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**Working Paper**

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Working Paper, No. 833

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*Suggested Citation:* Karanassou, Marika; Sala, Hector (2017) : Distributional consequences of capital accumulation, globalisation and financialisation in the US, Working Paper, No. 833, Queen Mary University of London, School of Economics and Finance, London

This Version is available at:

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# Distributional Consequences of Capital Accumulation, Globalisation and Financialisation in the US

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Working Paper No. 833

May 2017

ISSN1473-0278

## School of Economics and Finance



# Distributional Consequences of Capital Accumulation, Globalisation and Financialisation in the US\*

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May 2017

## Abstract

In this paper we examine the dynamic contributions of capital accumulation, globalisation, and financialisation to the functional-personal income distribution nexus. We estimate a two-equation model for the income distribution in the US over the 1968-2014 period. We show that the labour share is affected negatively by personal inequality, capital intensity and trade, while the Gini statistic is fueled by the falling labour share and increasing financial assets and financial payments. Using counterfactual simulations, we show that trade is the most stable and unidirectional factor driving the labour share down since the eighties, with financialisation equally relevant in the eighties, but innocuous in the 1990s. We also document the growing relevance of capital accumulation and globalisation in driving personal inequality, although financialisation is the most important factor in absolute terms. In the post-Great Recession years of tense socioeconomic conditions, looking at income distribution through the lens of the wage-productivity gap could enlighten economic policy.

*JEL Classification:* D33, E25.

*Keywords:* Income distribution, labour share, wage gap, inequality, capital intensity, globalisation, financialisation.

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\***Acknowledgments:** Hector Sala is grateful to the Spanish Ministry of Economy and Competitiveness for financial support through grant ECO2016-75623-R.

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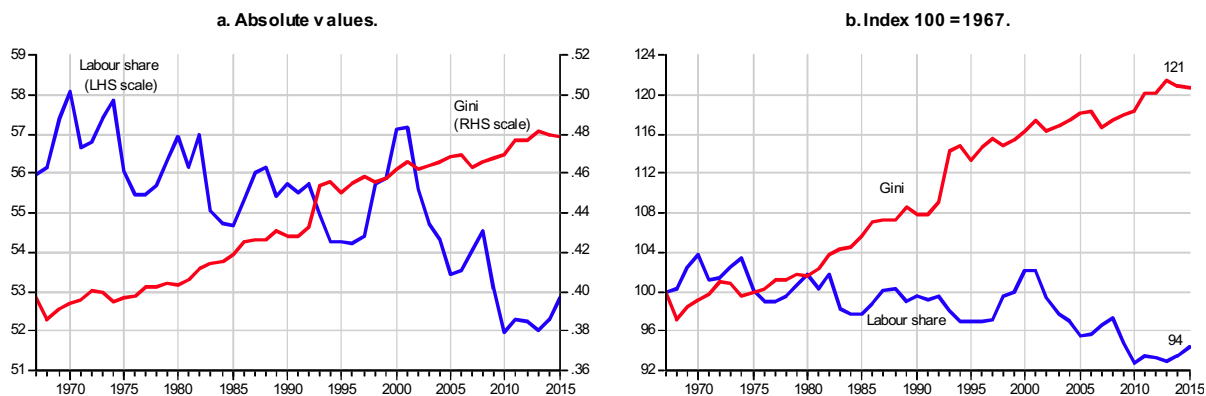
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# 1 Introduction

For the last three decades, the personal and functional distributions of income have followed divergent trends in the US. While increasing inequality in personal income distribution has been pushing the Gini index relentlessly upwards, the evolution in the functional distribution of income has been characterized by a downward trend in the labour income share (Figure 1).<sup>1</sup> Since the labour share can also be envisaged as the wage-productivity gap, its downward trend is a mere reflection of wages lagging further behind labour productivity.

The aim of this paper is to identify the driving forces of the wage-productivity gap and inequality, and evaluate their consequences for the functional-personal income distribution nexus.

**Figure 1. labour income share and income inequality in the US.**



Note: all-worker nonfarm business sector labour share and income Gini ratio for households.

Source: Bureau of Labor Statistics (BLS) for the labour share; US Census Bureau for the Gini index.

An initial phase of our enquiry showed that the falling labour share is an important channel increasing personal income inequality and supporting employment. This led us to evaluate the inequality-employment sensitivity ratio (Karanassou and Sala, 2012),<sup>2</sup> which can be seen as a barometer of the two-sided role of the falling labour share in economic activity: wider wage gaps are associated with lower unit labour costs that boost employment and, at the same time, they further lead to the squeeze of the middle class by overloading its socio-economic burden. In effect, the employment support of the falling labour share, from the seventies to the late noughties, "sweetened" its distributional impact and diverted attention away from the issue of increasing inequality.

<sup>1</sup>The rise in income inequality has been documented by, among others, Atkinson *et al.* (2011), Piketty and Saez (2006), Wolff and Zacharias (2006). Evidence for the declining labor share can be found in, e.g., Karabarbounis and Neiman (2014), Autor *et al.* (2017), Dünhaupt (2017), and Stockhammer (2017).

<sup>2</sup>The negative relation between the labour share and inequality is also documented by Checchi and García-Peñalosa (2010) in their regression of the Gini statistic. Giovannoni (2010) argues that the high-quality datasets by the UTIP-UNIDO and the OECD-SULCI clearly show a strong link between the lower wage share and higher inequality since 1980.

While our work is in accordance with the inverse relation between real wages and employment, it refutes the conventional wisdom that the labour income share is neutral to the performance of macro-labour markets. It may be tantalizing to place the finding of an inverse relation between the wage-productivity gap and employment along the lines of a profit-led growth model. However, in the light of the financial developments and high personal borrowing of recent decades, the scenarios of wage-led and profit-led growth/demand need to be reassessed.<sup>3</sup>

This paper shows that the central determinants of the labour share and the Gini coefficient are capital intensity, trade (or the degree of openness), and financial assets and payments. These variables are regarded as reasonably good proxies of the critical macro-economic phenomena of capital accumulation, globalisation, and financialisation. The paper later refers to the engagement of the non-financial sector (global/oligopolistic industries) in financial markets.<sup>4</sup>

Estimating a two-equation system over the 1968-2014 period, we find that (i) the functional income distribution is mainly driven by the capital intensity and trade factors, and (ii) inequality is fueled by the falling labour share and increasing financial payments. Put differently, while there is a direct effect of financialisation on the personal income distribution, capital accumulation and globalisation affect inequality indirectly via the labour share. In addition, it can be argued that capital intensity is the transmission channel of financialisation to the functional income distribution.

On the basis of the statistical significance and adequacy of our model, we measure its economic significance by evaluating the distributional consequences of capital intensity, trade, and financial assets and payments. To this end we carry out counterfactual simulations over selected time spans after 1980 that answer the question: How have the paths of these factors contributed to the evolution of the labour share and the Gini index? The results are revealing. The negative effect of trade on the labour share has been a vital force in the distributional developments throughout the decades. On the other hand, financialisation is a key factor shaping inequality.

Although financialisation is the most determinant driver of personal inequality, it has a twofold transmission channel which may have different effects in specific periods. One is the ratio of financial assets over total assets, which has tended to grow since the eighties; the other one is financial payments, with a much volatile behaviour. As a consequence,

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<sup>3</sup>In their thorough analytical exposition, Bhaduri and Marglin (1990) associated the negative relation between real wages and employment with a profit-led expansion obtained by profit maximization or, alternatively, when “aggregate demand is higher owing to the strong response of investment to the higher profit margin/share brought about by a lower real wage rate” (ib., p.379). Projecting on the same argument, the reverse case of a wage-led expansion can be derived: employment (output) contracts at a lower real wage due to the relatively weak response of investment to the higher profit margin/share.

<sup>4</sup>See, for example, Stockhammer (2004), Milberg and Winkler (2010a), and Hatgioannides and Karanassou (2011).

when both indicators grow, as in the eighties, the effects on income inequality are devastating (financialisation explains 90% of the increase in the Gini index in that decade). If, however, payments fall sufficiently in bad times, weakening financialisation may relieve inequality as it did in the noughties. We also show that capital accumulation and globalisation have growing influence on inequality, but not as much as the financialisation process.

Regarding the functional income distribution, while the increase in trade has been the biggest contributor to the widening wage gap during the eighties, nineties and noughties (by almost 9 percentage points, overall), lower capital intensity in the eighties and nineties took the labour share up by 3.5 pp., with little effects subsequently. Financialisation took off in the eighties and joined trade in pressing the labour share down; it was innocuous in the nineties, along with growing financial assets but lower financial payments counterbalancing one each other; and pushed the labour share up in the noughties due to the stabilisation of financial assets and the fall in financial payments as a consequence of the early noughties' downturn and the Global Financial Crisis (GFC).

Section 2 presents the functional income distribution. Section 3 discusses the measures of inequality and comments on the steep upward trend of the personal income distribution since the eighties. Section 4 outlines the labour share and Gini coefficient relations of our empirical model, while Section 5 presents the estimation results. Having identified capital accumulation, trade, and financialisation as the driving forces of the labour share and inequality, Section 6 evaluates their distributional consequences. Section 7 concludes.

