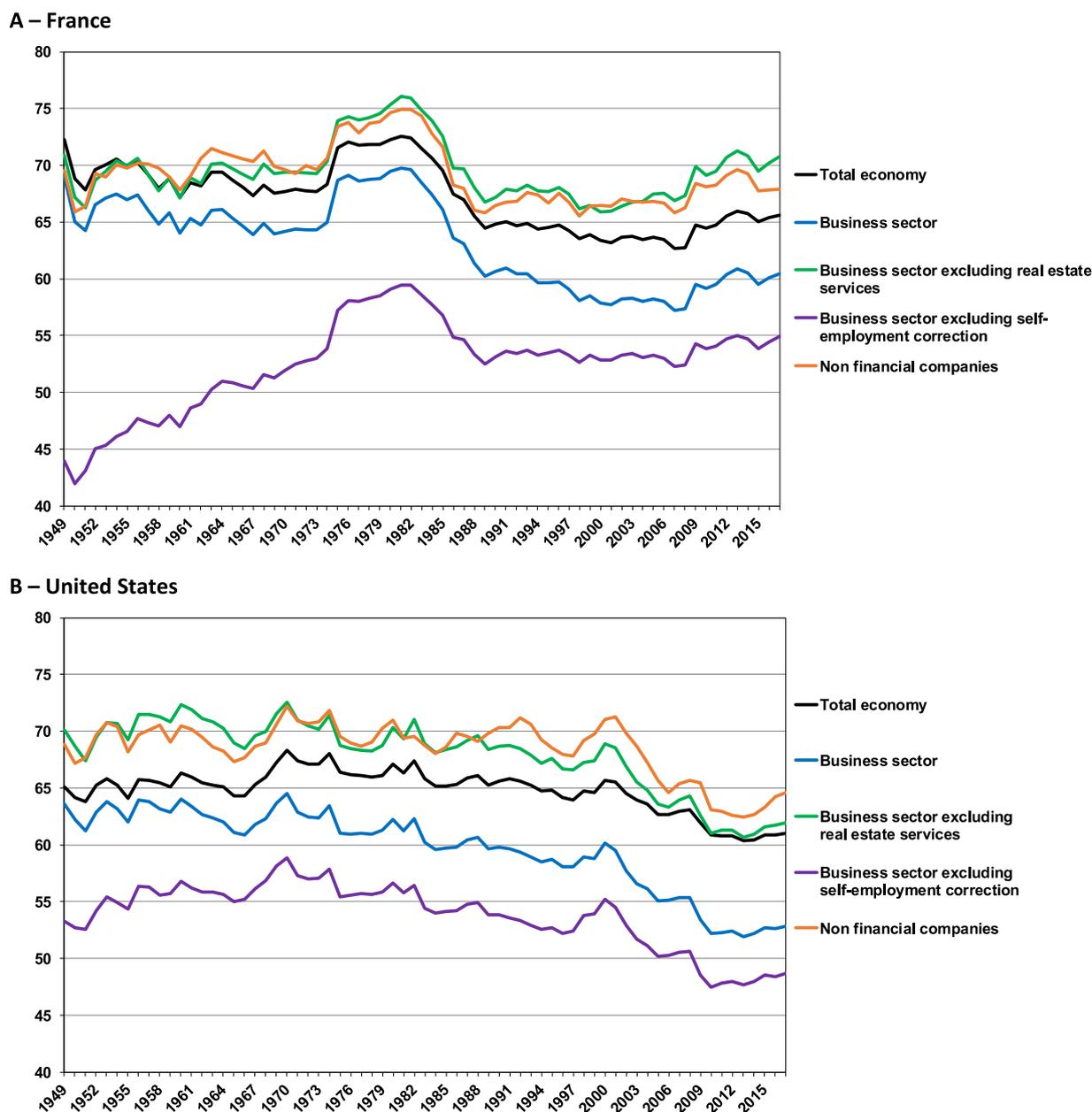


Fig. 1. Labor share – In % of the value added.
Source: See Box I.

activities whose value added calculation is very specific, as mentioned before. 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 with the aim of illustrating how large this correction is. The fourth indicator is built on the business sector excluding real estate activities. The last indicator is built on the non-financial corporation (NFC) scope, excluding self-employment 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 but only covers about half of the GDP at the end of the period in the two countries.

