Firm ownership and the labour share

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Abstract:

Since the early 1980s, there has been a broad, worldwide decrease in the share of income accruing to labour. We argue that this trend could be driven by recent trends in firm ownership. Using national accounts data, we first document the decline in the labour share since the 1980s in both Europe and the United States. This trend is common to most sectors of the economy, and is robust when accounting for the income of the self-employed. We show that this decline was mirrored by an increase in the share of payouts (dividends and buybacks) to shareholders. We provide evidence that countries with a larger share of non-financial corporations owned by institutional investors are countries with the largest share of payouts in gross value added. We use institutional ownership as an instrumental variable for payouts. We show that more institutional ownership leads to higher payouts and to a lower labour share. Overall, recent trends in firm ownership could explain half of the decline in the labour share in Europe and the United States.

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Key words: labour share, cost of capital, ownership, corporate finance, institutional investors.

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1. Introduction

The question of how the benefits of economic growth are distributed has recently been the subject of a renewed interest among economists and policy-makers. This interest is sparked by the observation of a worldwide decrease in the share of income accruing to labour since the early 1980s (Karabarbounis and Neiman, 2014). Parallel to this trend, there is also a growing concern about the allocation of corporate value added that could be more and more in favor of shareholders. In the United States, Lazonick (2014) points to the fact that companies in the S&P 500 index used 54% of their earnings to buy back their own stock, and 37% to distribute dividends from 2003 through 2012. With only 9% left for investments in productive capabilities or higher incomes for employees, he denounces this distribution of earnings as unequal, and calls it "profits without prosperity".[1]

Could the decline in the labour share of income since the 1980s result from a rising share of value added distributed to shareholders? To answer, this paper provides evidence of recent changes in firm ownership since the early 1980s, embodied in the increasing ownership of non-financial corporations by institutional investors. These changes have resulted in an increased share of value added distributed as payouts to shareholders (in the form of dividends and stock buybacks), and in a decline in the labour share. Our results show that recent trends in firm ownership could explain half of the decline in the labour share in Europe and the United States on average. The contribution of this paper is thus to provide a novel explanation for the decline in the labour share, relating the labour share to firm ownership.

We start by documenting three stylized facts common to Europe and the United States since the 1980s. The first one is the decline in the labour share of income (share of total labour compensation in gross value added), common to most sectors, and robust when accounting for the income of the self-employed. Mirroring this decline, we observe an increase in its counterpart: the capital share. In the second stylized fact we identify, in this capital share, the share of current profits before distribution (what is left of the gross operating surplus after deducting capital depreciation, receiving property income, paying interests, rents and charges payables, and paying current taxes). We show that the increasing capital share reflects an increase in the profit share. And this increase in the profit share reflects mostly an increase in payouts to shareholders (dividends and buybacks). Finally, in the third stylized fact, we provide evidence that the share of payouts evolves closely with institutional ownership and that countries with more institutional ownership have a larger share of payouts on average.[2]

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[1]In the Spring 2018, Oxfam made a similar case against the distribution of corporate income of firms in the CAC 40 in France. From 2009 up to 2016, firms have distributed 67% of their earnings in dividends, leaving only 27% for investment, and 5% for employee benefits. Oxfam (2018), "CAC 40, des profits sans partage", 14 mai. Last accessed at this address: http://www.oxfamfrance.org/rapports/justice-fiscale/cac-40-des-profits-sans-partage.

[2]We follow OECD classification and consider that institutional investors include investment funds (money market and non-money market funds), insurance corporations and pension funds. Institutional investors have in common

We discuss three mechanisms through which firm ownership affects resource-allocation decisions: by tightening governance, by inducing a short-termist governance or by increasing concentration. We argue that, whatever the mechanism, more institutional ownership may lead to a lower labour share by increasing firms' profitability while reducing both employment and wages. In the empirical part, we are unable to differentiate between the three hypotheses. We simply test whether an increase in institutional ownership leads to a higher profit share and a lower labour share. We quantify the causal effect of increased profit shares on labour shares using lagged institutional ownership as an instrumental variable. Results show that more institutional ownership leads to higher payouts and to a lower labour share. Firm ownership could explain about half of the fall in the labour share since the early 1980s. Despite the common declining trend in the long-run, some European countries display stable or even increasing labour share since the mid-1990s. We show that our explanation can partly account for this heterogeneity.

This paper relates to recent studies of the determinants of the decline in the labour share. Three main views emerge to explain the decline in the labour share. The first one focuses on the counterpart of the labour share: the capital share. They argue that this share has increased because of capital accumulation, which is not offset by a fall in the returns per unit of capital. Piketty and Zucman (2014) document wealth accumulation for 8 developed economies since the 1970s. Karabarbounis and Neiman (2014) relate this trend to the recent decline in the price of capital goods. Koh et al. (2015) argue that this increasing capital reflects the accumulation of a new form of capital: intangible assets. Acemoglu and Restrepo (2016) relate it to a "race between machine and man". Another view is supported by Elsby et al. (2013), who show evidence that offshoring is a leading potential explanation of the decline in the labour share in the United States.[3] Finally, recent papers have emphasized the role of increasing profits in explaining the counterpart of the declining labour share: the rising capital share. These increasing profits could be explained by an increased scarcity of safe assets (Rognlie, 2015; Caballero et al., 2017). It could also reflect the increased concentration of firms (Dorn et al., 2017). But Gutiérrez (2017) recently show evidence that the effect of competition cannot explain dynamics of the labour share in Europe.

All of these explanations are certainly at play to explain the long-term declining trend in the labour share. However, they cannot account for heterogeneous patterns of the dynamics of the labour share in Europe. Our contribution is to provide a novel hypothesis that can explain the declining trend in the labour share as well as its heterogeneous dynamics across European countries. Gutiérrez and Philippon (2018) establish a causal relationship between increased institutional ownership and decreased investment. Focusing on the United States since the 1980s, they show that investment is weak relative to the measure of profitability in the business sector. They suggest that one of

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that they are agents of their clients' money as opposed to individual investors.

[3]Elsby et al. (2013) also show that there is little evidence supporting previous explanations based on the hypothesis of a reduced bargaining power of workers. On the effect of the bargaining power of workers on the labour share, see for instance Blanchard and Giavazzi (2003); Kristal (2010).

the reasons for this "investment-less growth" is to be found in recent trends in firm governance. Crane et al. (2016) have already provided evidence that higher institutional ownership causes firms to pay more dividends. And the role of institutional investors have increased substantially in the United States since the 1980s. This change in firm ownership has led firms to repurchase more shares at the expense of investment. We suggest that these trends could also contribute to the decline in the labour share since the 1980s.

Our contribution is threefold. First, building on national accounting data, we provide evidence that increased profit shares in Europe and the United States reflect mostly the increase in payouts to shareholders. We document these trends for up to 28 countries and over at most 1950-2015. Second, we show that there is a causal relationship from the profit share to the labour share. We subsequently provide a novel explanation for the decline in the labour share, relating the labour share to firm ownership. Finally, we show that our narrative accounts for a large part of the declining trend in the labour share, but also for heterogeneous patterns of the labour share over time and across countries.

The remainder of the paper is organized as follows. Section 2 describes the data gathered to show three main stylized facts in Europe and the United States since the 1980s: (i) the decline in the labour share of income; (ii) mirrored by an increase in the share of payouts (dividends and buybacks) to shareholders; (iii) the positive relationship between the share of payouts and institutional ownership. Section 3 provides theoretical intuitions to understand better the effect of firm ownership on the allocation of resources. Section 4 describes the empirical strategy used to establish a causal relationship between institutional ownership and the labour share, and shows macroeconomic implications of this relationship. Section 5 concludes.

2. Stylized Facts

In this section, we describe the data used and indicators built to document three trends concerning the non-financial corporate sector: the decline in the labour share, the increase in the share of payouts (dividends and buybacks) to shareholders, the positive relationship between the share of payouts and institutional ownership.

2.1. Data

We use different data sources: Eurostat and OECD financial accounts as well as the US Flow of Funds for data by institutional sectors; EU KLEMS for industry-level data.

Aggregate accounts of the non-financial corporate sector Eurostat and OECD financial accounts and the US Flow of Funds provide data by institutional sectors, including data for the non-financial corporate sector. They provide a detailed decomposition of the sector accounts

(generation and allocation of income, as well as financial transactions and balance-sheets). Data are available for up to 29 countries from 1950 to 2015.

Industry accounts of the non-financial market economy We use the 2017 update of EU KLEMS which provides data on gross value added and its decomposition into labour and capital compensations, as well as data on produced capital (tangible and intangible capital) by industry for European countries and the United States.[4] For some countries, the time coverage is shorter than in previous updates of EU KLEMS. When possible, missing data was filled with the 2011 update to increase the time coverage for these countries. EU KLEMS classifies industries according to the International Standard Industrial Classification (ISIC rev. 4). We focus on the non-financial market economy, which is the closest aggregate to the non-financial corporate sector. We discuss the comparison between both sectors in the following section. The non-financial market economy is composed of 19 industries, excluding non-market services sectors (data are very poor), public administration (by construction, its labour share is 100%) and the financial sector (for which the measure of output is not clear).[5] Data are available for up to 29 countries from 1970 to 2015.

The role of institutional investors in equity markets In the data by institutional sectors provided by Eurostat, the OECD and the US Flow of Funds, it is possible to identify institutional investors. We follow OECD classification and consider that institutional investors include investment funds (money market and non-money market funds), insurance corporations and pension funds.[6] We focus on their activity on equity markets, and build a measure that is comparable across countries: the ratio of total equity owned by institutional investors (excluding investment fund shares) to total market capitalization of non-financial corporations. We use this indicator as a proxy for institutional ownership. Data are available for up to 29 countries from 1950 to 2015.

Country coverage We focus on the comparison between Europe and the United States over 1980-2015. For Europe, data coverage is very heterogeneous across countries. We build an EU (moving sample) aggregate representing a weighted average for all European countries.[7] To account for entry and exit during the sample, as in Karabarbounis and Neiman (2014), evolutions

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[4]Data are freely available at: http://www.euklems.net/.

[5]Since the previous updates were in a different classification, some industries had to be aggregated to make the correspondence. We end up with the non-financial market economy being composed of 19 industries. Non-market services sectors include the Nace revision 2 codes T and U: activities of households as employers and non-profits serving households, but also sector L: real estate, which reflects mostly the imputed rental income. Public administration includes the sector codes O, P and Q. The financial and insurance sector (K) is also excluded.

[6]European Commission (2013) defines as investment funds all financial corporations and quasi-corporations whose business is to issue investment fund shares or units as close substitutes for deposits from institutional units, and, for their own account, make investments.

[7]We weight countries using their share in total GDP at PPP.

for the EU (moving sample) plot the year fixed effects from a regression that also includes country fixed effects, and which is weighted by the country's share in the European total gross value added. The effects are then normalized to equal the European average in 1997.

2.2. Accounting framework and methodological issues

National accounts data describe the generation and distribution of income and the accumulation of non-financial and financial assets.[8] Each dataset here complies with the standards of the 2008 System of National Accounts (SNA 2008). The main accounting identities are summarized in table 1.

Gross value added at factor costs can be decomposed into labour compensations and gross operating surplus. Consumption of fixed capital is deduced from the gross to get the net operating surplus. Current profits before distribution are what is left of the net operating surplus after receiving property income, paying interests, rents and charges payables, and paying current taxes (including the corporate income tax). Part of these current profits are then distributed to shareholders in the form of dividends or stock buybacks.[9] In the following we will discuss how we build, in EU KLEMS and in financial accounts data, the different measures of the labour share (the ratio of labour compensation to gross value added), the profit share (ratio of current profits before distribution to gross value added), and the share of payouts to shareholders (dividends + buybacks) in gross value added.

Delineation of the corporate versus market economy   Financial accounts data are available for the non-financial corporate sector. By construction, this sector excludes the activity of self-employed.[10]

We build in EU KLEMS the accounts for the non-financial market economy. Contrary to the non-financial corporate sector, the non-financial market economy includes both the activity of employees and self-employed. The gross value added is then the sum of the compensation to employees, the gross operating surplus and the mixed income of self-employed. Mixed income includes both the compensation and the gross operating surplus of self-employed.

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[8]For more details, see chapter 8 of European Commission (2013).

[9]Current profit before distribution is a concept used in business accounting. Its equivalent is the net entrepreneurial income in national accounting. See European Commission (2013), paragraph 8.26 on p.209 for a discussion on this equivalence.

[10]In some countries (Italy and Germany especially), corporate income includes the activity of certain types of self-employment (quasi-corporations). See the next section for a discussion on the implications for the measure of the labour share.