## 2 Functional Income Distribution

The labour income share is in effect the wage share, which through the wage-productivity relationship can be seen as the wage gap (ILO, 2015):

$$\text{labour share} \equiv \frac{\text{wages}}{\text{GDP}} = \frac{\text{wages/employees}}{\text{GDP/employees}} = \frac{\text{avg. wage}}{\text{productivity}} \equiv \text{wage gap}. \quad (1)$$

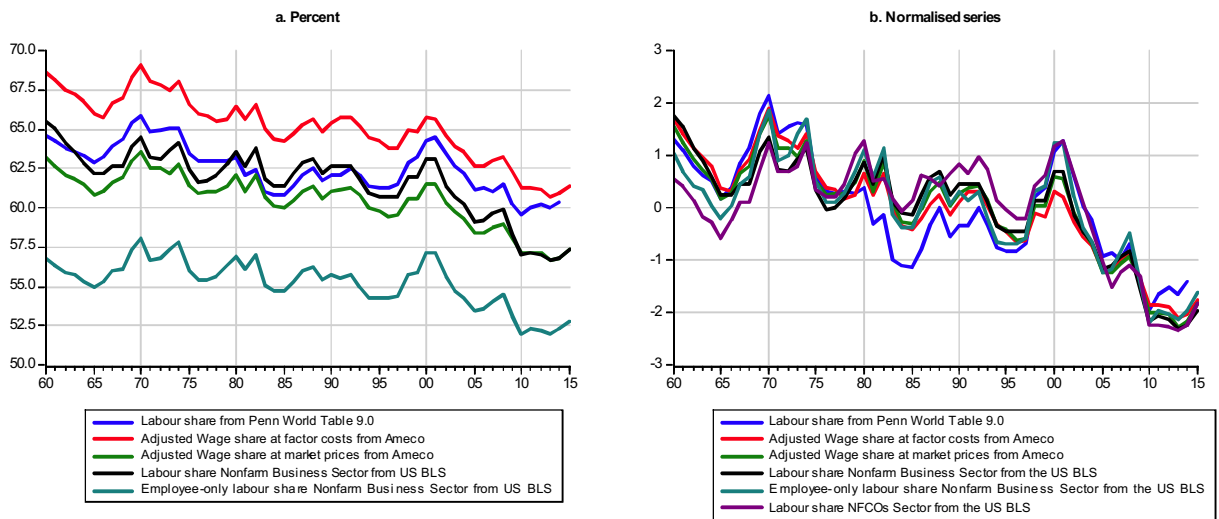
Hence, the fact that the labour share has been trending downwards worldwide in last decades implies that the wage gap is widening. This is generating great concern on different grounds (ILO, 2015; OECD 2015; IMF, 2017). First, because it implies that growth does not translate sufficiently into workers' income, which is likely to hamper economic growth and contribute to secular stagnation. Second, because it increases personal inequality, since capital income is more concentrated than labour income. Third, because it rises social discontent and undermines the support to the political and economic system (Stiglitz, 2002).

## 2.1 Measurement issues

The measurement of the labour share is surrounded of issues related to the use of deflators (wages can be deflated by the CPI index or the GDP deflator); the evaluation of GDP at factor costs or market prices; the incidence of depreciation (through its effects on the valuation of capital and, thus, on the capital share); the inclusion, or not, of self-employment rents; the measurement of ideas (Koh *et al.*, 2016); or the fact that a producer or a consumer perspective may be taken (Cho *et al.*, 2017).

Another important issue has to do with the object of measurement. The Penn World Table (PWT) 9.0 and the European Commission Ameco database supply information for the whole economy. As shown in Figure 2a, the adjusted wage share at factor costs from the Ameco database is the largest (given that workers' income in the numerator includes self-employment rents, while total income in the denominator has been diminished, with respect to the one at market prices, by indirect taxation). Both the series from the PWT 9.0 and the labour share in the nonfarm business sector evolve within the Ameco database series (at factor costs and market prices).

Figure 2. US labour shares.



To avoid noise from compositional changes in dependent and self-employment, we have considered the employee-only labour share of the nonfarm business sector, supplied by the US BLS (Giandrea and Sprague, 2017). This covers 75% of the US economy and excludes general government, nonprofit institutions, private households, the Armed Forces, and farms. As shown in Figure 2b, the evolution of our selected series follows the general downward trend.<sup>5</sup>

<sup>5</sup>In the OECD definition of the Labor Income Share (or Real Unit Labor Cost, as they explicitly say) we read that “the total labour costs measure relates to compensation of employees adjusted for the self employed and thus essentially relates to labour income”; it is further acknowledged that this adjustment “assumes that labour compensation is equivalent for the self employed and employees of businesses”. We should also point out that IMF (2007) distinguishes the income share of employees –the ratio of

No matter the measure, Figure 2 depicts a slow fall in the labour share that accelerates in the noughties. Milberg and Schöller (2009) note that the labour share has not fallen as much as in other countries “partly due to the fact that the large levels of CEO compensation in the U.S., including stock options, are officially accounted in labour income” [Milberg and Schöller (2009), p. 20].

## 2.2 Drivers

The drivers of the falling labour share have recently received great attention. A brief classification can be sketched around three main sets of factors:

1. Technology. Technological progress may affect capital intensity and influence the labour share through capital-labour substitution (Alvarez–Cuadrado *et al.*, 2015) or the fall in the prices of investment goods relative to consumption goods (Karabarbounis and Neiman, 2014). It may also bias the demand of skilled and non-skilled workers, and affect the percentage of income that compensates the labour factor (European Commission, 2007). And it may also create accounting problems. For example if technology accelerates the rate of depreciation and inflates GDP in gross terms thus reducing the labour share (Bridgman, 2014; Cho *et al.*, 2017); or by accruing the stock of ideas (i.e., the intangible capital stock), which is not taken into account in official statistics (Koh *et al.*, 2016).
2. Globalisation and market deregulation, which is typically associated to a lower labour share. Globalisation, which has been facilitated by technological progress, exerts direct and indirect influence on the labour share. Direct through trade, the spread of offshoring practices (Milberg and Winkler, 2010a, 2010b; Elsby *et al.*, 2013), and participation in global value chains (IMF, 2017). Indirect through market deregulation, which has caused welfare state retrenchment and a falling bargaining power of labour –see Rodrik’s (1997) conjecture and Stockhammer (2017) for a survey on related literature.

As a by-product of technological progress and globalisation, a new firm-level perspective has recently emerged. Autor *et al.* (2017) show that selected “superstar firms” are gaining very large shares of the market, and these are precisely firms with very high profits and a low share of labour over their value added. In turn, Kehrig and Vincent (2017) focus on the important reallocation of production towards “hyperproductive firms”, which they claim are driving the aggregate labour share down in the US.

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employees’ labor compensation to value added– from the income share of labor, which is the share of labor compensation of employees and "nonemployee" workers in value added.



3. Financialisation. Although widely studied in recent years, this phenomenon has only recently been directly connected to the falling trend in the labour share.<sup>6</sup> Dünhaupt (2017) and Stockhammer (2017) document both a strong negative influence arising from financial payments in the first case (interests and dividends), and from financial globalisation in the second (assets and liabilities over GDP). In turn, González and Trivín (2017) focus on the increasing trend in asset prices, and show that the rising path in Tobins' Q (and hence in corporate financial wealth) has also been detrimental of the labour income share.

Regarding financialisation, one aspect that is still neglected in the literature is its influence on the personal income distribution. This should come as no surprise since personal income distribution is in general studied by taking a microeconomic perspective. The exception is the work by Jacobson and Occhino (2012) who look, as we do, at the interaction between the declining share of income and rising inequality. They decompose the Gini index as the weighted average of the concentration indexes of labour and capital income, with the weights equal to the two income shares. In this way they are able to infer the Gini response to a 1 percent decrease in the labour share, which they place in the range of 0.15–0.33 percent increase. The drivers of such interactions are however ignored.

### 3 Personal Income Distribution

From the trauma of the stagflating seventies and the ensuing deregulation starting in the eighties, to the roaring nineties and up to the great moderation of the noughties, the pillars of conventional wisdom in economic policy were established on the premises of low inflation, reasonably good and sustainable growth, and relatively low unemployment. Issues of inequality and distribution had been ostracised from the analysis of economic affairs as it was thought that they could be trivially resolved under the holy trinity of the above economic outcomes.

In the midst of the worst since the 1930s economic crisis, the alarming rise in unemployment and the significant numbers of foreclosures that sparked the protest against the rich-poor divide, the distribution issue resurfaced in the political scene after its long absence from the lexicon of mainstream economists.