Concerning the first bias, we see that the two oil shocks of the 1970s provoked in France 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 the labor share to reach from the end of the 1980s a new equilibrium which lasted two decades, until the financial crisis emerged in 2008.

In the US, 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 large producer of petrol and gas, and the oil shocks were mainly a transfer from energy user sectors to the petrol and gas producer sector, and not as in France from all sectors to petrol and gas foreign country producers.⁵

Concerning the second bias, it appears that self-employment largely impacts the level and the trend of the labor share in France. This impact comes from the fact that the share of self-employed in the total employment decreased continuously from about 39% at the end of the 1940s to about 10% in the early 2000s.

⁵ This explanation was already given by Baghli et al. (2003).

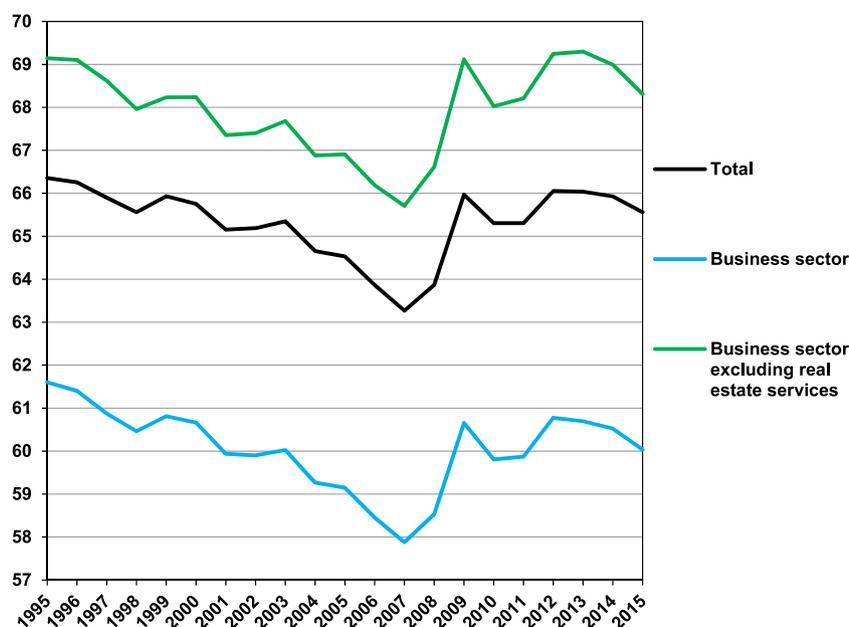


Fig. 2. Labor share in the Euro Area — In % of the value added. The Euro Area in this Figure comprises Germany, France, Italy, Spain, The Netherlands and Belgium. In 2017, these six countries represented 86% of the GDP of the whole Euro Area.

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

Then, it was quite stable until the end of the 2000s to increase slightly by about 1 percentage point thereafter, as a result of the creation of a specific status of auto-self-employed (“*auto-entrepreneur*”) in 2008. From these changes, 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 to remain relatively stable thereafter.

In the US, we observe that the self-employment correction has also an effective impact on the labor share indicators mainly before the early 1970s, and not really afterwards. The reason is that the share of self-employed workers in the 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 about 7% until the current period.

Concerning the third bias, it appears that to remove real estate services totally changes the diagnosis of the trend of the labor share. Except the long decade affected by the oil shocks from the mid-1970s to the mid-1980s, the labor share in the business sector exhibited a decreasing trend from 1949 until the financial crisis in 2008 of about 12 percentage points, followed afterwards by an increase of about 3 percentage points. The indicator excluding real estate services has exhibited a totally different evolution: until the first oil shock, it fluctuated around a stable level of about 70%, then it was above until the mid-1980s, then it was below until the financial crisis of 2008 and since then it has fluctuated again around the stable 70% level. The gap between the two indicators comes from the increasing share of real estate services in the total value added, from about 4% at the end of the 1940s to about 16% in 2008, this share remaining quite stable afterwards. In the field of non-financial companies, the diagnosis is very similar to that in the business sector excluding real estate services.