Table 1 – Simplified sequence of accounts for the non-financial corporate sector

Accounting definition		Economic concept in EU KLEMS (industry k, year t)
Generation of income account	**Gross value added =**	$p_{k,t}Y_{k,t} \equiv$
	+ Taxes less subsidies on production and imports	-
	+ Gross value added at factor cost	$p_{k,t}Y_{k,t}$
	Gross value added at factor cost =	$p_{k,t}Y_{k,t} =$
	+ Compensation of employees	$+\omega_{k,t}L_{k,t}$
	+ Gross operating surplus (GOS)	$+U_{k,t}K_{k,t}$
	Gross operating surplus =	$U_{k,t}K_{k,t} =$
	+ Consumption of fixed capital	$+\sum_a \delta_k^a q_{k,t}^a K_{k,t}^a$
	+ Net operating surplus	$+r_{k,t}\sum_a q_{k,t}^a K_{k,t}^a$
Allocation of income account	**Net operating surplus =**	$r_{k,t}\sum_a q_{k,t}^a K_{k,t}^a \equiv$
	- Property income receivable	-
	+ Interest, rents or charges payable (interest on debts, rents on land and other natural resources, other investment charges)	$+i_t \sum_a q_{k,t}^a K_{k,t}^a$
	+ Current taxes (taxes on income and other current taxes)	$+\tau_t U_{k,t} K_{k,t}$
	+ Current profit before distrib. (net entrepreneurial income)	$+\Pi_{k,t}$ (estimated)
	Current profit before distribution =	$\Pi_{k,t}$ (estimated)
	+ Distributed income of corporations (dividends and withdrawals from income of quasi-corporations)	-
	+ Reinvested earnings on foreign direct investment	-
	+ Other net current transfers	-
	+ Net saving	-
Capital account	**Net saving =**	-
	+ Net fixed capital formation (with details by asset type a in AN_F6 classification)	$\sum_a q_{k,t}^a \Delta K_{k,t}^a$
	+ Changes in inventories and net acquisitions of valuables and non-produced assets	-
	+ Net capital transfers (investment grants, others)	-
	+ Net lending (+) / net borrowing (-)	-
Financial account	**Net lending (+) / net borrowing (-) =**	-
	- Net issuance of equities (proxy for buybacks)	-
	- Net incurrence of other financial liabilities (currency, deposits, debt securities and loans; financial derivatives and employee stock options; trade credits; other)	-

Note: EU KLEMS provide information on: $Y_{k,t}$ the gross value added and $p_{k,t}$ its price; $L_{k,t}$ the number of hours worked and $\omega_{k,t}$ the average hourly wage; $K_{k,t}$ the stock of capital and $K_{k,t}^a$ the stock of capital good a, δ_k^a the depreciation rate of asset a, $q_{k,t}^a$ the investment price of capital good a. It is then easy to deduce $U_{k,t}$ the usercost of capital, and $r_{k,t}$ the internal rate of return. Using data from financial accounts, we get a measure of the implicit interest rate by country i_t, as well as the effective corporate income tax τ_t. We can thus get a rough estimate of $\Pi_{k,t}$, current profits before distribution.

Measuring the labour share   Using both EU KLEMS and financial accounts data, we can compare three different measures of the labour share:

- the wage share (total compensation of employees to total gross value added) for the non-financial corporate sector using financial accounts data;
- the wage share for the non-financial market economy in EU KLEMS, this measure is also available at the industry-level;
- the labour share (total compensation of employees and self-employed to total gross value added) for the non-financial market economy in EU KLEMS, this measure is also available at the industry-level.

As explained earlier, the non-financial market economy in EU KLEMS includes both the activity of employees and self-employed. The measurement of the labour share can be biased if it does not account for the compensation of self-employed (i.e. when focusing on the wage share only). This is especially true in cross country comparisons (Gollin, 2002). The third measure, the labour share in EU KLEMS, is adjusted for the income of self-employed.

To obtain an indicator of total labour compensation of employees and self-employed, a measure of the compensation of self-employed is needed. In EU KLEMS, labour income of self-employed are estimated assuming the average earning per hour worked for self-employed is the same as for employees:[11]

$$LS_{k,t} = WS_{k,t} + \frac{\omega_{k,t} L_{k,t}^S}{p_{k,t} Y_{k,t}} = \frac{\omega_{k,t}(L_{k,t}^E + L_{k,t}^S)}{p_{k,t} Y_{k,t}} \tag{1}$$

with $WS_{k,t}$ the wage share, $L_{k,t}^E$ the number of hours worked by employees, $L_{k,t}^S$ the number of hours worked by self-employed, and $\omega_{k,t}$ the average hourly wage in industry k and year t.

Measuring current profits before distribution   We can easily observe data on the entrepreneurial account for the aggregate non-financial corporate sector in financial accounts –the equivalent in national accountings to current profits before distribution. However, we do not directly observe current profits before distribution in EU KLEMS. EU KLEMS provides only the generation of income account and the capital account for produced fixed assets. It does not provide information on the allocation of income nor on the financial account.

It is possible to construct a proxy of current profits before distribution in EU KLEMS $\Pi_{k,t}$, for year t and industry k (Table 1).

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[11]Self-employed represent, on average, 14% of total employment, with the highest share in Italy (31%) and the lowest share in the United States (8%). On average, the labour share is thus 1.16 (1/(1-14%)) times the wage share. By estimating the earnings of self-employed, some labour shares are larger than 1 in some countries. When this is the case, we set the labour share to 1.

EU KLEMS provides information on gross value added at current prices and its decomposition into labour and capital compensation (capital compensation being the gross operating surplus):

$$p_{k,t}Y_{k,t} = \omega_{k,t}L_{k,t} + U_{k,t}K_{k,t} \tag{2}$$

with $Y_{k,t}$ the gross value added and $p_{k,t}$ its price, $L_{k,t}$ the total number of hours worked, $K_{k,t}$ the stock of capital and $U_{k,t}$ the usercost of capital.

EU KLEMS provides also information on depreciation rates by industry and asset type (δ_k^a). Using these depreciation rates, we can get an estimate of the consumption of fixed capital. By deducting the consumption of fixed capital from the gross operating surplus, we get the net operating surplus:

$$r_{k,t}\sum_a q_{k,t}^a K_{k,t}^a = U_{k,t}K_{k,t} - \sum_a \delta_k^a q_{k,t}^a K_{k,t}^a \tag{3}$$

with $K_{k,t}^a$ the stock of capital good a and $q_{k,t}^a$ its price, and $r_{k,t}$ the 'internal' rate of return. See table A.1 in Appendix for a classification of assets a.

As shown in Table 1, current profits before distribution correspond roughly to the net operating surplus minus interests and charges payable and minus current taxes (assuming that property income receivable is negligible).[12] We get that profits are:

$$\Pi_{k,t} = (1 - \tau_t)U_{k,t}K_{k,t} - \sum_a (i_t + \delta_k^a)q_{k,t}^a K_{k,t}^a \tag{4}$$

with i_t the interest rate, and τ_t the effective tax rate.

When accounting for holding gains and losses on assets, we get:

$$\Pi_{k,t} = (1 - \tau_t)U_{k,t}K_{k,t} - \sum_a (i_t + \delta_k^a - \hat{q}_{k,t}^a)q_{k,t}^a K_{k,t}^a \tag{5}$$

with $q_{k,t}^a$ the inflation rate in the price of asset a. We get the usual Jorgenson and Hall (1967) formula for the user cost of capital: $U_{k,t}^a = (i_t + \delta_k^a - \hat{q}_{k,t}^a)\tau_t q_{k,t}^a$.

EU KLEMS does not provide information on neither the interest rate nor the effective tax rate. We use Eurostat and US Flow of funds data to get implicit measures of these rates at the country-level (we implicitely assume that these rates are the same in each industry). Implicit interest rates are calculated as the ratio of interests paid to the current stock of debt at market prices. For robustness checks, we alternatively use the nominal long term interest rate on government bonds given by Ameco.

Finally, profit shares (ratio of total profits to gross value added) can be estimated as follows:

$$PS_{k,t} = \frac{\Pi_{k,t}}{p_{k,t}Y_{k,t}} = 1 - LS_{k,t} - \frac{\sum_a (i_t + \delta_k^a - \hat{q}_{k,t}^a)\tau_t q_{k,t}^a K_{k,t}^a}{p_{k,t}Y_{k,t}} \tag{6}$$

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[12]By assuming that property income is null, the net operating surplus is slightly overestimated. In aggregate data, the sum of interests and profits are 25% larger than the net operating surplus.

The profit share is a negative function of the labour share. It also depends negatively on capital depreciation, on the rental rate (in real terms, deflated by the inflation in the investment price), on the effective tax rate, on the real investment price (deflated by the price of gross value added), and on the capital-to-output ratio.

Payouts to shareholders in aggregate data   In the aggregate data for the non-financial corporate sector, the allocation of income account provides data on distributed income of corporations, and more specifically of distributed dividends. The financial account also provides data on the net issuance of equities by corporations. Net equity issues are new corporate stock issues minus outstanding stock withdrawn through repurchases and merger and acquisition activities. We use the negative of these net equity issues as a proxy for buybacks.

2.3.   Three facts about non-financial corporations

### Fact #1: A decline in the labour share...

Figure 1 shows the labour share[13] in Europe and in the United States, over 1980 to 2015. Three measures of the labour share are confronted. The grey line shows the wage share for the non-financial corporate sector using financial accounts data. The dotted black line shows the wage share for the non-financial market economy in EU KLEMS. The black full line shows the labour share adjusted for self-employed in EU KLEMS. As already explained, the aggregate for Europe (moving sample) shows the estimated year fixed effects from a least-squared regression of the labour share on country and year fixed effects, to eliminate the influence of entry and exit in the dataset. The effects have been normalized to equal to the average labour share in 1997.

Accounting for the self-employed in EU KLEMS leads to an upward correction of the labour share, by more than 16p.p. in Europe and 7p.p. in the United States on average over the period. In the United States, the estimated labour share in the non-financial market economy (EU KLEMS) is very close to the labour share in the non-financial corporate sector (Flow of funds). In Europe, the labour share in non-financial corporate sector (Eurostat) is significantly lower than the labour share in the non-financial market economy (EU KLEMS). This gap might be explained by two reasons.

The first one is that there are cross-country differences in the delineation of the corporate sector (Pionnier and Guidetti, 2015). In some countries (Italy and Germany especially), corporate income includes the activity of certain types of self-employment (quasi-corporations). In other countries (like France or the United States), it does not. In countries where corporate income is over-stated compared to the number of hours worked by employees, the wage share of the non-financial

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[13]We here focus on the gross labour share, i.e. labour compensations to gross value added, and not the net labour share. See Rognlie (2015) for a discussion on gross versus net labour shares.

Figure 1 – Labour share, Europe and United States, 1980-2015

(a) Europe   **(b)** United States
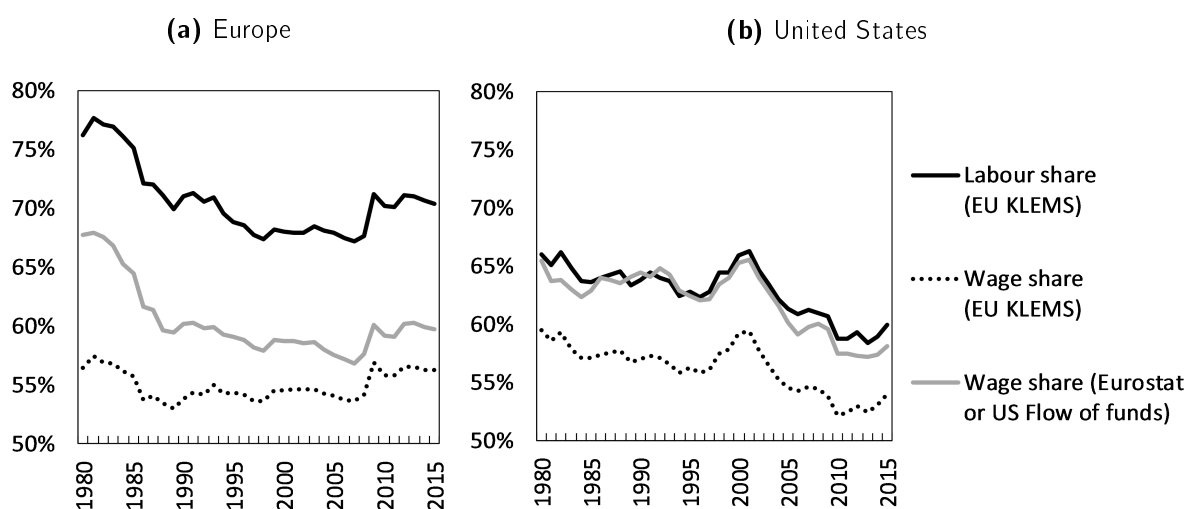
Source: authors' calculations using EU KLEMS, Eurostat and Flow of funds data.
Note: Europe plots the year fixed effects from a regression of labour shares that also includes country fixed effects, to account for entry and exit during the sample. The effects have been normalized to equal to the average labour share in 1997.

corporate sector is underestimated.[14]

The second reason is linked to the estimate of earnings of self-employed in EU KLEMS. In some countries, earnings of self-employed might be over-estimated when assuming that they get the same average wage as employees (for example, 'auto-entreprenariat' tend to be a precarious status in France, see Askenazy and Palier, 2018). In that case, the labour share in EU KLEMS is overestimated.