#### 3.1 Measuring Inequality: The Gini Ratio

Figure 1 shows that inequality increased by 20% over the 1967-2015 period (from 0.40 in 1967 to 0.48 in 2015). Although our summary measure of the personal income distribution

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<sup>6</sup>For example, it was connected to offshoring (Milberg and Winkler, 2010a), and offshoring was in turn connected to the labour share (Milberg and Winkler, 2010b), but no direct influence was studied.

is the Gini coefficient, it is worth highlighting its differences from alternative measures of top income shares. The Gini ratio (or relative income) is constructed by the Census Bureau using internal Current Population Survey (CPS) data, while income trends in terms of top shares are obtained by the Internal Revenue Service (IRS) tax return data.<sup>7</sup>

CPS data measure pre-tax, post-transfer income, and exclude capital gains. In contrast, although the IRS data refer to pre-tax income, they exclude most transfer income (since the latter is generally not taxable) but include capital gains, stock options and bonuses. Survey data have been criticized for not being able to fully capture the top end of the distribution due to topcoding, undercoverage, and underreporting of top incomes. The availability of tax return data for longer time spans than survey data is a further attractive feature of the former. On the other hand, the Gini statistic has a twofold advantage: (i) it is a more comprehensive measure of inequality as it uses data on all incomes rather than just the richest end of the spectrum, and (ii) it includes many socio-demographic variables, since the CPS survey questions about income are broader than those on IRS tax forms.<sup>8</sup>

The typical interpretation of the Gini index is through the geometry of a Lorenz diagram plotting the cumulative population shares, from the poorest to the richest, against their cumulative income shares. It is the area between the Lorenz curve and the diagonal (45°) line as a ratio of the area below the diagonal (e.g. see Brewer *et al.*, 2006, p.68). As the value of the Gini statistic increases from zero to one, the more unequal the income distribution becomes.

A more intuitive interpretation than the standard geometric one is given by Shorrocks (2005), where the Gini coefficient is portrayed as the division of a "pie" into two unequal shares. For example, a Gini value of 0.40 is obtained from the division of an aggregate economic pie worth \$1 into 90c and 10c. Presenting inequality as “a 2-way division of a pie in which one person gets 9 times the other is a powerful way of capturing the extent of income differences.” Since the "fair" share in a 2-way division is 0.50, the Gini value of 0.40 represents the excess share of the richest person (Gini= 0.90 – 0.50).

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<sup>7</sup>For a reconciliation of estimates from CPS and IRS tax data see the authoritative work by Burkhauser *et al.* (2012a).

<sup>8</sup>The Gini ratio is most easily calculated from unordered size income,  $x$ , data as the ‘relative mean difference’, i.e., the mean of the difference between every possible pair of individuals divided by the mean size  $\mu$  (<http://www.wolframalpha.com/input/?i=gini+coefficient>):

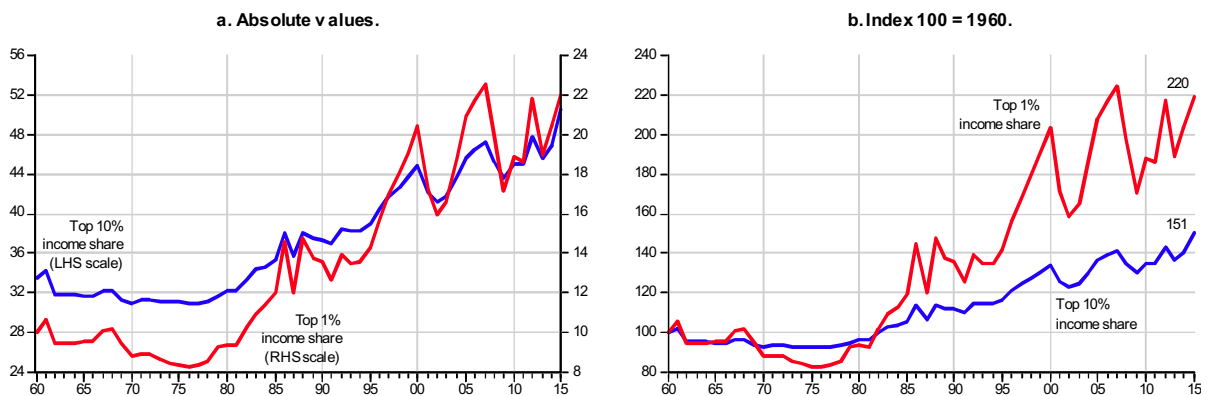
$$Gini = \frac{\sum_{j=1}^n \sum_{i=1}^n |x_i - x_j|}{2n^2\mu}.$$

### 3.2 Inequality Burst

Although we use the Gini index to measure inequality, and although the issue of how closely top income shares track the Gini coefficient is far from being resolved, it is worthwhile to point out some dramatic results on the top end of the personal distribution spectrum that have dominated the debate in recent years. The study of Burkhauser *et al.* (2012a) is particularly informative about the differences in estimated inequality trends that can arise from differences in the definition of income (and the way its distribution is summarized) or from differences in the data sources.<sup>9</sup> Nevertheless, the focus of our work does not lose weight.

The graphic evidence in Figure 3 shows that, since the late seventies, income inequality has evolved in terms of an upward ‘trend’ rather than ‘episodes’ of falling/increasing inequality. In 2015 the top 1% appropriated 22.0% of the national income amounting to an increase of 120% since 1960, most of it arising after the second half of the eighties. Seen from the other side of the spectrum, the decreasing income shares of the bottom 99% reflect the continuing squeeze of the middle classes since the eighties.

**Figure 3. Top 10% and top 1% income shares in the US.**



Source: Alvaredo *et al.* (2011).

Piketty and Saez (2006) demonstrate that the last time the top percentile reached a value close to 20% was before the Great Depression. Wolff and Zacharias (2006) further document that, over the 1982-2000 period, the share of the top percentile increased from 9.9% to a staggering 17.4%, using the standard measure of money income, and from 14.1% to 20.1% using the their measure of wealth adjusted income. In a brief overview of trends

<sup>9</sup>Also, Burkhauser *et al.* (2012b) argue that the conclusions of the research on income and its distribution rely upon the income definition; i.e. on whether income is defined as pre-tax, pre-transfer tax unit cash (market) income or post-tax, post-transfer, size-adjusted household cash income. “So which income series is superior? This depends on the research question. For researchers interested in how middle class Americans are compensated for their time in the labor market, for example, it is more appropriate to use pre-tax, pre-transfer (market) income ... However, for those interested in the overall economic resources available to individuals, it is more appropriate to consider income defined as broadly as possible.” (ib., p.29-30)

in income inequality, Mankiw (2010) notes that since the mid-seventies the share of total income of the top 0.01% (i.e. those with annual income of more than \$11 million) has increased about sixfold.

Studying ‘Top Incomes in the Long Run of History’, Atkinson *et al.* (2011) use the Pareto law for top incomes to obtain the (cumulative) distribution function for income  $y$  and focus on what they refer to as the inverted Pareto coefficient,  $\beta$ . This is the ratio of average income  $y^*(y)$  of individuals with income above  $y$  to  $y$ . The authors argue that the coefficient  $\beta$  has more intuitive economic appeal, since a higher  $\beta$  means a fatter upper tail of the distribution. They find that “in the United States, the  $\beta$  coefficient (estimated at the top percentile threshold and excluding capital gains) increased gradually from 1.69 in 1976 to 2.89 in 2007 as top percentile income share surged from 7.9% to 18.9%”. It is further noted that when capital gains are included, “the rise of the  $\beta$  coefficient is even more dramatic, from 1.82 in 1976 to 3.42 in 2007”.<sup>10</sup>

In the Financial Times (2008, October 29) we read that “Between 2000 and 2006 the US economy expanded by 18 per cent, whereas real income for the median working class dropped by 1.1 per cent ... Meanwhile, the top tenth saw an improvement of 32 per cent in their incomes, the top 1 per cent a rise of 203 per cent the top 0.1 per cent a staggering gain of 425 per cent.” Wolff and Zacharias (2006, p. 5) note that in 2004, the median net worth of the individuals in the Forbes 400 list was \$1.5 billion “as compared to the median net worth of \$93,000 for all other households.”

As the increase in the share of the top percentile has been accompanied by the exceptional growth in top executives’ pay relative to the salaries of employees, the issue of whether the so called “working rich”<sup>11</sup> have replaced top capital owners (the “rentiers”) at the top of the economic ladder is open to debate. For example, Wolff and Zacharias (2006) do not support this issue, whereas Piketty and Saez (2006) argue in its favour.

Interestingly, the Financial Times (2010, February 3) reported that “A packed session at the World Economic Forum in Davos...addressed the issue of executive compensation and the huge rise in the pay gap between chief executives and ordinary workers in their organizations. ...The best-paid person in a US company was paid about 40 times that of the worst-paid person a generation ago. Now the multiple is about 300. ...Asked whether the reason was that management had improved hugely; executives were underpaid in the past; their jobs were more onerous today, or whether executives had collectively exploited market power to raise their salaries, all of the members of the panel agreed that the last possibility was closest to the truth.”

Apparently, the personal income distribution theme was forced to enter (for the first

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<sup>10</sup>Ib., Section 3, ‘Pareto Interpolation’.