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 much in France. From its maximum in 1970 to its current level

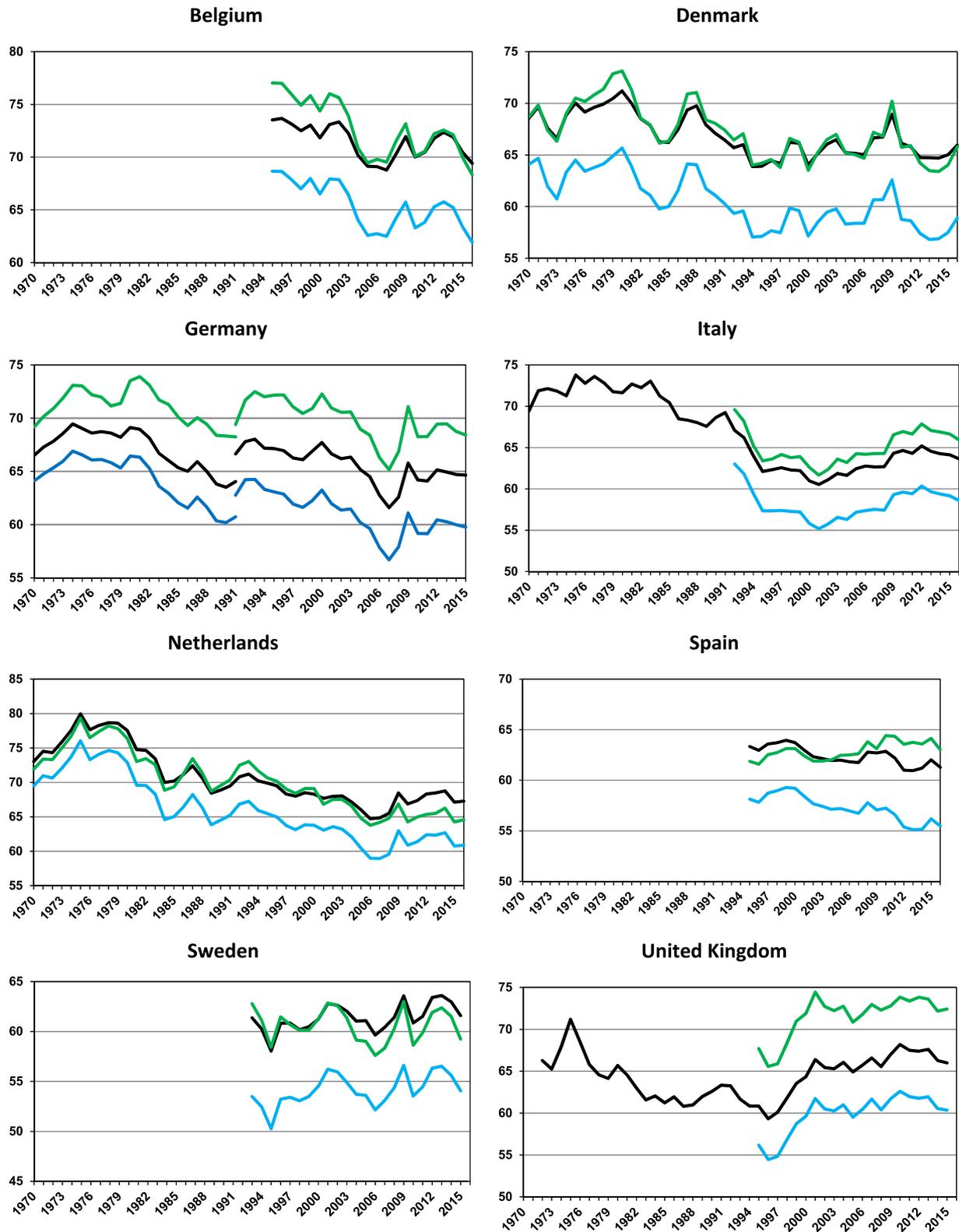
in 2017, the business sector labor share decreased by about 12 percentage points for the non-corrected indicator and by about 10 percentage points for the corrected one. Nevertheless, for the non-financial companies, the labor share has fluctuated around a stable level of about 70% from the end of the 1940s to the early 2000s, to decrease thereafter by about 5 percentage points, 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.