From 1980 to 2015, whatever the measure used, and consistent with previous studies[15], the labour share declined by 1 to 8p.p. in Europe, and by 5 to 7p.p. in the United States. The labour share

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[14]This issue is also discussed in Piketty and Zucman (2014), Data Appendix, p.41. The authors discuss the case of small businesses with partners counted as self-employed in labour force surveys. Their earnings should logically be recorded as mixed income but are sometimes treated as corporate dividends in national income. In this case, corporate dividends are recorded as income of corporations, while partners are recorded as self-employed. It results that the wage share in the corporate sector tends to be underestimated in countries with a vast network of small and medium entreprises (like Germany). To overcome this issue, Pionnier and Guidetti (2015) suggest that adjusting the labour share to account for self-employed, as does EU KLEMS, is the most suited estimate for cross-country comparisons in the labour share.

[15]For example, Karabarbounis and Neiman (2014) document a 5p.p. decline the share of global corporate gross value added paid to labour from 1975 to 2012, for a sample of 59 developed and developing countries. For the US, they document a 7p.p. decline over 1975-2012, or a declining trend of about 1p.p. per decade. They document that most developed economies experienced a decline over the period, except the United Kingdom for which the trend in the labour share increased by less than 1p.p. per decade.

has different dynamics in Europe and the United States. In Europe, it starts declining in 1980, stabilizes in the mid-1990s and slightly increases since 2008. In the United States, the labour share declines steadily from 2000 to 2015. This decline happened despite the increase in employers' social contribution (see Figure A.1 in Appendix).

Figures A.2a and A.2b in Appendix show estimated linear trends for countries and each 19 industries using EU KLEMS data. The labour share shows a declining trend in 21 of the 29 countries present in the dataset. Of the 21 countries where the trend is significant at the 5% level, the labour share declines in 17 of them. Increasing trends are found in new member States (Estonia, Latvia, Czech Republic, Cyprus, Bulgaria), but also in the United Kingdom and in Greece. For new member States, data is available only since the mid-1990s. And if looking at the dynamics of the labour share for European countries since the mid-1990s, there is no evidence of a decline. The labour share is stable on average, with strong heterogeneous patterns across countries. Concerning the UK, the decline happened in the 1970s (Piketty and Zucman, 2014).

Finally, as in Karabarbounis and Neiman (2014), we investigate to what extent the change in the labour share is the result of a composition effect (increasing size of sectors with a low labour share). To do so, we decompose the trend in the labour share into a within and between components:

$$\Delta LS_i = \underbrace{\sum_k \overline{\omega}_{i,k} \Delta LS_{i,k}}_{\text{Within-industry}} + \underbrace{\sum_k \overline{LS}_{i,k} \Delta \omega_{i,k}}_{\text{Between-industry}} \qquad (7)$$
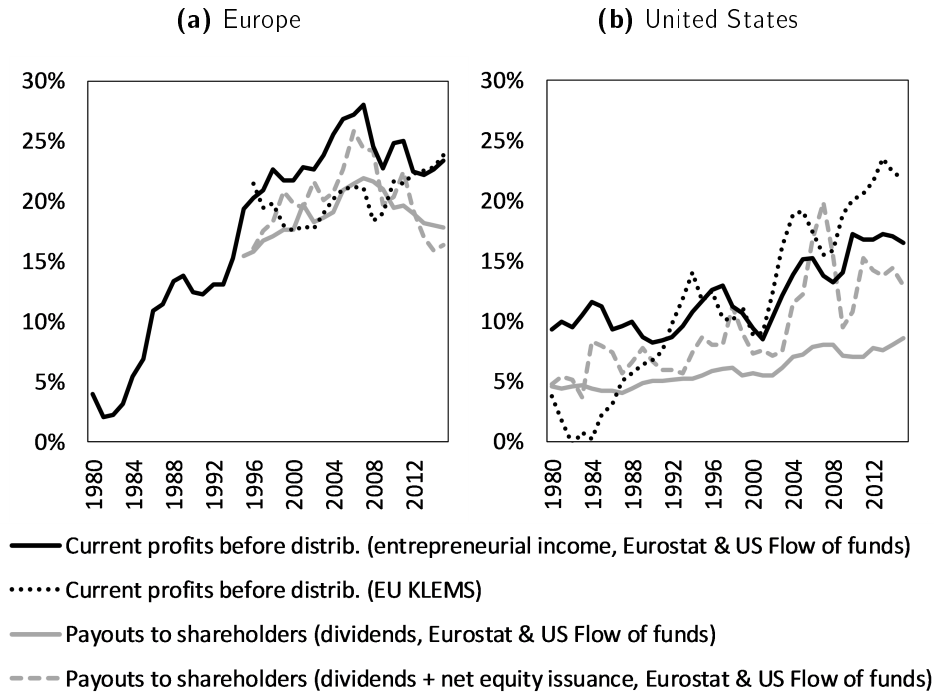
where $LS_{i,k}$ is the labour share in country i and sector k, $\omega_{i,k}$ is the sector k's share in country i's gross value added, Δx is the estimated linear trend in x over the entire period, and $\overline{x}$ is its arithmetic mean over the entire period. Figure A.3 in Appendix plots the country trends in the labour share (x-axis) against the within-industry component (y-axis). As in Karabarbounis and Neiman (2014), with a few exceptions countries are aligned along the 45-degree line, implying that the fall of the labour share is mostly driven by the within-industry component. 70% of the trend in the labour share reflects the within-industry component in the US and EU9. This result casts doubts on the fact that increased import competition drives the decline in the labour share, as argued by Elsby et al. (2013), as this import competition should affect mostly tradable sectors and not all sectors equally.[16]

Fact #2: ...mirrored by an increase in the share of profits distributed to shareholders

Figure 2 shows current profits before distribution in financial accounts data (entrepreneurial income, black full line) and our estimate in EU KLEMS (measured using the implicit rate, black dotted

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[16]The evolution of the labour share reflects the evolution of real wages plus the evolution of total hours relative to the value added at current prices. A simple decomposition shows that the fall in the labour share is due to a fast decrease in the ratio of total hours worked to value added that was not compensated by the increase in real wages. In the UK however, the increase in real wages more than compensated the fall in the ratio of total hours worked to value added.

Figure 2 – Share of current profits (EU KLEMS) and payouts to shareholders (Eurostat, OECD and US Flow of funds) in gross value added, Europe and United States, 1980-2015

(a) Europe   **(b)** United States

—— Current profits before distrib. (entrepreneurial income, Eurostat & US Flow of funds)

······ Current profits before distrib. (EU KLEMS)

—— Payouts to shareholders (dividends, Eurostat & US Flow of funds)

--- Payouts to shareholders (dividends + net equity issuance, Eurostat & US Flow of funds)

Source: authors' calculations using EU KLEMS, Ameco, Eurostat and US Flow of funds data.
Note: Europe plots the year fixed effects from a regression of profit shares that also includes country fixed effects, to account for entry and exit during the sample. The effects have been normalized to equal to the average profit share in 1997.

line).[17]

The share of profits in gross value added has increased in both Europe and the United States. From 1980 to 2015, the share of profits measured in financial accounts data increased by 19p.p. in Europe and by 7p.p. in the United States.[18] From 1996 to 2015, the share estimated in EU KLEMS increased by 2p.p. in Europe and by 9p.p. in the United States (this share increased by 18p.p. over 1980-2015 in the United States).

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[17] For the measure of the profit share, in the following, the wage share is used in EU KLEMS and not the labour share since the correction for self-employed significantly overestimates the labour share in Europe and results in negative profit shares.

[18] The profit share is a negative function of the labour share but not only. As showed in Table 1, the profit share also depends on capital depreciation, the rental rate, the effective tax rate, the real investment price, and the capital-to-output ratio. Over 1980 to 2015, the labour share declined by 8p.p. in Europe and 7p.p. in the United States, and the the capital share (which corresponds to $1 - LS_{i,t}$) increased by respectively 25 and 21p.p. The profit share increased by 19p.p. in Europe and 7p.p. in the United States, meaning that the part of the capital share explained by other factors than the profit share increased by 6p.p. in Europe and decreased by 14p.p. in the US.

Figure 3 – Estimated linear trend in the labour share and the share of payouts (dividends and buybacks) to shareholders, p.p. per 10 years, 1995-2015
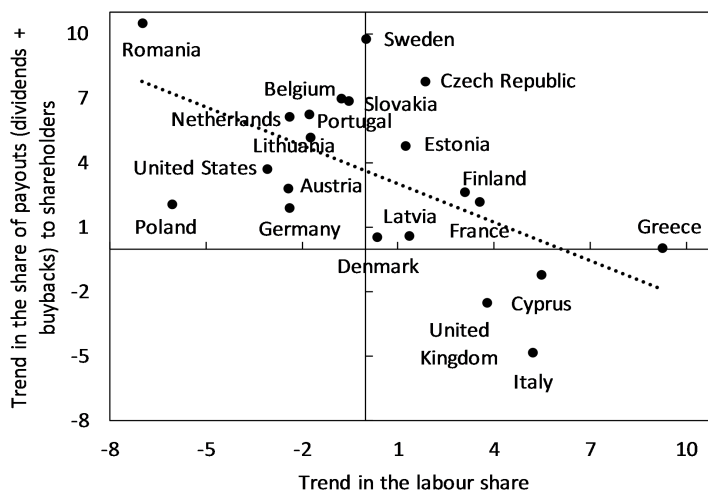
Source: authors' calculations using EU KLEMS, Eurostat and US Flow of funds data.
Note: this figure shows the estimated trend in the labour share and the share of payouts. It plots trends for the 21 countries with data available since 1996 and before. Trend coefficients are reported in percentage points per 10 years (i.e., a value of -1 means a 1 percentage point decline every 10 year). The black line is the estimated linear trend between the labour share and the share of payouts.

Figure 2 also plots the share of payouts to shareholders in corporate gross value added, including (grey dashed line) and excluding (grey full line) net equity issuance (using Eurostat, OECD and US Flow of funds data). We can see that the share of payouts evolves very closely to the share of profits. In Europe, the share of payouts including net equity issuance is stable over 1996-2015, but with a substantial increase from 1996 up to the global financial crisis followed by a strong decline. The share excluding net equity issuance follows a similar dynamic but increases by 2p.p. overall. In the United States, both shares of payouts increase steadily since the early 1980s. Over 1980-2015, the share including net equity issuance increased by 8p.p. while the share excluding net equity issuance increased by 4p.p. Net equity issuance represents an increasing share of total payouts in the United States (it represents 3% of total payouts in 1980, and about one third in 2015), while its importance remains smaller in Europe (it represents 5% of total payouts on average over 1996-2015).

Figures A.4 and A.5 in Appendix show estimated linear trends for each country and each industry over 1995-2015. Payouts increase in 22 of the 28 countries present in the dataset, while profit shares increase in 11 out of 20 countries. Of the 14 countries where the trend is significant at the 5% level, the profit share increases in 8 of them. Profit shares decline only in business services, the textile industry and for wood and paper products activities.

We investigate to what extent the change in the profit share is the result of a composition effect (increasing size of sector with a high profit share). To do so, we decompose the trend in the profit share (measured using the implicit rate) into a within and between component, using the same formula as for the labour share. Figure A.6 in Appendix plots the country trends in the profit share (x-axis) against the within-industry component (y-axis). With a few exceptions countries are aligned along the 45-degree line, implying that the increase in the profit is mostly driven by the within-industry component. 95% of the trend in the profit share reflects the within-industry component.