<sup>11</sup>“*Forbes* popularised this term. However, the magazine used it in the sense that the wealthiest Americans hold jobs rather than in the sense that the wealthiest depend mainly on labour income as their chief source of income.” (Wolff and Zacharias, 2006, p.12).

time) in the agenda of the World Economic Forum in Davos 2012, where the priority(!) of tackling growing inequality generated heated discussions (see the reports by BBC on 27/1, Bloomberg Businessweek 31/1, and others).

## 4 Modelling the Distributions

### 4.1 Distribution Nexus

In view of the points raised above it is essential that we scrutinize further the income distribution network. Stockhammer (2017, p. 29) correctly writes that “Globalisation ought to have decreased the market power by means of the entrance of new competitors. At the same time it has increased the bargaining power of firms vis-a-vis labour”.

In other words, although globalisation should have increased the degree of competition in both the labour and product markets, it has mainly enhanced labour market reforms affecting the rules of collective bargaining, trade union power, minimum wages, and employment protection legislation. The mechanism of such reforms is well-known and has been examined theoretically through efficiency wage and collective bargaining models. The point we would like to raise is that the expectation from globalisation to move markets towards perfect competition cannot materialize in the presence of what has been labeled *Call-Put policy options* (Hatgioannides and Karanassou, 2011).<sup>12</sup>

Under the neoliberal status quo of globalisation,<sup>13</sup> economic conditions reflect the systemic creation/preservation of inequality and business concentration of Call-Put policy options. Such institutional options are implicitly written by the state and distributed to big financial firms and multinationals at a minimal premium, the cost of lobbying.

We need to emphasize that labour market institutions are among the key factors that engineer the perpetual in-the-moneyness of institutional Call-Put options. Put differently, leaving aside the difficulty in measuring the bargaining power of workers and firms, it is institutional options –rather than mere labour market institutions– that empower corporate globalisation.

Hatgioannides *et al.* (2013) explain how the Call-Put policy options unwind to a ‘heads-I-win, tails-you-loose’ corporatist strategy: a double-sided options strategy, where

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<sup>12</sup>Key policies that engineer the perpetual in-the-moneyness of the Call-side of Call-Put policy options include: (1) favourable regulatory/tax policies, exploitation of regulatory/tax arbitrage, and the existence of tax havens; (2) freeing of capital movements, deregulation of global capital markets, and openness of the financial sectors of emerging and developing economies; (3) privatization of natural resources; (4) flexible labor markets that lead to the dominance of the "worst employer" in the most profitable "social haven"; (5) ‘one model fits all’ economic policy prescriptions, e.g. slashing of public spending and structural programmes. On the other hand, the Put-side of the Call-Put policy options preserves inequality and business concentration) via its cost to the general public of the state funded rescue or bailout plan(s).

<sup>13</sup>Also called corporate globalization (e.g. Palley, 2013) or corporatocracy, a term used in the 2004 book ‘Confessions of an Economic Hitman’.

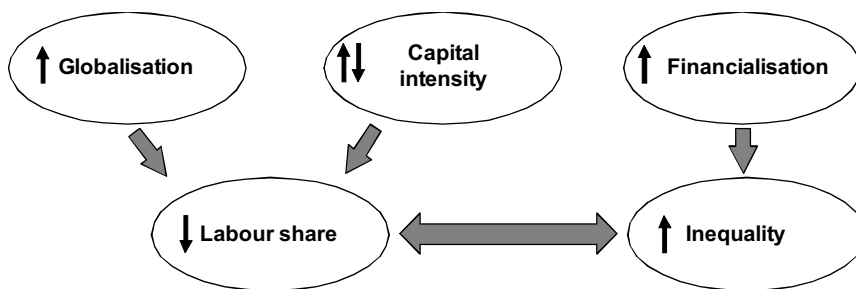
‘heads’ refers to the boom years of lavishing rewards for the top-income earners and increasing income inequality, and ‘tails’ to the bust years of bailouts and austerity. Thus financialisation is a consequence of Call-Put options, a symptom of the twisted market economy; it simply takes advantage of the short-term profitable opportunities that Call-Put policy options grant to big non-financial corporations.

In a nutshell, the neoliberal globalized markets mirror the power of institutional Call-Put options and the concomitant strengthening of monopolies/oligopolies. It is in this context that we need to place Autor *et al.*’s (2017) highlight of the "superstar firms" and Kehrig and Vincent’s (2017) notion of “hyperproductive firms”. These are champion firms that increase their sales and value added without increasing employment and compensation. And they account for a growing fraction of the market.

This tendency to market concentration was already anticipated by Kalecki (1954), who argued that the degree of monopoly has a general tendency to increase in the long run, and thus to depress the relative share of wages in income. In this light, the falling labour share is a (widely accessible) measure of the higher degree of monopoly. As the latter is equivalent to business concentration, institutional options bring Kalecki’s work at the centre of the distribution network. This is the route followed by Dünhaupt (2017), who uses Kalecki’s framework to show that the labour share is determined by the mark-up imposed by firms’ price-setting.

To evaluate the driving forces that jointly determine the labour share and inequality, we postulate a system of equations for the functional and personal income distributions. Figure 4 sketches the system’s key dimensions and illustrates the anatomy of the income distribution network.

**Figure 4. Anatomy of the distribution network.**



The figure portrays that the falling labour share (i.e. the higher degree of monopoly) is at the core of the distribution nexus. While it fuels personal income inequality (and vice-versa), it is inversely related with trade openness –a proxy for (purist) globalisation– and proportionately associated with capital accumulation. At the same time inequality is also fueled by financialisation, a symptom of corporate globalisation.

## 4.2 Labour Share Equation

We model the functional income distribution using a log-linear equation for the labour share,  $l_{s_t}$ :

$$l_{s_t} = c^L + \sum_{j=1}^J \alpha_j^L l_{s_{t-j}} + \sum_{j=1}^J \beta_j^L gini_{t-j} + \sum_{j=1}^J \gamma_{t-j}^L \left( \frac{k_{t-j}^{pr}}{y_{t-j}} \right) + \sum_{j=1}^J \delta_{t-j}^L tr_{t-j} + \sum_{j=1}^J \lambda_j^L \mathbf{X}_{t-j}^L + \varepsilon_{1t}, \quad (2)$$

where  $k_t^{pr}/y_t$  denotes capital intensity (with just private capital stock considered, so as to be consistent with the labour share for the nonfarm business sector);  $tfp_t$  proxies technology;  $tr_t$  denotes trade, and  $\mathbf{X}_t^L$  contains other control variables. Precise definitions are given in Table 1. The  $\alpha$ 's,  $\beta$ 's,  $\gamma$ 's,  $\delta$ 's and  $\lambda$ 's are parameters to be estimated, with superscript  $L$  referring to the labour share equation (2), and  $\varepsilon_{1t}$  being a strict white noise error term. The autoregressive element in specification (2), typical in dynamic time series equations, controls for the empirical relevance of labour adjustment costs in the model.

With respect to existing literature, the novelty in model (2) is the presence of the gini coefficient. Checchi and García-Peñalosa (2010) develop a model to examine the determinants of wage dispersion, the labour share and the personal distribution of income under the premises that the three forms of inequality are closely related and potentially affect each other. In this context, a critical channel by which the gini coefficient affects the labour share is job polarisation resulting from losses of jobs in middle-skill occupations (see IMF, 2017, p.123).

Capital intensity (i.e. the capital-output ratio) was introduced as a major factor in the labour share equation by Bentolila and Saint Paul (2003). A positive elasticity between the two variables indicates that labour and capital are substitutes (so that the elasticity of substitution between capital and labour,  $\sigma$ , is lower than 1), while a negative elasticity implies they are complements (so  $\sigma > 1$ ). This value corresponds to the slope of the so called share-capital schedule, which has become a popular framework. Milberg and Winkler (2010a, 2010b), Checchi and García-Peñalosa (2010), Karabarbounis and Neiman (2014) and Koh *et al.* (2016) have used it. A common finding for the US when using this framework is the complementarity between capital and labour, a result that is controversial (Chirinko and Mallick, 2014). Although it is tempting (as in this debate) to interpret capital intensity as a variable driven by technology, Stockhammer (2013, p.5) is right to note that, from a Keynesian perspective, capital accumulation will be driven to some extent by changes in animal spirits that are not primarily related to technology.

Together with the capital-output ratio, technology enters as a control variable to capture the impact of biased technological change. As shown by Bentolila and Saint-Paul (2003), total factor productivity (TFP) coming out with the same sign as capital intensity is an indication of capital augmenting technology.

Another major factor in the wage gap evolution is trade (or the degree of openness), which is commonly interpreted as a proxy for some key aspects of the globalisation process (e.g. IMF, 2007). Contrary to the prediction of Heckscher-Ohlin theory, it is widely accepted in the empirical literature that trade openness exerts a negative influence on the labour share.