In the two countries, the correction of the three biases appears necessary to build a diagnosis on the labor share trend. When we take into account the three biases, we do not observe in France any structural decrease and we could even consider that the labor share could have increased over the last two decades. In the US, we observe a decrease after 2000, which coincides with other evolutions. [Covarrubias et al. \(2019\)](#) discuss the relative importance of competition, barriers to entry, technology, and trade. 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.

3.2. The labor share developments in the euro area and other countries (Figs. 2 and 3)

We look now at the labor share orientation also for the eight other developed countries and the EA, at least from 1995 to the current period, for the business sector excluding or not real estate services. The indicators are adjusted for self-employment mixed income. As much as the comparison is possible, the orientation of the labor share seems consistent with the one described in recent international analyses, as for instance [IMF \(2017\)](#) or [OECD \(2018\)](#).

With real estate services included in the value added, it is a clear downward one in the EA and in seven countries, a clear upward one in two countries and a quasi-stability in the last country. When real estate services are removed 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 EA and in two countries. Then, the usual diagnosis of a general downward



— : Total economy; — : Business sector; — : Business sector excluding real estate services
 In Germany, the break corresponds to the reunification event.

Fig. 3. Labor share — In % of the value added.
 Source: Author's calculation from the STAN
 OECD database.

orientation of the labor share in the developed countries over the last decades is not confirmed on our dataset of ten developed countries and the EA. Even, as commented before, the downward trend is not so clear concerning the US. The relevant real estate services correction decreases the number of countries with a clear downward orientation of the labor share.

4. Conclusion

Three important biases appear to have plagued much of the existing literature on labor share: (i) starting periods for the empirical 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 appears not to be a general downward or upward one.

Within each country, results from our country-level data analysis stem from different types of evolutions at the firm level: from the changes in the labor share within firms and from the reallocation of the value added between firms that have different labor share levels. In this domain, [Schwellnus et al. \(2018\)](#) have shown that countries with a falling labor share have witnessed both a decline in terms of the technological frontier and a reallocation of the market shares toward firms with low labor shares, two evolutions that are not necessarily observed in the other countries. In France, [Bouche et al.'s \(2020\)](#) firm-level analysis over the last two decades shows that the median labor share does not exhibit any clear trend on their whole dataset, and also with respect to the technological frontier (corresponding to the higher productivity level firms) or on the laggard firms. These results are consistent with those commented on the country-level data corresponding to no decline or even, potentially, an increase in the labor share. The contrasted country-level labor share trends commented in this paper could result from different evolutions at the frontier and for laggard firms, without any general orientation for each of these two components.

Appendix A. Supplementary data

Supplementary material related to this article can be found online at <https://doi.org/10.1016/j.econlet.2020.108979>.

References

Acemoglu, D., Restrepo, P., 2018. Artificial Intelligence, Automation and Work. NBER Working Paper, no. 24196, January. <https://www.nber.org/papers/w24196>.