All in all, the decline in the labour share is mirrored by an increase in the profit share, and more specifically the share of payouts to shareholders. Figure 3 shows this negative relationship over 1995-2015, period for which we have data on payouts (dividends + buybacks) to shareholders in Europe. As explained already, there is a lot of heterogeneity in the dynamics of labour shares in Europe over this period. On this figure we can see that whatever the trend in the labour share, it mirrors the trend in the share of payouts: countries experiencing a decline in the labour share over the period are countries where the share of payouts increased (the US for example); countries experiencing an increase in the labour share over the period are countries where the share of payouts decreased (the UK for example).
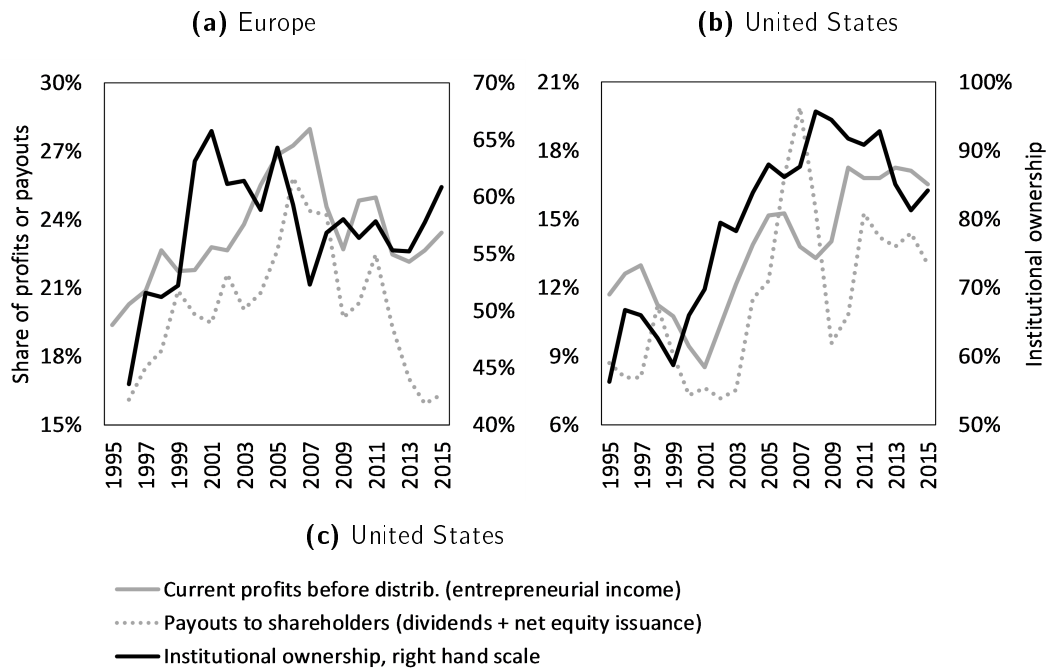
Fact #3: A strong positive relationship between the share of payouts to shareholders and institutional ownership

Finally, these trends in the labour and profit shares are parallel to an increasing role of institutional investors in equity markets. Institutional investors (investment funds, insurance corporations and pension funds) have an increasing role in the ownership of publicly listed companied. The of total equity owned by institutional investors to total market capitalization increased from about 10% in the United States in the early 1950s to about 70% in 1995 and reaches 84% in 2015. This fraction increased from 39% in 1995 to 60% in 2015 in Europe. This trend is consistent with long term trends in stock ownership, as already documented in Gutiérrez and Philippon (2018) for the United States.[19] Figure A.7 in Appendix shows estimated linear trends for each country over 1995-2015. Institutional ownership increases in 16 of the 27 countries present in the dataset.

Our proxy of institutional ownership moves closely to the share of payouts to shareholders (Figure 4). Also, countries displaying a larger share of institutional investors in the ownership of

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[19]Gutiérrez and Philippon (2018) document, for all US incorporated firms, an increase in the average share of institutional ownership. This share increased from close to 20% in 1980 to about 55% in 2015. This increase reflects mostly the increasing role of quasi-indexer institutions, institutions that have diversified holdings and low portfolio turnover consistent with a passive buy-and-hold strategy. See their Figure 1. Due to data limitations, our measure of equity owned by institutional investors includes all equity and not only equity issued by resident non-financial corporations. Our measure is thus larger than the one documented by Gutiérrez and Philippon (2018).
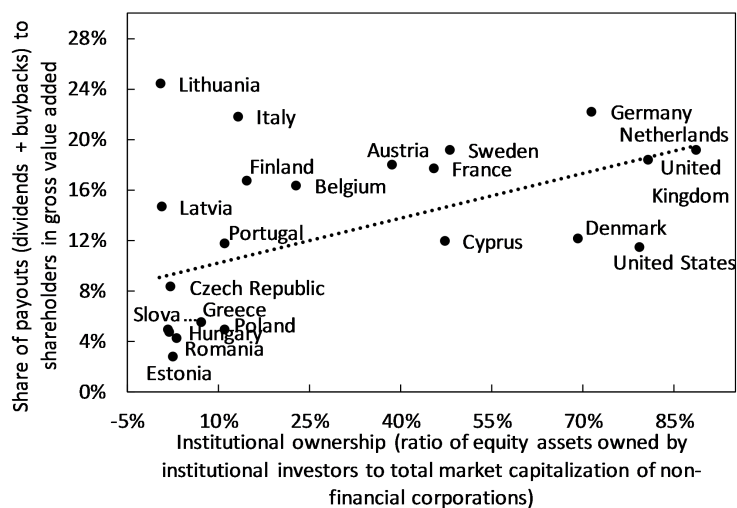
Figure 4 – Payouts to shareholders and institutional ownership, Europe and United States, 1995-2015

(a) Europe

(b) United States

(c) United States

———Current profits before distrib. (entrepreneurial income)
············Payouts to shareholders (dividends + net equity issuance)
———Institutional ownership, right hand scale

Source: authors' calculations using OECD, Eurostat and Flow of funds data.
Note: Europe plots the year fixed effects from a regression that also includes country fixed effects, to account for entry and exit during the sample. The effects have been normalized to the average in 1997.

Figure 5 – Payouts to shareholders and institutional ownership, average per country, 1995-2015

Source: authors' calculations using EU KLEMS, OECD, Eurostat and US Flow of funds data.
Note: this figure shows the average level of payouts to shareholders and institutional ownership for the 21 countries with data available since 1996 and before.

non-financial corporations on average over 1995-2015 are also countries with a larger share of payouts to shareholders (Figure 5).

All in all, in the United States for example, the labour share declined by 1p.p. per decade on average, while payouts increased by 4p.p., and the profit share by 4p.p. Parallel to this, institutional ownership also increased by 16p.p. The United-Kingdom has trends that are opposite to the United States: the labour share increased by 1p.p. per decade on average, while payouts declined by 3p.p., and the profit share by 1p.p. Institutional ownership also declined by 4p.p. This evidence suggests that there is a relationship between firm ownership and the labour share.

3.   Theoretical intuitions

Before turning to the empirical analysis, we discuss in this section the three main mechanisms through which ownership affects resource-allocation. Ownership can affect management incentives in three ways: by tightening governance, by inducing a short-termist horizon, by inducing anti-competitive behaviors through common ownership. These changes can in turn affect the allocation of resources within the firm. In this section, we discuss .

Governance   A large literature following Jensen (1986) argues that conflicts of interest between managers and shareholders can lead firms to grow beyond their optimal size. It could be, as Jensen (1986) argues, that managers are reluctant to return cash to shareholders as it reduces the resources they have under control; in that case, managers actively over-invest. But it could also be that managers enjoy a 'quiet life', and prefer to avoid the difficult decisions and costly efforts associated with shutting down old plants or starting new plants, or increase wages to buy peace with their workers (Bertrand and Mullainathan, 2003). The large stockholdings and sophistication of institutional investors allow them to monitor and discipline managers (Bushee, 1998), thereby increasing the firms' value while reducing both employment and wages.

Short-termism   Short-term investors might pressure managers to maximize short-run profits at the expense of long-run firm value (Bushee, 1998). Similarly, equity markets can put excessive emphasis on quarterly earnings, and higher stock-based compensation incentivizes managers to focus on short-term share prices at the expense of long term profits (Lazonick, 2014). Almeida et al. (2016) show that the probability of share repurchases is higher for firms that would have just missed the earnings per share (EPS) forecast in the absence of a repurchase. An increase in share repurchases made by firms that would have a small negative EPS surprise is associated with a decrease in employment relative to companies that just meet analyst EPS forecasts. These results suggest that companies are willing to trade off employment for stock repurchases. The rise of

institutional ownership, reflecting mostly an increase in short-term oriented investors[20], may lead firms to increasingly trade off employment for payouts to shareholders.

Concentration Institutional investors have concentrated investment strategies. They are concentrated in only a few foreign markets and aim at specific industries (Choi et al., 2017). Fichtner et al. (2017) document, for example, that BlackRock, Vanguard and State Street constitute the largest shareholder in 88% of the S&P500 firms. BlackRock and Vanguard are also among the largest shareholders of CAC 40 firms in France (Manon Aubry, 2018). Onwership concentration has long been studied in the industrial organization literature, which argues that common ownership of natural competitors may reduce incentives to compete. AZAR et al. (2018) document this ownership concentration for the US airline industry. They show that ownership concentration is 10 times larger than market concentration. They also show that ticket prices are approximately up to 7% higher than would be the case under separate ownership. As ownership concentration may lead a few firms to dominate the market, these few firms also dominate hiring in the market. Using data from a leading US employment website, Azar et al. (2017) show that more concentration on the labour market is associated with a decline in posted wages, suggesting that concentration increases labour market power and decreases the labour share.

All in all, there is empirical evidence showing that more institutional ownership leads to increased payouts to shareholders (Crane et al., 2016). Whether it results from increased short-termism, improved governance or increased (ownership, product and labour market) concentration does not change the result: more institutional ownership may lead to a lower labour share by increasing firms' profitability while reducing both employment and wages. In the empirical part, we are unable to differentiate between the two hypotheses empirically (short-termism or monitoring). We simply test whether an increase in institutional ownership leads to a higher profit share and a lower labour share.

4. Empirical Investigation

In this section we investigate empirically to what extent do higher payouts to shareholders leads to a lower labour share. In a first step, we use OLS regressions of the labour share on the lagged profit share. We show that a higher profit share is correlated to a lower labour share in the following year. However, these regressions only show a correlation between profit shares and labour shares and do not allow us to establish a causal relationship from the profit share to the labour share. Building on Gutiérrez and Philippon (2018), we then use institutional ownership as an instrumental variable for the profit share. Gutiérrez and Philippon (2018) focus on the United States and and show that

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[20]Gutiérrez and Philippon (2018) show that the increase in institutional ownership in the US is mostly driven by the growth in transient and quasi-indexers institutions, investors that have diversified holdings and a high portfolio turnover.

firms with higher institutional ownership spend a disproportionate amount of free cash flow buying back their shares, and invest less. Using different specifications, we find that industries that are in countries with more institutional ownership have a higher profit share and a lower labour share. Finally, we drive macroeconomic implications and assess how much changes in firm ownership can account for the decline in labour shares in Europe and the United States.

4.1. Data

We focus on our hypothesis relating recent trends in firm ownership to the dynamics of the labour share. We use the data presented in the stylized facts. Our baseline regressions use the labour share (adjusted for self-employed) as well as the profit share (measured using the long-term nominal rate) built using EU KLEMS. Both measures focus on the non-financial market economy. For the activity of institutional investors, data are only available at the country-level. We will thus use variations in our proxy of institutional ownership built using financial accounts data.

Alternative measures are used for robustness checks. We will use only alternative measures from EU KLEMS: the wage share (not ajusted for self-employed), as well as the profit share measured using the implicit rate. We also run some regressions on aggregate country-level data using the payouts to shareholders, being the sum of dividends and net equity issuance, measured in financial accounts data.

We add a series of country and industry-level controls. Appendix 3 includes a detailed discussion of these controls.

We keep countries for which which industry-level data is available since 1997 and before. We end up with a panel of 12 countries with data for up to 38 years (1980-2015) and for 19 industries.[21]

4.2. Empirical strategy

We run different specifications of an equation of the labour share in country i, industry k and year t:

$$LS_{k,i,t} = \alpha PS_{k,i,t-1} + \beta \mathbb{C}_{k,i,t-1} + FE_{i,k} + FE_{i,t} + \epsilon_{k,i,t} \tag{8}$$

where $LS_{k,i,t}$ is the labour share, $PS_{k,i,t-1}$ is the one-year lagged profit share measured using the implicit rate and built in EU KLEMS, $\mathbb{C}_{k,i,t-1}$ is a vector of industry-level controls described in Appendix 3, $FE_{i,k}$ and $FE_{i,t}$ are respectively country-industry and country-year fixed effects, and $\epsilon_{k,i,t}$ is the idiosyncratic error.

Concerning the controls, each measure is first included individually and then simultaneously if significant.

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[21]When including the control for the concentration hypothesis, we end up with a panel of 11 countries with data for up to 10 years and for 13 industries.

Given the structure of fixed effects we do not focus on country trends in our panel data, nor on cross-country and cross-industry differences in the level of the labour share. We exploit rather variations in the dynamics of industry labour shares.