Financialisation is the final key factor in the unraveling of the distributional nexus. Our point of view is that, while it affects directly the personal income distribution, which is the focus of our analysis, it also enters indirectly the functional income distribution via the capital intensity factor. Following the reasoning in the literature on the negative effect of financialisation on real investment (e.g. Orhangazi, 2008), it can be argued that capital accumulation is the transmission channel of financialisation to the labour market (González and Sala, 2014).

### 4.3 Gini Coefficient Equation

As in Karanassou and Sala (2012), we examine the inequality factors with a log-linear model along the lines of the reduced form inequality equation in Checchi and García-Peñalosa (2010). Our autoregressive distributed lag (ARDL) model for income inequality has the following form:

$$gini_t = c^G + \sum_{j=1}^J \alpha_j^G gini_{t-j} + \sum_{j=0}^J \beta_j^G ls_{t-j} + \sum_{j=0}^J \gamma_j^G fin_{t-j}^a + \sum_{j=0}^J \delta_j^G fin_{t-j}^p + \sum_{j=0}^J \lambda_j^G \mathbf{X}_{t-j}^G + \varepsilon_{2t}, \quad (3)$$

where  $gini_t$  is the Gini coefficient,  $fin_t^a$  denotes financial assets,  $fin_t^p$  financial payments, and  $\mathbf{X}^G$  comprises other control variables. Precise definitions are given in Table 1. The  $\alpha$ 's,  $\beta$ 's,  $\gamma$ 's,  $\delta$ 's and  $\lambda$ 's are parameters to be estimated, with superscript  $G$  referring to the Gini equation (3), and  $\varepsilon_{2t}$  being a strict white noise error term.

Blinder and Esaki (1978) introduced the approach of regressing the share of the  $i^{\text{th}}$  quintile of the income distribution on the overall unemployment rate. Here, rather than a "group" perspective on inequality of the  $i^{\text{th}}$  income share regressand, we have an aggregate perspective on inequality through regression (3). The Gini statistic captures inequality by measuring the allocation of income in (real) monetary terms to the various groups of agents. Therefore, wages, benefits, rewards to capital or labour, and institutions that facilitate such rewards are legitimate candidate determinants in a Gini regression. On one hand, having unemployment as an additional driving force in the model carries the risk of blurring the results.<sup>14</sup> On the other, the effect of unemployment on inequality can be

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<sup>14</sup>Consider, for example, the Gini equation of Checchi and García-Peñalosa (2010). As the negative and insignificant unemployment coefficient using OLS and IV (Table 4, p. 428) becomes positive and significant with 3SLS (Table 5, p. 431), it is hard to justify such a u-turn of the estimates on the grounds of endogeneity and cross-equation correlation alone.

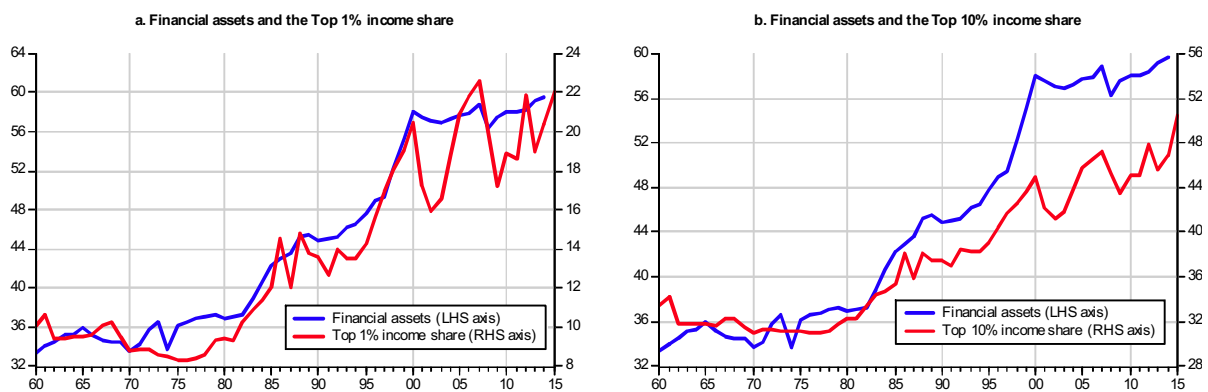


satisfactorily addressed by examining the relationship between the various income classes and the existence of unemployment à la Blinder and Esaki (for example, see Mocan, 1999).

It is widely understood that higher corporate profits as a share of national income lead to (i) higher investment and (ii) the engagement of non-financial businesses in financial markets (e.g. due to fees income), i.e. the ‘financialisation’ of the industry (Stockhammer, 2004; Milberg and Schöller, 2009; Milberg and Winkler, 2010a, among others). Recognizing the link between corporate profits and financialisation, the finding that financial assets and payments have a positive impact on the Gini coefficient implies that financialisation has a "direct" adverse effect on inequality.<sup>15</sup>

Figure 5 is eloquent in showing the very close upward path followed by financial assets and the top 1% income share. Hence, model (3) not only captures the impact of the changing concentration of incomes (due to the falling labour share and the resulting increased income dispersion relative to capital rents), but also the within labour share rise in dispersion (due to the financialisation process).

**Figure 5. Financial assets and the top income shares.**



## 5 Estimated Model

Our econometric application follows the ARDL approach, also known as bounds testing. The ARDL procedure, developed by Pesaran and Shin (1999) and Pesaran *et al.* (2001), has the advantage of yielding consistent short- and long-run estimates irrespective of whether the regressors are  $I(1)$  or  $I(0)$ . Since an ARDL equation can be reparameterised in error-correction form and its long-run solution can be interpreted as the cointegrating vector of its variables, the ARDL procedure can be viewed as a rigorous alternative to the standard integration/cointegration techniques.

Once the ARDL selected dynamic forms of models (2) and (3) have been estimated by Ordinary Least Squares (OLS), we regress them as a system of equations using the

<sup>15</sup>For an in-depth analysis of an intricate cobweb of institutional policy options that distort competition and accelerate economic concentration, and the systemic exploitation of inequality via novel and toxic forms of securitisation see Hatgioannides and Karanassou (2011).

Generalised Method of Moments (GMM) and Three Stage Least Squares (3SLS). This allows dealing with potential endogeneity issues, as well as potential cross-equation error correlation.

## 5.1 Data

We use annual observations over the 1967-2015 period obtained from the US Bureau of Labor Statistics (for the nonfarm business sector labour share); the US Census Bureau (Gini ratio for households); the US Federal Reserve (dividends, interests, corporate profits and the capacity utilisation rate); the IMF Investment and Capital Stock Dataset (private capital stock and output in the same units of measure, so as to compute the capital-output ratio or capital intensity); the Penn World Table 9.0 (for the depreciation rate, and the TFP index); and the OECD Economic Outlook (degree of trade openness, direct taxes on households, indirect taxes, and payroll taxes).

Table 1 describes the variables used in the selected specifications of the labour share and inequality equations.<sup>16</sup>

**Table 1. Definitions of variables.**

$ls$	labour share; nonfarm business sector	$\tau^h$	direct taxes on households/GDP
$gini$	gini coefficient	$\tau^b$	direct taxes on business/GDP
$\delta$	depreciation rate	$\tau^p$	Social security contributions/GDP
$cur$	capacity utilisation rate	$\tau^T$	fiscal pressure $=\tau^h + \tau^b + \tau^p$
$ki$	capital intensity $=\frac{\text{private capital stock}}{\text{GDP}}$	$fin^a$	financial assets $=\frac{\text{financial assets}}{\text{total assets}}$
$tr$	degree of trade openness $=\frac{\text{exports} + \text{imports}}{\text{GDP}}$	$fin^p$	financial payments $=\frac{\text{dividends} + \text{interests}}{\text{corporate profits}}$
$tfp$	total factor productivity	$\Delta$	difference operator

Note: All variables are defined as indices ( $gini, tfp$ ) or ratios (the rest).

Sources: US Bureau of Labor Statistics, US Census Bureau, US Federal Reserve, IMF (Investment and Capital Stock Dataset), Penn World Table 9.0, OECD (Economic Outlook).

The time series data on income inequality correspond to Gini ratios for the total household income.<sup>17</sup>

<sup>16</sup>Although we have worked with an extended dataset (including competitiveness, union density, and benefits) we only report the estimates of variables entering the selected specifications.

<sup>17</sup>Note that it is available for money income rather than equivalised income (<https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-households.html>).

As labour share, we use the one for the nonfarm business sector (plotted in Figures 1 and 2), which is a standard measure used in the literature (Elsby *et al.*, 2013). We follow Elsby *et al.* (2013) and focus just on the all-worker labour share, so that we get rid of the measurement issues surrounding the labour income of the self-employed. This is also the reason why Karabarbounis and Neiman (2014) focus on the labour share within the corporate sector.

Given our measure of the labour share, the capital-output ratio excludes public capital stock. Note that it is computed in constant 2011 dollars, and results into a capital intensity ratio evolving between 1.2 and 1.6 throughout our sample period (values closer to 3 would be expected if computed at current costs using the total stock of capital).