- Aghion, P., Bergeaud, A., Boppart, T., Klenow, P., Li, H., 2019. A Theory of Falling Growth and Rising Rents, April. Mimeo, <http://dx.doi.org/10.24148/wp2019-11>.
- Autor, D., Dorn, D., Katz, L.F., Patterson, C., Van Reenen, J., 2017. The fall of the labor share and the rise of superstar firms. NBER working paper May 2017. *Quartely J. Econ.* Forthcoming. <https://www.nber.org/papers/w23396>.
- Baghli, M., Cette, G., Sylvain, A., 2003. Les déterminants du taux de marge en France et quelques autres grands pays industrialisés : analyse empirique sur la période 1970-2000. *Econ. Prevision* 2003 (2(158)), 1-25. <http://dx.doi.org/10.3406/ecop.2003.6899>.
- Blanchard, O., 1998. Revisiting European Unemployment: Unemployment, Capital Accumulation, and Factor Prices. Technical Report, NBER Working Paper, <https://www.nber.org/papers/w6566>.
- Bouche, P., Cette, G., Lecat, R., 2020. News from the frontier: Increased productivity dispersion across firms and factor reallocation (forthcoming).
- Cette, G., Koehl, L., Philippon, T., 2019a. Labor shares in some advanced economies. nber working paper, no. 26136, august. <https://www.nber.org/papers/w26136>.
- Cette, G., Koehl, L., Philippon, T., 2019b. The labor share in the long term: A decline? *Econ. Stat.* (510-511-512), 35-51. <http://dx.doi.org/10.24187/ecostat.2019.510t.1993>.
- Cette, G., Lopez, J., Mairesse, J., 2019. Rent creation and rent sharing: New measures and impacts on total factor productivity. *Econ. Inq.* 57 (4(October)), 1915-1938. <http://dx.doi.org/10.1111/ecin.12809>.
- Covarrubias, M., Gutiérrez, G., Philippon, T., 2019. From good to bad concentration? U.S. industries over the past 30 years. NBER macro annual. <https://www.nber.org/papers/w25983>.
- Elsby, M., Hobijn, B., Sahin, A., 2013. The decline of the U.S. labor share. *Brook. Pap. Econ. Activity* 44 (2(Fall)), 1-63. <http://dx.doi.org/10.24148/wp2013-27>.
- Grossman, G.M., Helpman, E., Oberfield, E., Sampson, T., 2017. The Productivity Slowdown and the Declining Labor Share: A Neoclassical Exploration. Technical Report, NBER Working Paper, <https://www.nber.org/papers/w23853>.
- Gutiérrez, G., 2017. Investigating global labor and profit shares. <http://dx.doi.org/10.2139/ssrn.3040853>.
- IMF, 2017. Understanding the downward trend in labor income shares. In: Chapter 3 of the World Economic Outlook, April. <https://www.elibrary.imf.org/view/IMF081/23926-9781475564655/23926-9781475564655/ch03.xml?redirect=true>.
- Karabarbounis, L., Neiman, B., 2014. The global decline of the labor share. *Q. J. Econ.* 129 (1), 61-103. <http://dx.doi.org/10.1093/qje/qjt032>.
- Martinez, J., 2019. Automation, Growth and Factor Shares. Technical Report, LBS, http://www.josebamartinez.me/pdf/Martinez_AutomationGrowthFactorShares.pdf.
- OECD, 2018. Labour share developments over the past two-decades: The role of the technological progress, globalization and "winner-takes-most" dynamics. In: Chapter 2 of the OECD Employment Outlook, 2018, July. The content of this chapter comes from [Schwellnus et al. \(2018\)](#). <http://dx.doi.org/10.1787/3eb9f9ed-en>.
- Pionnier, P.-A., Guidetti, E., 2015. Comparing Profit Shares in Value-Added in Four OECD Countries: Toward More Harmonised National Accounts. OECD, Working Paper no. 61, STD/DOC(2015)3, 29 May. <http://dx.doi.org/10.1787/5js0bsm2g0lt-en>.
- Rognlie, M., 2015. Deciphering the fall and rise in the net Capital share: Accumulation or scarcity? *Brook. Pap. Econ. Activity* (Spring), 1-69. <http://dx.doi.org/10.1353/eca.2016.0002>.
- Schwellnus, C., Pak, M., Pionnier, P.-A., Crivallaro, E., 2018. Labour Share Developments over the Past Two-Decades: The Role of Technological Progress, Globalization and Winner-Takes-Most Dynamics. OECD, Economic Department Working Papers, No. 1503, 3 September. <http://dx.doi.org/10.1787/3eb9f9ed-en>.