Endogeneity issues   The main problem with our specification is that a lower share of labour in value added leads to a higher profit share, almost by definition.[22] And OLS regressions do not allow us to establish a causal relationship from the profit share to the labour share. We thus need to isolate the dynamics of the profit share that is driven by changes in governance, but is exogenous to the industry performance, and study its implications for the labour share. Building on Gutiérrez and Philippon (2018), we use institutional ownership as an instrumental variable for the profit share. Gutiérrez and Philippon (2018) focus on the United States and show that higher institutional ownership leads firms to spend a disproportionate amount of free cash flow buying back their shares, and to invest less.[23]

To instrument profit shares, we use the interaction between the lagged institutional ownership in year t and country i and the world level of industry-profits in 1980, controlling for both country-level and industry-level controls decribed in Appendix 3, and with country and year fixed effects:

$$PS_{k,i,t} = \gamma \, PS_i^{t=0} \times II_{i,t-1} + \beta \mathbb{C}_{k,i,t-1} + FE_i + FE_t + u_{k,i,t} \tag{9}$$

The problem with institutional ownership is that it might also depend on the current and expected industry performance: investors might invest in sectors that initially have a lower labour share and a higher profit share. Therefore, we build a second instrument for profit shares. We use the interaction between the institutional ownership proxy in country i in the initial year ($II_{i,t=0}$) and the lag of world profits in industry k, controlling for both country-level and industry-level controls, and country-industry and year fixed effects:

$$PS_{k,i,t} = \gamma \, II_i^{t=0} \times PS_{k,t-1} + \beta \mathbb{C}_{k,i,t-1} + FE_{i,k} + FE_{i,t} + u_{k,i,t} \tag{10}$$

The intuition here is that countries with initially more institutional ownership are more sensitive to aggregate (world) trends in the share of profits.[24]

This strategy is consistent if institutional ownership (the initial or lagged) is not related with the labour share. There are two reasons to think this is true. The first one is that institutional

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[22]As explained in the stylized facts, the profit share is a negative function of the labour share. It also depends negatively on capital depreciation, on the rental rate, the effective tax rate, the real investment price and on the capital-to-output ratio.

[23]Our focus is on understanding the different dynamics of the labour share across countries and industries. Our dataset thus has a wide coverage, allowing us to derive implications for macroeconomic outcomes that firm-level data could not provide us. The drawback is that we do not have firm-level information on firm ownership, and have to build a proxy for institutional ownership. As described in the stylized facts, we use variations in the ratio of equity owned by institutional investors to total market capitalization of the non-financial corporate sector.

[24]Since our dataset is unbalanced, the initial dates differ for each countries.

ownership is highly persistent: the regression of ownership on time t on the one on time $t-5$ displays a coefficient of 0.95, even after controlling for country characteristics. This suggests that ownership in the initial year is likely to persist and influence profits in the following years, but is not influenced by the expected changes in the labour share. At the country level, institutional ownership reflects rather other characteristics, like the country's pension system. The second one is that both governance and short-termism, the main two mechanisms through which ownership affects the labour share, increased only after the 2000s.[25] Previous investment decisions could not have foreseen these trends.

These facts suggest that institutional ownership is indeed uncorrelated with the labour share in the following years. It can therefore be used as an instrument for the profit share, which in turn affects the labour share.

4.3. Main results

We report summary results in the body of the paper, and detailed regression output in the Appendix. In following regressions, only controls for the real investment price and the bargaining power of workers will be included (See Appendix 3 for a discussion of these controls).[26]

Table 2 reports estimates of different specifications of equation 8 using the labour share and the profit share measured using EU KLEMS. Column 1 starts with the simplest OLS estimation of equation 8. Column 1 adds sector-year fixed effects to this OLS regression. On average, a 1p.p. increase in the profit share is correlated with a 0.2p.p. decrease in the labour share, and coefficients are significant at the 1% level.

In columns 3 to 8, we implement the two alternative IV strategies. Columns 3 and 4 display results when the profit share is instrumented using the interaction between the lagged institutional ownership in year t and country i and the world level of industry-profits in 1980. Columns 5 and 8 display results when the profit share is instrumented by the interaction between the initial role of institutional investors and the lagged world industry profit share. Columns 3, 5 and 7 present the first-stage regressions; columns 4, 6, and 8 present the second-stage regressions.

Let us first discuss the first-stage regressions. As expected, lagged institutional ownership is

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[25]Gutiérrez and Philippon (2018); Barton et al. (2017) document these trends for the United States.

[26] Before turning to our main regressions, we first run similar regressions to Gutiérrez and Philippon (2018) to validate their conclusions on our data. In a first step, we check how much our proxy of institutional ownership and our proxy of payouts are correlated. A simple OLS regression of the log-profits on our ratio of the role of institutional investors on equity markets gives an estimate of 1.6. This coefficient is smaller than what the authors find, a coefficient of 2.59 when regressing log-buybacks on institutional ownership. However, our proxy of institutional ownership is 50% bigger than their indicator on average, so coefficients are of equivalent order of magnitude. We then estimate equation 8 replacing the labour share by the investment share (ratio of total investment to value added). Results are presented in Table A.5 in Appendix. Both OLS and IV regressions confirm the negative effect of institutional ownership on investment.

positively correlated with the profit share. Similarly, industries in countries with more institutional ownership are more affected by the world industry profit share. All F-tests for nullity of the instrument are above 10, which leads us to conclude that these instruments are not weak.

All results confirm that an increase in the profit share is correlated with a decrease in the labour share, and coefficients are all significant at the 1% level. The IV coefficients are larger than in OLS: the effect of a 1p.p. increase in the profit share due to institutional ownership on the labour share ranges from -0.1 to -0.6p.p.

4.4. Robustness checks

Table 3 provides various robustness checks of the baseline estimation of equation 8 (with the specification presented in columns 5 and 6 of Table 2).

Columns 1 and 2 present estimates using a different measure of the profit share: the profit share built using the implicit rate (from financial accounts) and not the long-term nominal rate. Columns (3) and (4) present estimates using another measure of the labour share: the wage share, not adjusted for self-employed. Neither the significance nor the magnitude of the coefficient of interest change in both cases.

Columns 5 and 6 present estimates for a sample excluding tradable sectors.[27] This specification is used to make sure that the effect that we capture is not linked to globalization. Again, neither the significance nor the magnitude of the coefficient of interest change when considering non-tradable sectors only.

Columns 7 and 8 present estimates for a sample excluding the United States. This specification addresses the fact that we do not have a proxy to control for the concentration and market power hypothesis for the entire sample. The growing concentration of firms affects the labour share, but only in the United States (Gutiérrez, 2017). To make sure that our results are not driven by this effects, we exclude the United States from our sample, and estimate the effect on European countries only. Neither the significance nor the magnitude of the coefficient of interest change when considering European countries only.

Columns 9 and 10 present estimates for a sample focusing on the post global financial crisis period. Previous narratives on the labour share focus on explaining the decline in the labour share. But the labour share is increasing in Europe since the global financial crisis, a trend that could be explained by a declining payouts to shareholders. To confirm that our hypothesis can explain both upward and downward trends in the labour share, we focus on its dynamics since 2007. Neither the significance nor the magnitude of the coefficient of interest change, confirming that our effect is not coming from some particular years in our sample.

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[27]Tradable sectors are sectors for which more than 10% of their production is internationally traded (using data on trade in goods and services).

Table 2 – Labour shares and firm ownership: regression results

| | OLS | | 1st | 2nd stage | 1st | 2nd stage | 1st | 2nd stage |
| | $LS_{i,k,t}$ | | $PS_{i,k,t}$ | $LS_{i,k,t}$ | $PS_{i,k,t}$ | $LS_{i,k,t}$ | $PS_{i,k,t}$ | $LS_{i,k,t}$ |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$PS_{i,k,t-1}$	-0.239^a	-0.225^a						
	(0.020)	(0.023)						
$PS_{i,k,t}$				-0.624^a		-0.394^a		-0.104^c
				(0.074)		(0.048)		(0.059)
IV: $PS_k^{t=0} \times II_{i,t-1}$			1.363^a					
			(0.152)					
IV: $II_i^{t=0} \times PS_{k,t-1}$					1.045^a		1.655^a	
					(0.133)		(0.344)	
Observations	4,429	4,106	4,448	4,448	4,448	4,448	4,125	4,125
R^2	0.933	0.948	0.137		0.966		0.247	
$\text{Controls}_{i,t}$	No	No	Yes	Yes	No		No	
$\text{Controls}_{i,k,t}$	Yes	Yes	Yes	Yes	Yes		Yes	
$FE_{i,k}$	Yes	Yes	No	No	Yes		No	
$FE_{i,t}$	Yes	Yes	No	No	Yes		Yes	
$FE_{k,t}$	No	Yes	No	No	No		Yes	
FE_i	No	No	Yes	Yes	No		No	
FE_t	No	No	Yes	Yes	No		No	

Note: Standard errors in parentheses. ^{c} p<0.10, ^{b} p<0.05, ^{a} p<0.01. This table shows the results of industry-level IV regressions of industry-level labour shares. The profit share $PS_{i,k,t}$ is alternatively instrumented by (i) the world average of initial profit shares at the industry-level interacted with the lagged country-level institutional ownership in columns (3) and (4); (ii) the initial level of institutional ownership at the country-level interacted with the lagged world average of profit shares at the industry-level, in columns (5) to (8). Country-level controls include the lag of country-level unemployment rates and government expenditures as % of GDP. Industry-level controls include the lagged real investment price.

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Table 3 – Labour shares and firm ownership: robustness checks

	With the implicit rate		With the wage share		Excluding tradable sectors		Excluding the US		After 2007		Countries with increasing trends in the $LS_{i,t}$	
	1st	2nd st.	1st	2nd st.	1st	2nd	1st	2nd st.	1st	2nd st.	1st	2nd st.
	$PS_{i,k,t}$	$LS_{i,k,t}$	$PS_{i,k,t}$	$WS_{i,k,t}$	$PS_{i,k,t}$	$LS_{i,k,t}$	$PS_{i,k,t}$	$LS_{i,k,t}$	$PS_{i,k,t}$	$LS_{i,k,t}$	$PS_{i,k,t}$	$LS_{i,k,t}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
IV:$II_i^{t=0}$ x $PS_{k,t}$	1.192^a		1.192^a		0.531^a		0.722^a		0.472^a		0.604^a	
	(0.117)		(0.117)		(0.161)		(0.152)		(0.155)		(0.199)	
$PS_{i,k,t}$		-0.280^a		-0.247^a		-0.402^a		-0.316^a		-0.347^a		-0.383^a
		(0.029)		(0.026)		(0.117)		(0.066)		(0.085)		(0.123)
Observations	4,524	4,524	4,524	4,524	3,402	3,402	3,821	3,821	1,933	1,933	2,776	2,776
R^2	0.949		0.949		0.958		0.952		0.967		0.954	
$FE_{i,k}$	Yes		Yes		Yes		Yes		Yes		Yes	
$FE_{i,t}$	Yes		Yes		Yes		Yes		Yes		Yes	
Controls$_{i,k,t}$	Yes		Yes		Yes		Yes		Yes		Yes	

Note: Standard errors in parentheses. ^{c} $p < 0.1$, ^{b} $p < 0.05$, ^{a} $p < 0.01$. This table shows the results of industry-level IV regressions of industry-level labour shares. The profit share $PS_{i,k,t}$ is instrumented by the initial level of institutional ownership interacted with the lagged world average industry profit share. Controls include the lag of the industry-level real investment price.

Figure 6 – Labour share and its estimate, Europe and United States, 1980-2015
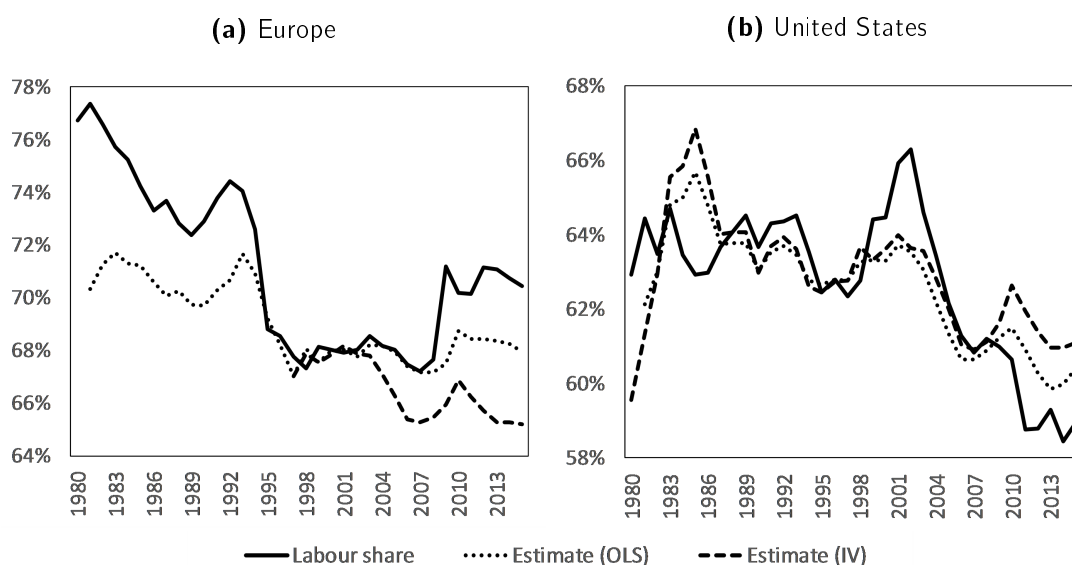
(a) Europe   **(b)** United States

—— Labour share   ······ Estimate (OLS)   - - - Estimate (IV)

Source: authors' calculations.