Regarding financialisation, we use two standard proxies, financial assets and financial payments (Figures 7c and 7d). The ratio of financial assets over total assets reflects the fact that, starting in the eighties, firms have given priority to financial investments over productive investments. Financial payments –(net) interests and dividends as a percent of pre-tax profits of non financial corporations– accommodate the two-sided role of financialisation. On one hand, the financial receipts crowd out the incentive of corporate management for real investment and, on the other, the financial payouts drain its funds (retained earnings) for real investment (González and Sala, 2014).

## 5.2 Results

Tables 2 and 3 present our estimates of the labour share and Gini equations, respectively, from 1968 to 2014. Equations E6, E7, and E8 in Table 2, and E4, E5 and E6 in Table 3, display the selected specifications of the model estimated by OLS, GMM, and 3SLS to accommodate endogeneity and cross-equation correlation. These specifications have been selected by the optimal lag-length algorithm of the Schwartz information criterion, and pass the standard misspecification tests –for residual autocorrelation, normality, linearity, and heteroskedasticity– and the cusum and cusum squared structural stability tests.

### 5.2.1 Labour Share Estimates

The persistence coefficient is around 0.5, it is robust across estimation methods (equations E6, E7, and E8 in Table 2), and also across specifications since it does not change substantially in the absence of the Gini index (E1), trade (E3), and technology (E4). It decreases, though, when not including capital intensity (E2).

The coefficient on the Gini index is negative with a long-run elasticity around -1.0. This implies that in equilibrium, once solved all dynamics embedded in the system, changes in the gini index are fully reflected in the labour share. Capital intensity also exerts a negative influence on the labour share, of similar magnitude and implications than in

**Table 2. Labour share equation. 1968-2014.**

Dependent variable: $\Delta l_{s_t}$							
	OLS					GMM	3SLS
	[E1]	[E2]	[E3]	[E4]	[E6]	[E7]	[E8]
$c$	0.41 [0.015]	0.06 [0.396]	0.38 [0.016]	0.51 [0.001]	0.40 [0.006]	0.31 [0.005]	0.35 [0.005]
$ls_{t-1}$	-0.50 [0.000]	-0.32 [0.000]	-0.47 [0.000]	-0.53 [0.000]	-0.50 [0.000]	-0.47 [0.000]	-0.48 [0.000]
$gini_{t-1}$		-0.58 [0.000]	-0.47 [0.001]	-0.26 [0.041]	-0.43 [0.001]	-0.50 [0.000]	-0.48 [0.001]
$ki_t$	-0.10 [0.021]		-0.05 [0.144]	-0.09 [0.035]	-0.09 [0.020]	-0.06 [0.030]	-0.07 [0.023]
$\Delta ki_t$	0.11 [0.000]		0.08 [0.003]	0.10 [0.000]	0.09 [0.001]	0.07 [0.000]	0.08 [0.001]
$\delta_t$	-1.44 [0.135]	1.63 [0.028]	0.28 [0.780]	-1.03 [0.290]	-0.03 [0.979]	0.65 [0.439]	0.36 [0.677]
$cur_t$	0.01 [0.846]	0.06 [0.105]	0.08 [0.013]	0.06 [0.115]	0.03 [0.503]	0.04 [0.124]	0.03 [0.336]
$tr_{t-1}$	-0.27 [0.014]	-0.15 [0.135]		-0.02 [0.792]	-0.22 [0.018]	-0.20 [0.000]	-0.21 [0.011]
$tfp_{t-1}$	0.10 [0.168]	0.24 [0.002]	0.07 [0.120]		0.20 [0.004]	0.22 [0.000]	0.21 [0.001]
$\tau_t^h$	0.55 [0.000]	0.64 [0.000]	0.42 [0.000]	0.41 [0.000]	0.57 [0.000]	0.58 [0.000]	0.57 [0.000]
$\tau_t^b$	-0.66 [0.079]	-0.24 [0.338]	-0.75 [0.035]	-0.93 [0.012]	-0.78 [0.018]	-0.60 [0.027]	-0.69 [0.016]
$Adj.R^2$	0.753	0.737	0.782	0.768	0.813	0.808	0.811
$St.e.$	0.004	0.004	0.004	0.004	0.004	0.004	0.004
$J-test$						0.218	
$Obs.$	47	47	47	47	47	47	47

Notes: p-values in brackets; instruments:  $c, ls_{t-1}, ls_{t-1}, gini_{t-1}, ki_t, \Delta ki_t, \delta_t, cur_t, tr_{t-1}, tfp_{t-1}, \tau_t^h, \tau_t^b, \tau_t^p, fin_t^a, fin_t^p, fin_{t-1}^p, fin_{t-2}^p$ .

The rate of capacity utilization has a positive effect as expected, while the incidence of depreciation is irrelevant. Karabarbounis and Neiman (2014) follow the standard practice in the literature of using gross value added and disregard the potential incidence of this issue. According to our results, it is the right decision.

Trade has the expected negative sign. Although its effect is robust across estimation methods and most specifications, it is interesting to observe its lower impact in the absence of technology (E4). This is probably reflecting the fact that globalisation and technology

<sup>18</sup>The long-run elasticity of the labour share with respect to capital intensity is -0.15, which is to be compared with the -0.23 found in Bentolila and Saint-Paul (2003). Following their model, this implies an elasticity of substitution between capital and labour ( $\sigma$ ) of 1.06. Taking our estimate of -0.15, our sample period labour share average (55%) and using the same labour demand elasticity with respect to the wage, (-0.39) we find  $\sigma = 1.03$ .

have progressed together and are joint drivers of the labour share. The same argument holds in terms of the estimated coefficient on technology, which also falls in the absence of trade (E3), but is otherwise robust. The fact that technology has the opposite sign than capital intensity implies that it is labour-augmenting, rather than capital-augmenting (Bentolila and Saint-Paul, 2003).

As expected, direct taxes on households affect the wage-productivity gap positively, which signifies their role as a wage-push factor (recall that wages are also in the numerator of the labour share). Direct taxes on business have the expected negative sign on account of their negative influence on employment (which is in the numerator of the labour income share ratio).

### 5.2.2 Gini Estimates

**Table 3. Gini equation. 1968-2014.**

Dependent variable: $\Delta gini_t$						
	OLS				GMM	3SLS
	[E1]	[E2]	[E3]	[E4]	[E5]	[E6]
$c$	0.07 [0.041]	0.10 [0.059]	0.13 [0.071]	0.18 [0.004]	0.16 [0.000]	0.15 [0.013]
$gini_{t-1}$	-0.24 [0.024]	-0.14 [0.004]	-0.25 [0.070]	-0.36 [0.002]	-0.34 [0.000]	-0.33 [0.002]
$ls_t$		-0.10 [0.200]	-0.10 [0.255]	-0.15 [0.053]	-0.15 [0.027]	-0.13 [0.124]
$\Delta ls_{t-1}$		0.22 [0.048]	-0.04 [0.707]	0.24 [0.021]	0.19 [0.010]	0.21 [0.046]
$fin_t^a$	0.05 [0.129]		0.06 [0.143]	0.07 [0.039]	0.06 [0.000]	0.07 [0.033]
$fin_t^p$	0.01 [0.055]	0.01 [0.006]		0.01 [0.004]	0.01 [0.000]	0.01 [0.004]
$\Delta fin_t^p$	-0.01 [0.069]	-0.01 [0.040]		-0.01 [0.015]	-0.01 [0.007]	-0.02 [0.018]
$\Delta fin_{t-1}^p$	-0.02 [0.001]	-0.03 [0.000]		-0.03 [0.000]	-0.02 [0.000]	-0.02 [0.011]
$\tau_t^p$	0.21 [0.035]	0.22 [0.033]	0.14 [0.211]	0.27 [0.008]	0.26 [0.000]	0.26 [0.007]
$cur_t$	-0.06 [0.031]	-0.06 [0.020]	-0.04 [0.172]	-0.05 [0.027]	-0.05 [0.000]	-0.05 [0.034]
$Adj.R^2$	0.232	0.257	0.132	0.461	0.448	0.442
$St.e.$	0.004	0.004	0.005	0.004	0.004	0.004
$J - test$					0.218	
$Obs.$	47	47	47	47	47	47

Notes: see Table 2.