Note: IV estimates of the labour share are predictions using results column 3 of Table A.4 in Appendix.
OLS estimates of the labour share are predictions using results from column 1 of Table A.4 in Appendix.
The estimates have been normalized to equal to the average labour share in 1997.

Finally, to confirm the intuition that our hypothesis could explain both upward and downward trends in the labour share, columns 11 and 12 present estimates for a sub-sample composed of countries with increasing trends in the labour share over the entire period. Again, neither the significance nor the magnitude of the coefficient of interest change, confirming that our effect is not coming from some particular countries in our sample. It confirms that this narrative could explain the heterogeneous dynamics of labour shares in Europe.

4.5. Macroeconomic implications

Equipped with estimates of the effect of firm ownership on the labour share, we can now assess the extent to which this hypothesis explains recent patterns in the labour share. Figure 6 displays the observed and estimated labour shares in Europe and in the United States, using two different specifications. Details for three European countries are presented in Figure 7: Germany, France and the United Kingdom. Results are displayed for each country in Figure A.8 in Appendix. Overall, estimates reflect well dynamics both in Europe and the United States: a decline since the early 2000s in the United States, as well as a recent increase in France for example, since the mid-1990s. Overall, both estimates can explain half the variations in the observed labour share.[28]

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[28]This number is the R^2 from a regression of observed industry-level labour shares on estimated industry-level labour shares.

Figure 7 – Labour share and its estimate, selected European countries, 1980-2015
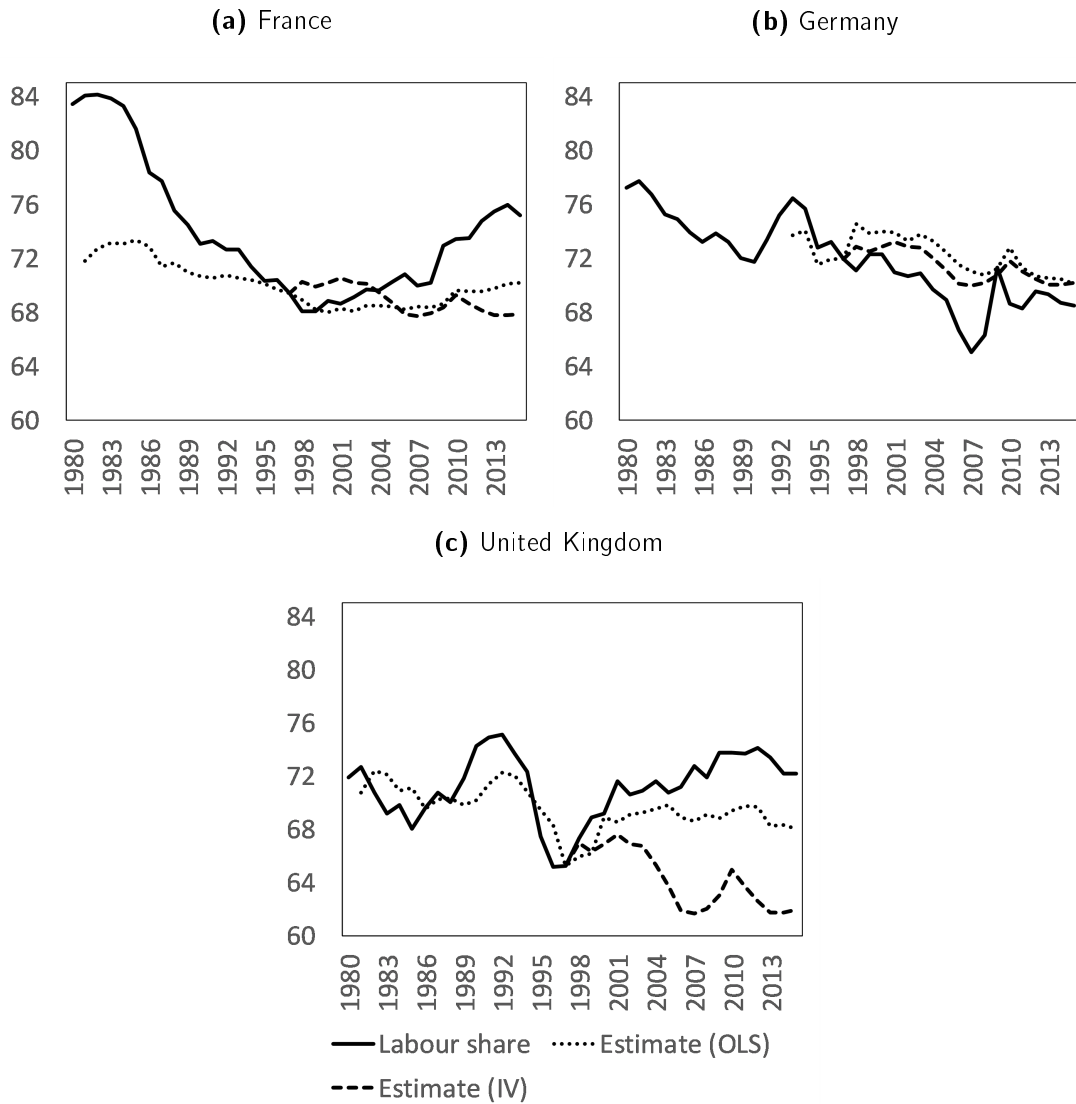
(a) France **(b)** Germany

(c) United Kingdom

Source: authors' calculations.

Note: IV estimates of the labour share are predictions using results column 3 of Table A.4 in Appendix.
OLS estimates of the labour share are predictions using results from column 1 of Table A.4 in Appendix.
The estimates have been normalized to equal to the average labour share in 1997.

5. Concluding remarks

How do recent trends in firm governance affect their resource-allocation decisions? And what are the macroeconomic outcomes for the distribution of national incomes? To answer these questions, this paper starts by documenting three stylized facts common to Europe and the United States since the 1980s: (i) the decline in the labour share of income, common to most sectors, and robust when accounting for the income of the self-employed; (ii) a this decline mirrors an increase in the share of payouts to shareholders (dividends and buybacks); (iii) a larger share of payouts to shareholders is associated with more institutional ownership. The causal effect of increased profit shares on labour shares is then quantified using lagged institutional ownership as an instrumental variable. Results show that more institutional ownership leads to higher payouts and to a lower labour share. This novel narrative could explain about half of the fall in the labour share since the early 1980s and can account for heterogeneous patterns of the labour share over time and across countries.

This paper suggests that firm ownership is an important determinant of the distribution of income between labour and capital. The increasing share of payouts to shareholders is also a key driver of income inequalities: Garbinti et al. (2018) document that capital income, and more specifically the rise in corporate retained earnings, has been the key driver of the rise of the top 1% income share in the twenty-first century. This empirical finding thus bears important implications for future economic and social policy making.

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Appendix 1. Classifications

Table A.1 – Asset types (AN_F6 classification)

AN_F6 code	Asset name	Asset type
N111	Dwellings	Housing
N112	Other buildings and structures	Housing
N1131	Transport equipments	Other
N11321	Computer hardware	Other
N11322	Telecommunications equipment	Other
N11O	Other machinery and equipment and weapons systems	Other
N115	Cultivated biological resources	Other
N1171	Research and development	Intangible
N1173	Computer software and databases	Intangible
N117-N1171-N1173	Intellectual property products	Intangible

Source: Eurostat and authors' classification.

Appendix 2. Stylized Facts: additional figures

Figure A.1 – Wage share, including and excluding employers' social contribution, 1950-2015

(a) Europe   **(b)** United States
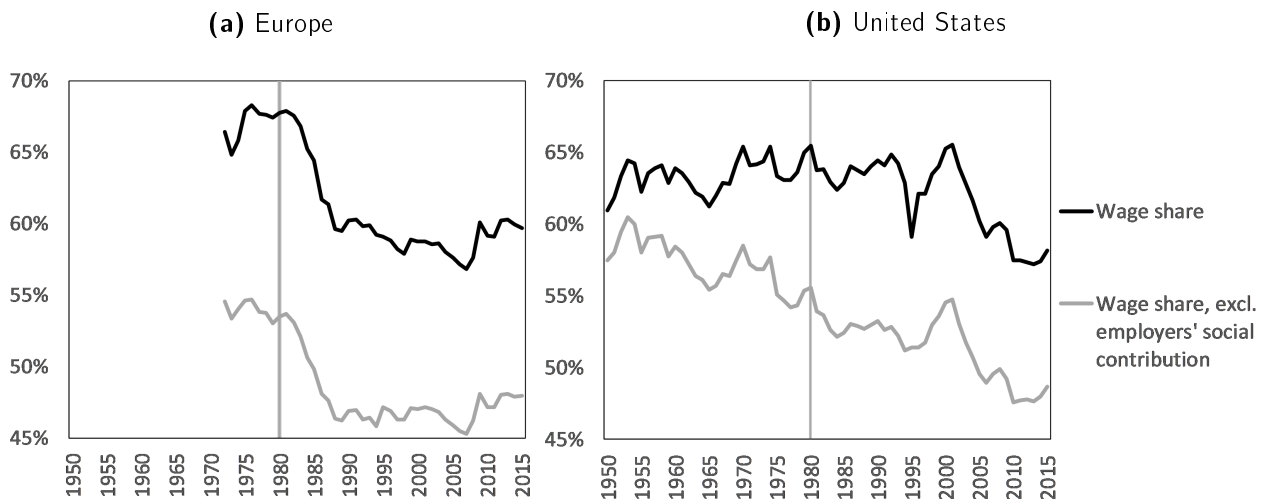
Source: authors' calculations using Eurostat and US Flow of funds.
Note: Europe (moving sample) plots the year fixed effects from a regression of wage shares that also includes country fixed effects, to account for entry and exit during the sample. The effects have been normalized to equal to the average wage share in 1997.
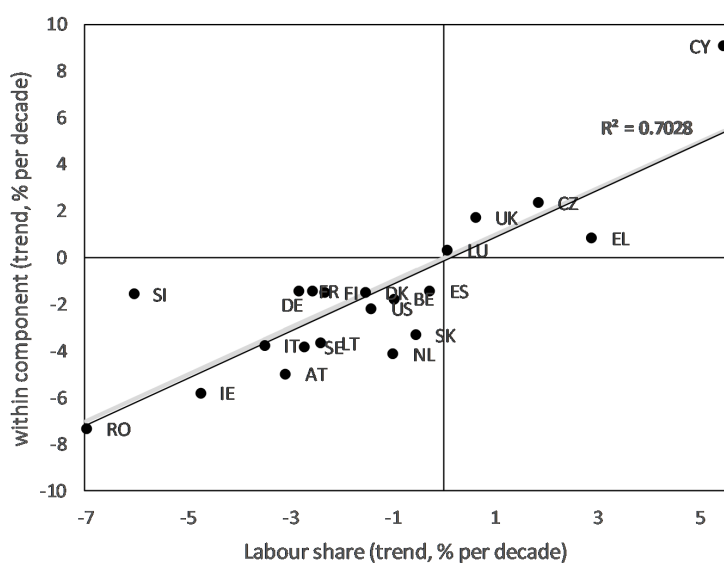
Figure A.2 – Estimated linear trend in the labour share (employees and self-employed), non-financial market economy, 1980-2015, % per decade
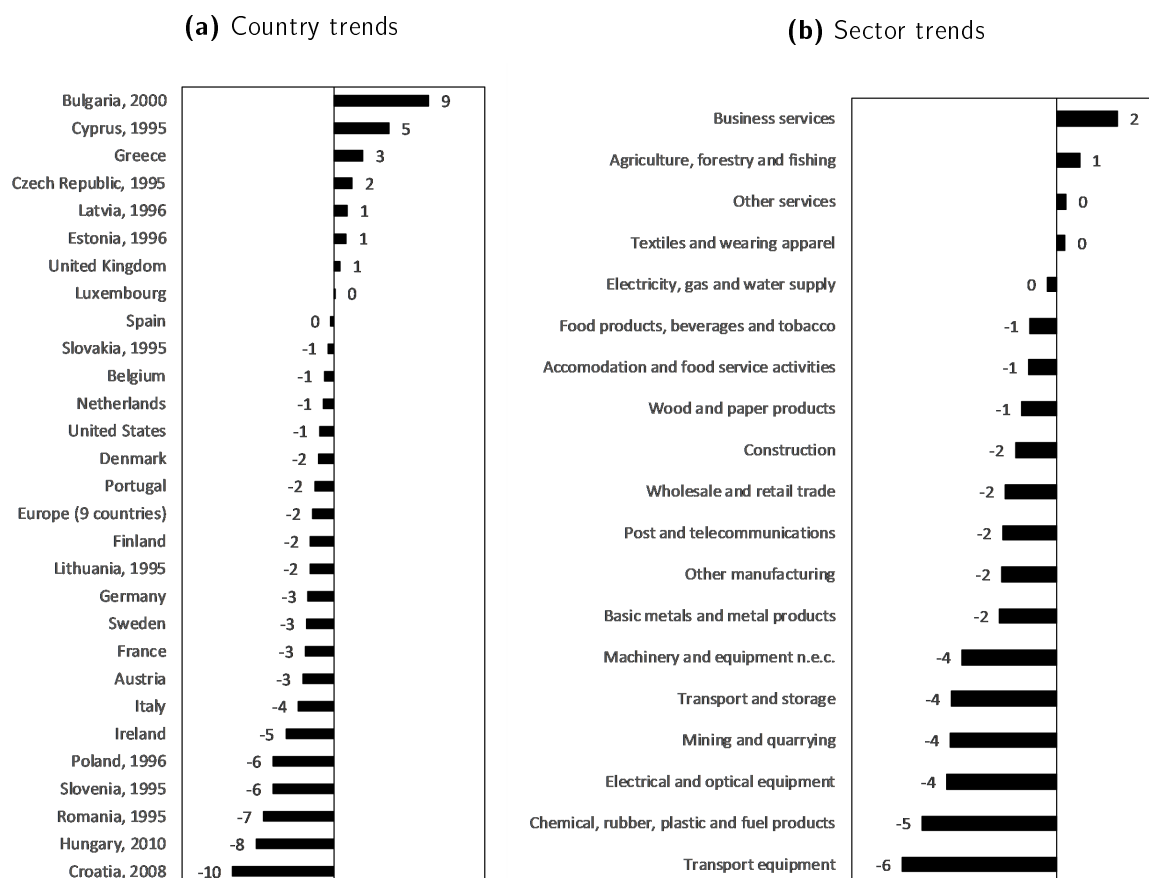
(a) Country trends

(b) Sector trends

Source: authors' calculations using EU KLEMS.

Note: The figure shows estimated linear trends for all countries or sectors in our dataset. Sector trends include also country fixed effects, and for both regressions observations are weighted by the country gross value added. Trend coefficients are reported in percentage points per 10 years (i.e., a value of -1 means a 1 percentage point decline every 10 year). Where no initial dates are specified, trends are for the period 1980-2015.

Figure A.3 – Estimated linear trend in the labour share (employees and self-employed) and its within-industry component, non-financial market economy

Source: authors' calculations using EU KLEMS.

Note: this figure shows the estimated trend in the labour share and its within-industry component as defined in equation 7. It plots trends for the 21 countries with data available since 1995 and before, over at most 1980-2015. Trend coefficients are reported in percentage points per 10 years (i.e., a value of -1 means a 1 percentage point decline every 10 year). The black line is the estimated linear trend between the labour share and within-industry component and the grey line is the 45-degree line.

Figure A.4 – Estimated linear trend in payouts to shareholders (Eurostat, OECD and Flow of funds) and the profit share (EU KLEMS), by country, 1995-2015, % per decade
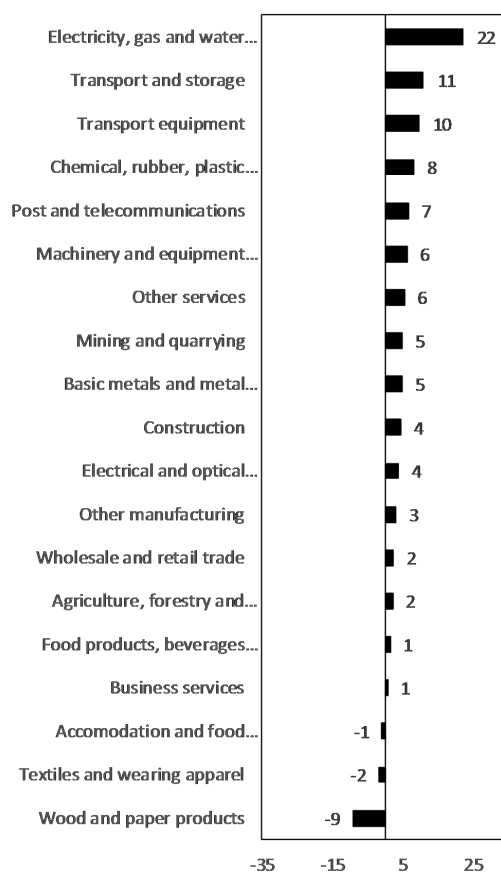
(a) Payouts to shareholders

(b) Profit share
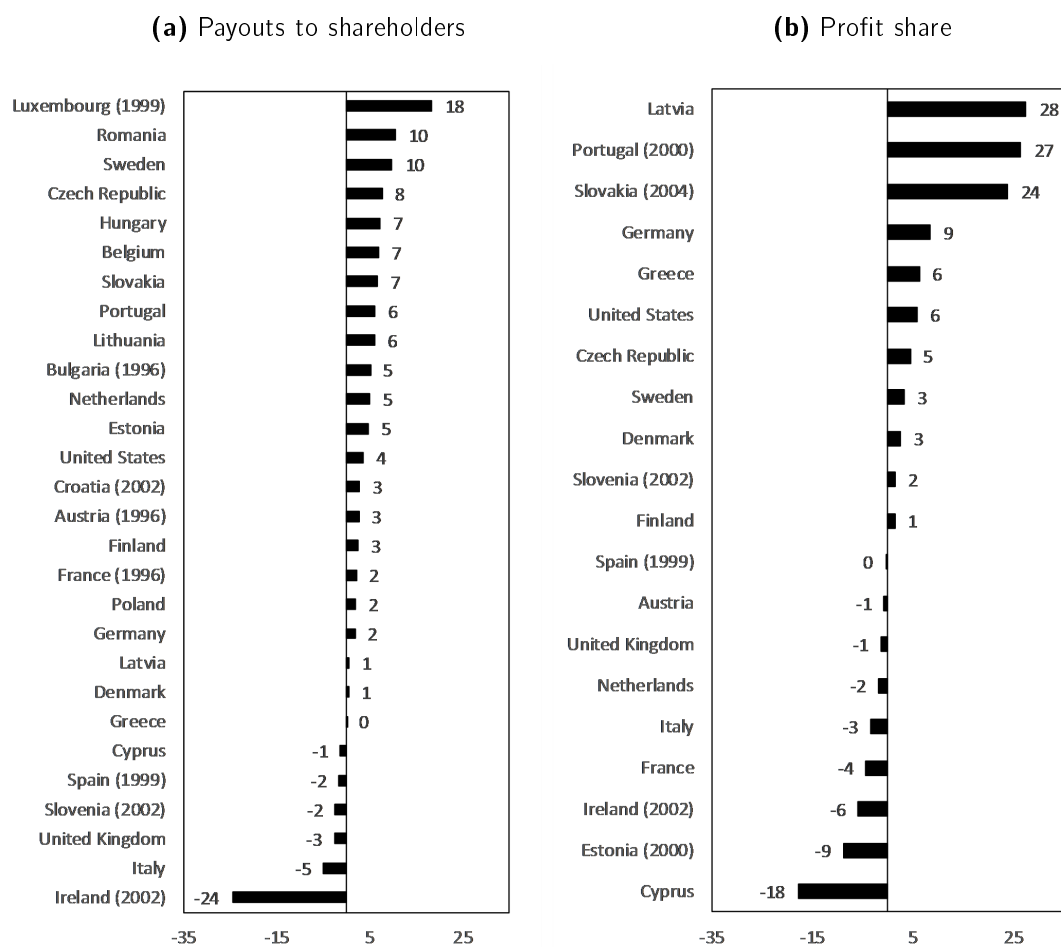
Source: authors' calculations using EU KLEMS, Eurostat, OECD and Flow of funds.

Note: The figure shows estimated linear trends for all countries in our dataset. Trend coefficients are reported in percentage points per 10 years (i.e., a value of -1 means a 1 percentage point decline every 10 year). Sector trends are for the period 1995-2015 if no initial years are specified in parenthesis. Payouts include net equity issuance, and the profit share is measured using the implicit rate.

Figure A.5 – Estimated linear trend in the profit share (EU KLEMS), by industry, Europe and United States, 1995-2015

(a) Sector trends, profit share

Source: authors' calculations using EU KLEMS.

Note: The figure shows estimated linear trends for all industries in our dataset. Trends include also country fixed effects, and observations are weighted by the country gross value added. Trend coefficients are reported in percentage points per 10 years (i.e., a value of -1 means a 1 percentage point decline every 10 year). The profit share is measured using the implicit rate. Where no initial dates are specified, trends are for the period 1995-2015.

Figure A.6 – Estimated linear trend in the profit share and its within-industry component, non-financial market economy
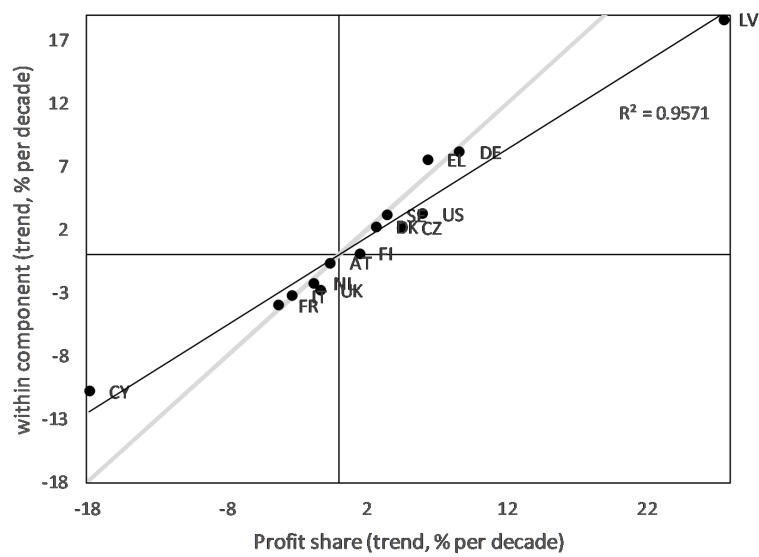
Note: this figure shows the estimated trend in the profit share and its within-industry component as defined in equation 7. It plots trends for the 14 countries with data available since 1996 and before, over at most 1995-2015. Trend coefficients are reported in percentage points per 10 years (i.e., a value of -1 means a 1 percentage point decline every 10 year). The black line is the estimated linear trend between the profit share and within-industry component and the grey line is the 45-degree line. The profit share is measured using the implicit rate.

Figure A.7 – Estimated linear trend in the ratio of equity owned by institutional investors to market capitalization of non-financial corporations, 1995-2015
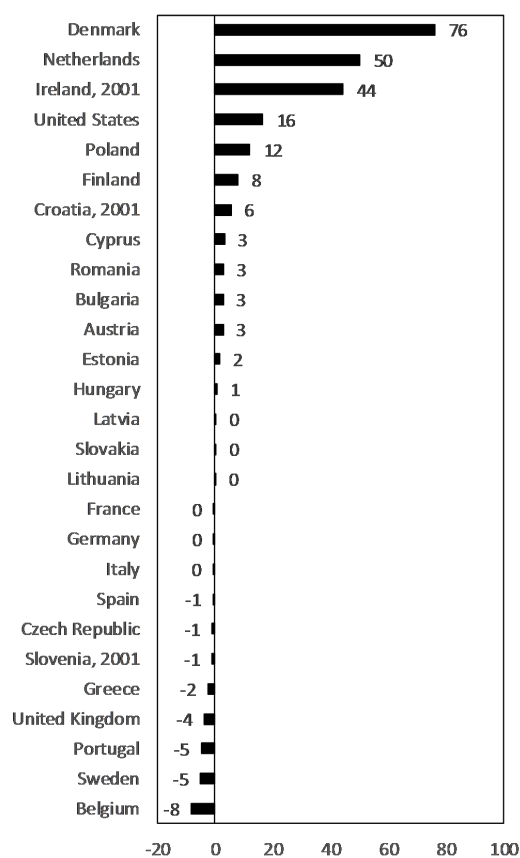
Source: authors' calculations using OECD, Eurostat and US Flow of funds data.

Note: The figure shows estimated linear trends for all countries or sectors in our dataset. Sector trends include also country fixed effects, and for both regressions observations are weighted by the country gross value added. Trend coefficients are reported in percentage points per 10 years (i.e., a value of -1 means a 1 percentage point decline every 10 year). Where no initial dates are specified, trends are for the period 1995-2015.

Appendix 3. Empirical Investigation: controls

Additional to our "core" narrative, we control for the following six hypotheses. The variables used to test them are summarized in Table A.2.