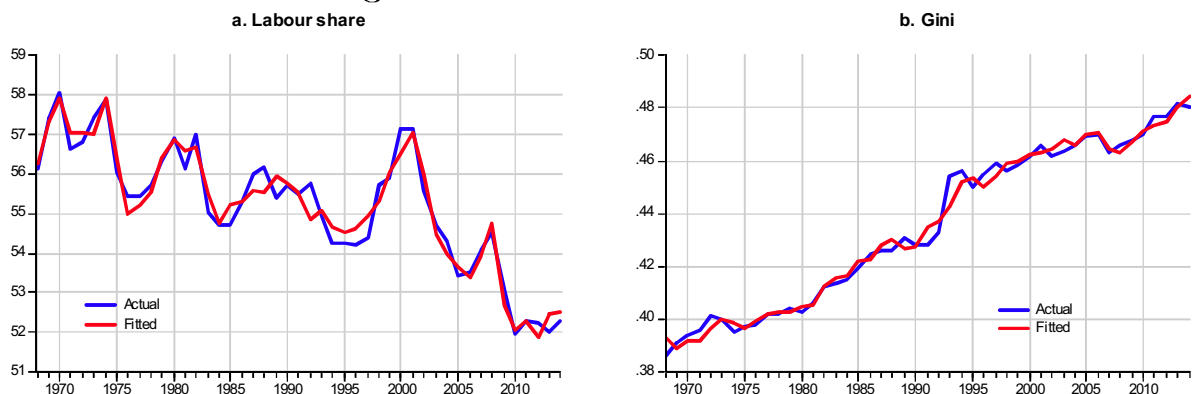
Looking at the Gini regressions in Table 3, we observe a low level of persistence of around 0.35, which is robust across estimation methods since the same picture is obtained from the OLS, GMM and 3SLS estimations (E4, E5, and E6). Moreover, the estimated

coefficients remain essentially unchanged in the absence of the labour share as explanatory variable, with some decrease in persistence as only noticeable change. There is a further reduction when financial assets are not considered, whereas in the absence of financial payments it is the coefficient on fiscal pressure that reduces its size and statistical significance. Overall, the econometric analysis reflects the existence of a quite stable influence of the functional income distribution, financialisation, and fiscal pressure on income inequality.

The labour share evolution has a negative impact on the personal income distribution across all time horizons. Both financial assets and payments exert an upward pressure on inequality, contemporaneously and in the long run, while the negative effect of the change in financial payments ( $\Delta fin^p$ ) has a lag structure. Finally, the higher the aggregate fiscal pressure, the higher inequality, which is to be interpreted as the low redistributive capacity, on average, of the US tax system.

Figure 6 shows that the fitted values of the selected two-equation model follow closely the time paths of the dependent variables.

**Figure 6. Actual and fitted values.**



## 6 Evaluating the Distributional Consequences

Having established the statistical significance and adequacy of our model, we unveil its economic significance by evaluating the dynamic contributions of the shocks (or impulses) to the time paths of the labour share and inequality.<sup>19</sup> "Shocks" are given shape in the chain reaction approach by the changes in the exogenous variables, rather than the residuals of the estimated model.<sup>20</sup> In this way, the impulse response functions (IRFs)

<sup>19</sup>The important point made by McCloskey and Ziliak (1996) that economic (or substantive) significance and statistical significance are not the same thing is thus acknowledged.

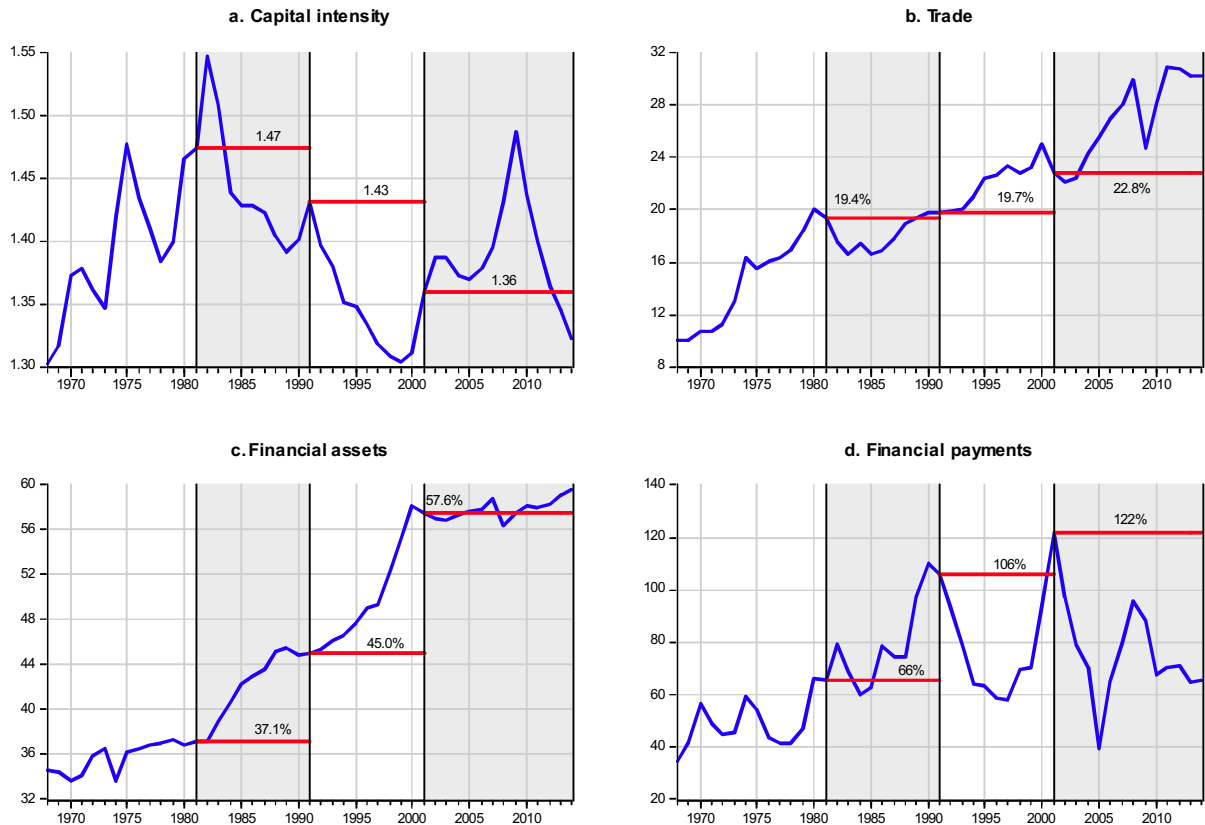
<sup>20</sup>The point raised by Blanchard (2009, p. 220) on the issue is notable: "The use of "shocks" is fraught with philosophical, but also with practical, difficulties: Technological shocks, animal spirits, changes in perceived uncertainty, etc. all have deeper causes, which themselves have even deeper causes, and so on."

of the system identify the impact of the actual changes in an exogenous factor on the evolution of the endogenous variables over a specific sample interval.<sup>21</sup>

In what follows we measure the distributional consequences of capital intensity, trade, and financial assets and payments with counterfactual simulations. In particular, the estimated system (equations E7 in Table 2 and E5 in Table 3) is simulated by fixing each of these three main driving forces (one at a time) at their values at the start of the selected time intervals.

Figure 7 plots the actual series (blue lines) together with the trajectories of their values fixed at the start of each selected period (red lines). In Figures 7a and 7d, the time intervals capture the falls and rises in capital intensity, and the turning points in financial payments. In the case of the upward trends in trade (Figure 7b) and financial assets (Figure 7c), more than turning points we have ‘sudden stops’ in the globalisation and financialisation US processes.

**Figure 7. Actual values and simulation intervals.**



The first interval comprises the period between the recessions in 1980-1982 (arising from the second oil price shock and the subsequent contraction in the monetary policy) and 1990-1991 (which, again, saw a contractionary monetary policy and the end of the

<sup>21</sup>The Appendix in Karanassou and Sala (2012) provides an analytic illustration of the dynamic accounting of contributions in the bivariate case under the static and AR(1) scenarios of the IRFs.

preceding real state boom). The second interval takes the US economy to next recession in the early noughties with the burst of the dot-com bubble, the 9/11 attacks, and the resulting international uncertainty. The third interval takes the simulation to the end of the sample period. Consequently, we fix the values of our exogenous factors at 1981, 1991, and 2001 (since the NBER’s Business Cycle Dating Committee places the peak of the cycle in March 2001), and evaluate their contributions in 1982-1991, 1992-2001, and 2002-2014. Simulating the responses of the endogenous variables answers the question: How have the ups and downs of the selected exogenous variables contributed to the evolution of the labour share and the Gini index?

Regarding our simulation results, note that (i) the first column in Figures 8 to 10 portrays the functional income distribution consequences of capital intensity, trade and financialisation, respectively, and (ii) the second column pictures their consequences for the personal income distribution. In Figures 8 to 10 blue lines plot actual values, while red lines plot simulated ones.

## 6.1 Capital Intensity Contributions

Consider the capital intensity contributions to the wage gap during the eighties (Figure 8a). This simulation answers the question: “Had capital intensity remained at its 1981 value, instead of falling (Figure 7a), what would have been the labour share level in 1991?”

The distance between the value reached by the actual and simulated lines measures the dynamic contributions of capital intensity to the labour share time path. From 1981 to 1991, the decrease in the capital/GDP ratio prevented the labour share from falling by 1.2 percentage points (pp) in addition to the actual 0.7 pp fall (from 56.2% to 55.5%). In a similar fashion, the decrease in capital intensity in the nineties prevented the labour share from falling by an additional 2.3 pp, since it would have fallen to 54.9%, instead of increasing to 57.2%. Therefore, in both periods there is a substantial influence of the changes in the capital-output ratio on the labour share, as in those periods they cause much wider effects than its actual little shifts.