- The decline in the real investment price: Karabarbounis and Neiman (2014) relate the decline in the labour share to the decline in investment prices relative to consumption prices. The authors argue that this decline in the price of capital goods fueled capital accumulation and a substitution of capital for labour. To test this hypothesis, we will use industry-level investment prices (deflated by the price of gross value added).
- The increasing role of intellectual property products: Koh et al. (2015) argue that the decline in the labour share reflects the fact that the United States economy is undergoing a transition to a more IPP capital-intensive economy. We include this hypothesis through the share of IPP products in the lagged total capital stock, by industry.
- Increased globalization: Elsby et al. (2013) provide cross-country evidence that off-shoring is a contributor to the declining labour share in the United States. We use the share of imports in total production by industry. We also provide estimates excluding tradable sectors in robustness checks.
- Safe asset scarcity: Rognlie (2015) emphasizes the role of rising returns to housing capital to explain the increasing real return to capital, while Caballero et al. (2017) emphasize the role of an increase in risk premiums. To get a measure of this risk premium, we use the implicit rate when building our proxy of profit shares in EU KLEMS. Estimates using this measure are provided in robustness checks.
- A decreased bargaining power of workers: the decline in unionization and the size and generosity of welfare States also affect the bargaining power of labour, and thereby the labour share. However, focusing on the United States, Elsby et al. (2013) find no empirical evidence of an effect of unionization on the labour share. We will focus on the effect of welfare States (captured through total government expenditures in % of GDP) and on the unemployment rate, which is an alternative measure of wage bargaining (Blanchard and Giavazzi, 2003).
- Increased concentration and market power: a growing literature documents an increasing concentration of firms in the United States that could explain the decline in the labour share and the increasing profit share (Dorn et al., 2017). However, this hypothesis seems to hold for the United States only; there is no clear pattern of increased concentration in Europe (Gutiérrez, 2017). EU KLEMS provides a measure of concentration (adjusted Herfindhal index) at the industry-level, but for Europe only over 1997-2006. We will also add estimates excluding the United States in the robustness checks.

Table A.2 gives a summary of results and Table A.3 gives detailed results. Results are very much in line with recent studies. They confirm the real investment price hypothesis, as well as the bargaining power of workers' hypothesis. The link between trade openness and the labour share is not significant. There is no clear evidence of intangibles on the labour share, a result that confirms previous findings by Gutiérrez (2017).

When focusing on Europe only, the adjusted Herfindhal index is positively related to the labour share (significant at the 10% level only), and has no significant effect on the profit share, a result at odds with recent findings for the United States. Gutiérrez (2017) find no evidence of an effect of concentration on the labour share in Europe, while concentration have reduced the share of labour in the United States.

Table A.2 – Summary of controls included and regressions results

Hypothesis	Indicator	Indicator description	Dimension	Source	Sign
Investment price	$q_{i,k,t}^{real}$	Investment price, deflated by the gross value added deflator	Industry	EU KLEMS	+
Intangibles	$IPP_{i,k,t}$	Share of IPP in the lagged total capital	Industry	EU KLEMS	NA
Trade globalization	$M_{i,k,t}$	Imports to production	Industry	TiVA	+
Bargaining power	$TGE_{i,t}$	Total government expenditures (% GDP)	Country	Ameco	+
Bargaining power	$UR_{i,t}$	Unemployment rate (%)	Country	Ameco	-
Concentration	$H_{i,k,t}$	Adjusted Herfindhal index	Industry	Amadeus*	+

Note: This Table summarizes industry-level regression results across all potential explanations. See text for regression specification and discussion. "NA" identifies variables that are not significant. * The adjusted Herfindhal index comes from EU KLEMS additional indicators. This indicator is available for Europe only, over 1997-2006.

Table A.3 – OLS with core and alternative hypotheses

| | LS_i,k,t | | | | | | | |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$PS_{i,k,t-1}$	-0.224[a]	-0.228[a]	-0.169[a]	-0.198[a]	-0.242[a]	-0.227[a]	-0.163[a]	-0.236[a]
	(0.023)	(0.020)	(0.019)	(0.024)	(0.021)	(0.020)	(0.038)	(0.021)
$q^{real}_{i,k,t-1}$		0.003[a]						0.003[a]
		(0.001)						(0.001)
$IPP_{i,k,t-1}$			0.004					
			(0.027)					
$M_{i,k,t-1}$				0.007[a]				
				(0.002)				
$TGE_{i,t-1}$					0.002[b]			0.003[a]
					(0.001)			(0.000)
$UR_{i,t-1}$						-0.005[a]		-0.007[a]
						(0.001)		(0.001)
$H_{i,k,t-1}$							0.067[a]	
							(0.022)	
Observations	4,106	4,106	3,764	3,511	4,106	4,106	1,298	4,106
R^2	0.948	0.940	0.959	0.944	0.942	0.940	0.946	0.942
$FE_{i,k}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$FE_{i,t}$	Yes	Yes	Yes	Yes	No	No	Yes	No
$FE_{k,t}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Standard errors in parentheses. [c] p<0.10, [b] p<0.05, [a] p<0.01. This table shows the results of industry-level OLS regressions of labour shares. Country-level controls include the lag of unemployment rates ($UR_{i,t-1}$) and government expenditures as % of GDP ($TGE_{i,t-1}$). Industry-level controls include the real investment price ($q^{real}_{i,k,t}$), the adjusted Herfindhal index ($H_{i,k,t-1}$), the share of intangibles in total capital ($IPP_{i,k,t-1}$) and the import to production ratio ($M_{i,k,t-1}$).

Appendix 4. Empirical Investigation: detailed regression tables and macroeconomic implications

Table A.4 – Labour shares and firm ownership: aggregate results

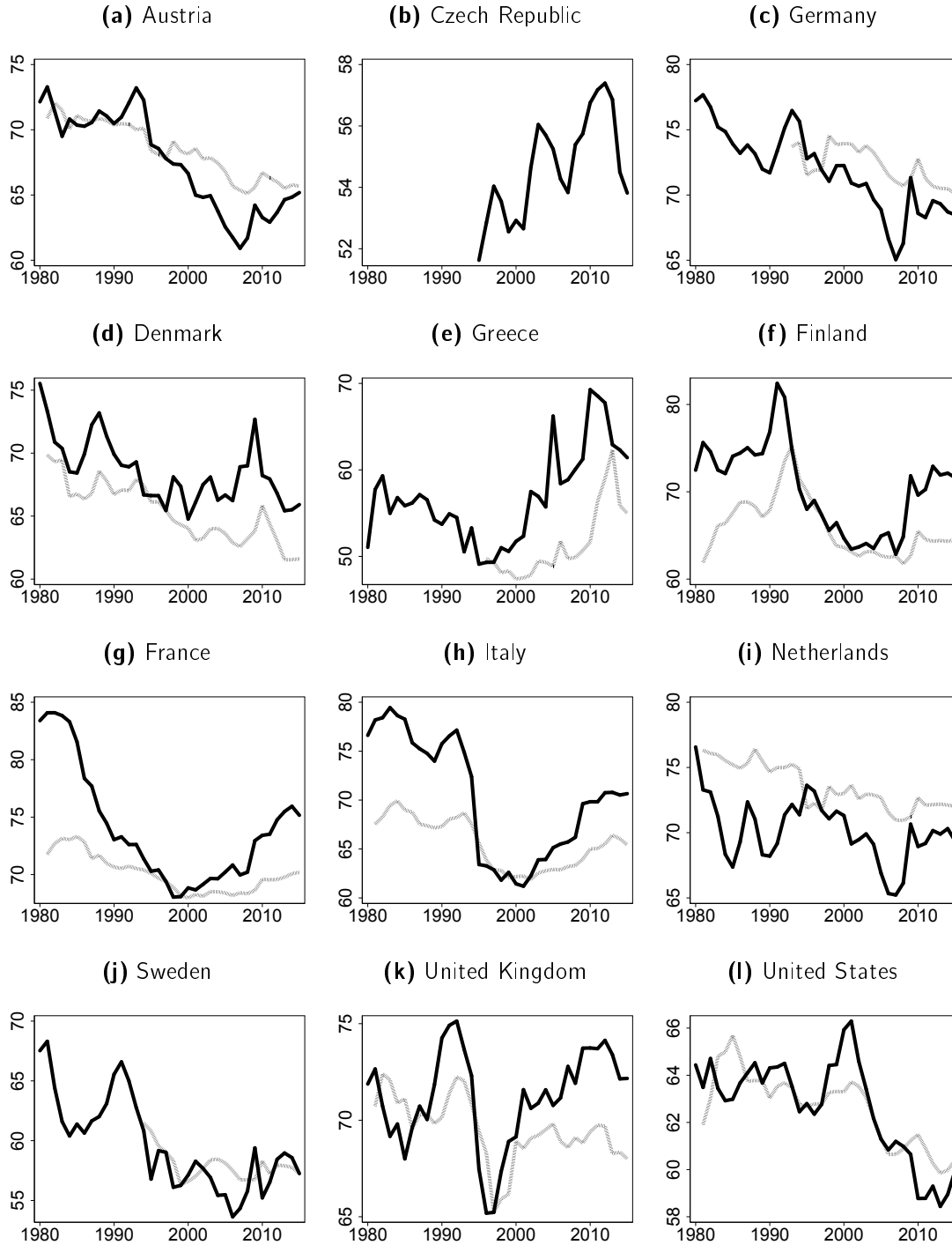|	OLS (1) $LS_{i,t}$	1st stage (2) $PS_{i,t}$	2nd stage (3) $LS_{i,t}$	1st stage (4) $PS_{i,t}$	2nd stage (5) $LS_{i,t}$	1st stage (6) $PS_{i,t}$	2nd stage (7) $LS_{i,t}$
IV: $II_i^{t=0} \times PS_t$		1.917^a (0.552)					
IV: $II_i^{t=0} \times$ Payouts share$_t$				1.552^b (0.622)			
IV: $II_i^{t=0} \times$ Dividends share$_t$						4.462^a (1.407)	
$PS_{i,t}$			-0.626^a (0.104)		-0.611^a (0.139)		-0.658^a (0.104)
$PS_{i,t-1}$	-0.357^a (0.034)						
Observations	221	222	222	222	222	222	222
R^2	0.919	0.706		0.700		0.707	
FE_i	Yes	Yes		Yes		Yes	
FE_t	Yes	Yes		Yes		Yes	
Controls$_{i,t}$	Yes	Yes		Yes		Yes	

Note: Standard errors in parentheses. ^{c} p<0.10, ^{b} p<0.05, ^{a} p<0.01. This table shows the results of country-level IV regressions of industry-level labour shares. Country-level controls include the lag of unemployment rates and government expenditures as % of GDP.

Table A.5 – Investment rates and firm ownership: regression results

	(OLS) $IR_{i,k,t}$ (1)	1$^{\text{st}}$ stage $PS_{i,k,t}$ (2)	2$^{\text{nd}}$ stage $IR_{i,k,t}$ (3)	1$^{\text{st}}$ stage $PS_{i,k,t}$ (4)	2$^{\text{nd}}$ stage $IR_{i,k,t}$ (5)
$PS_{i,k,t-1}$	-0.075^a (0.015)				
$PS_{i,k,t}$			-0.360^a (0.061)		-0.160^a (0.024)
IV: $PS_k^{t=0} \times II_{i,t}$		1.373^a (0.150)			
IV: $II_i^{t=0} \times PS_{k,t}$				2.749^a (0.254)	
Observations	4,106	4,448	4,448	4,524	4,524
R^2	0.898	0.099		0.179	
$FE_{i,k}$	Yes	No		No	
$FE_{i,t}$	Yes	No		Yes	
$FE_{k,t}$	Yes	No		No	
FE_i	No	Yes		No	
FE_t	No	Yes		No	

Note: Standard errors in parentheses. ^{c} p<0.10, ^{b} p<0.05, ^{a} p<0.01. This table shows the results of industry-level IV regressions of industry-level investment rates $IR_{i,k,t}$ (total investment to gross value added). The profit share $PS_{i,k,t}$ is alternatively instrumented by (i) the world average of initial profit shares at the industry-level interacted with the lagged country-level institutional ownership in columns (2) and (3); (ii) the initial level of institutional ownership at the country-level interacted with the lagged world average of profit shares at the industry-level, in columns (4) and (5). Country-level controls include the lag of country-level unemployment rates and government expenditures as % of GDP. Industry-level controls include the lagged real investment price.

Figure A.8 – Labour share and its estimate, by country, 1980-2015

(a) Austria

(b) Czech Republic

(c) Germany

(d) Denmark

(e) Greece

(f) Finland

(g) France

(h) Italy

(i) Netherlands

(j) Sweden

(k) United Kingdom

(l) United States

Source: authors' calculations. Note: the full black line shows the labour share. The dotted grey line shows the OLS estimates. OLS estimates of the labour share are predictions using results from column 1 of Table A.4. The estimates have been normalized to equalize the average labour share in 1997.