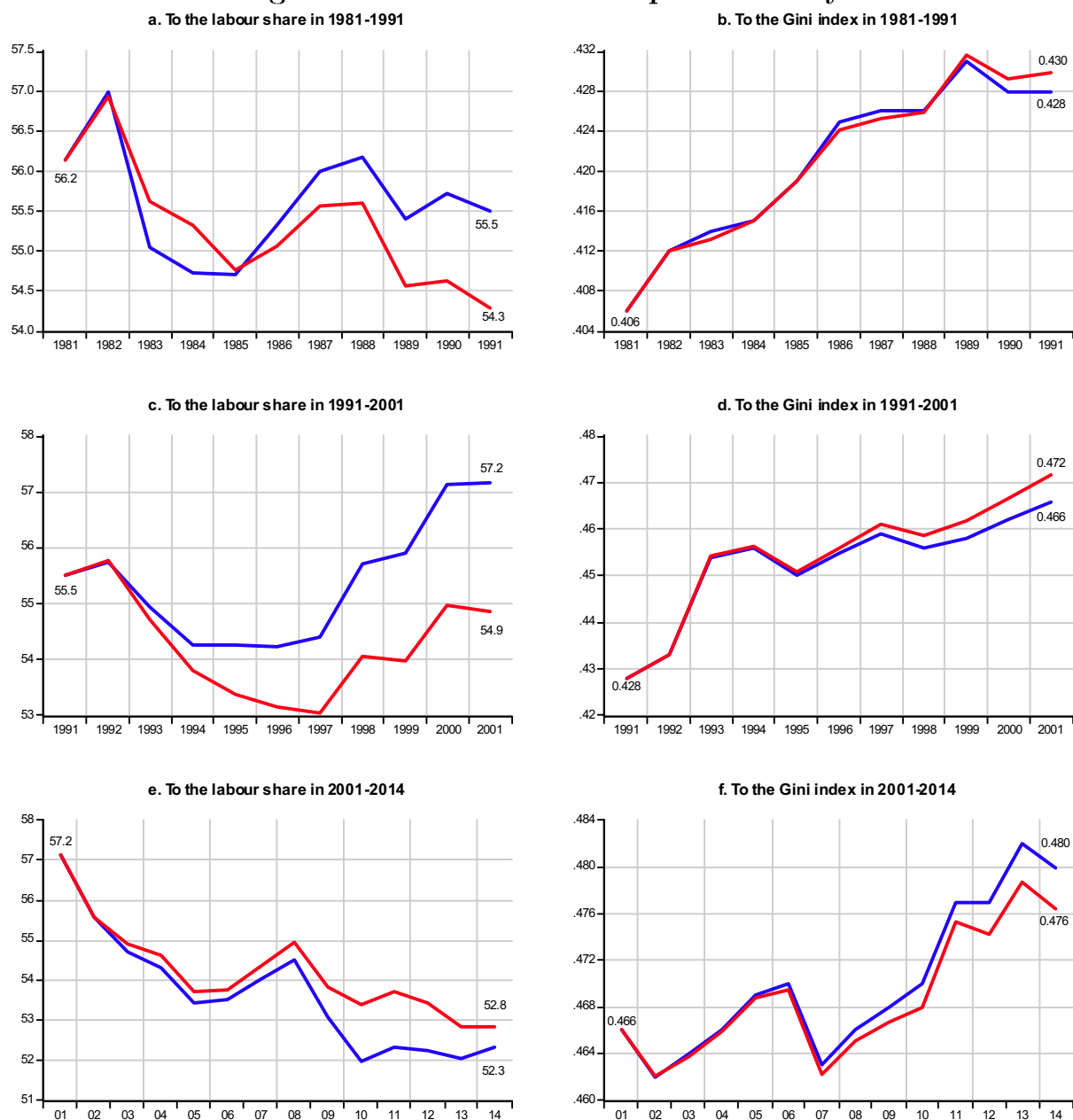
The picture changes dramatically in the noughties (Figure 8c), as there is a profound drop in the labour share (of 4.9 pp), and the increase in capital intensity only explains 10.2% of this drop ( $\frac{52.3-52.8}{52.3-57.2} = \frac{-0.5}{-4.9} = 10.2$ ).

Recall that capital intensity affects inequality indirectly via its effect on the labour share. Figure 8b shows that its fall during the eighties prevented the Gini index to increase by a further 9.1% ( $\frac{0.428-0.430}{0.428-0.406} = \frac{-0.002}{0.022} = -9.1$ ), while in the nineties this amounted to 15.8% (0.006 Gini points as shown by Figure 8d). On the other hand, had capital accumulation remained at its value in 2001 for the rest of the decade, rather than increasing during most of the period, the Gini would have been 0.004 points lower (Figure 8f). This implies that the rise in inequality would have been 28.6% smaller in those years



$$\left(\frac{0.480-0.476}{0.480-0.466} = \frac{0.004}{0.014} = 28.6\right).$$

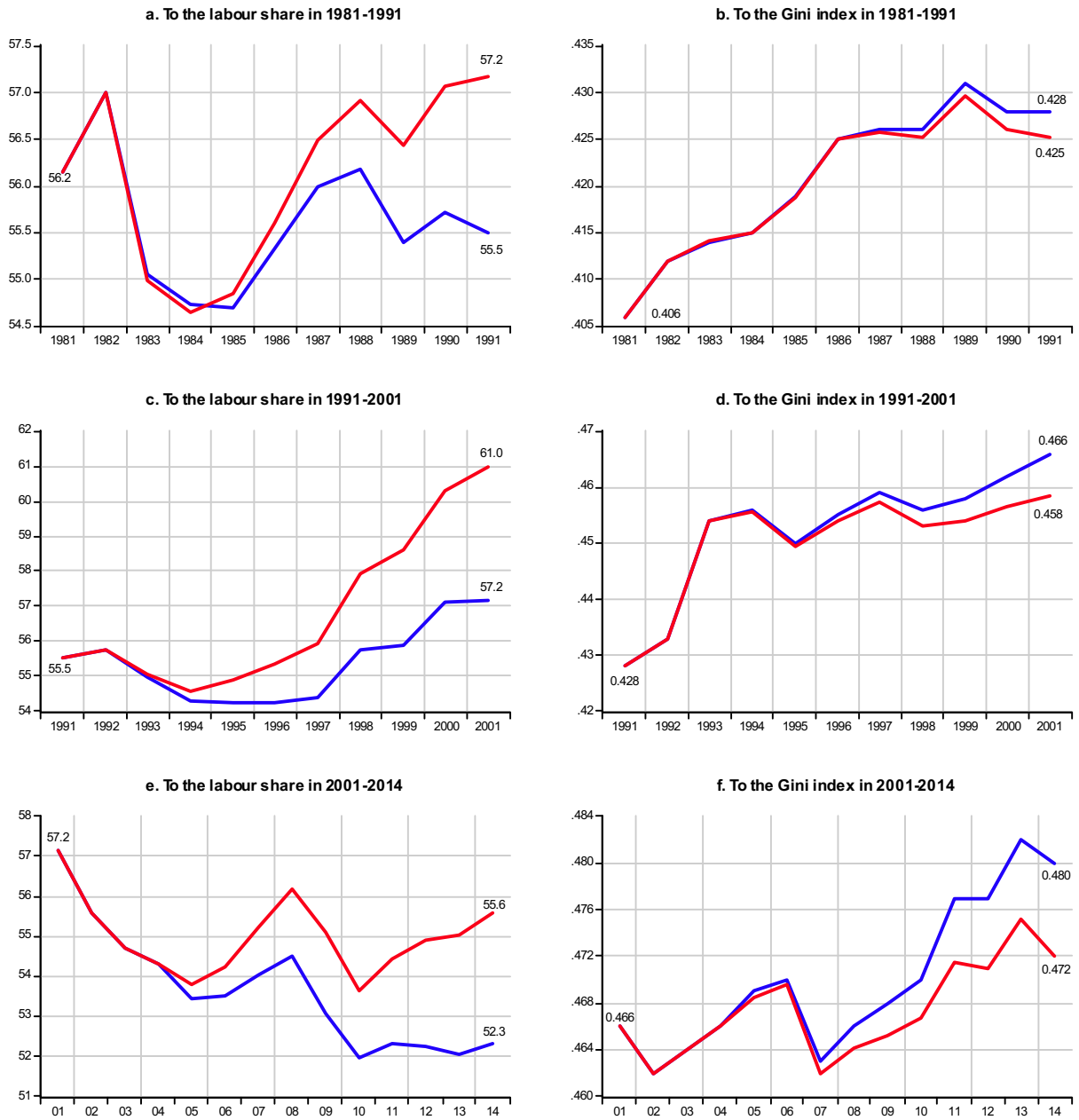
**Figure 8. Contributions of capital intensity.**



## 6.2 Globalisation Contributions

As shown in equation E7 of Table 2, globalisation (proxied by trade,  $tr_t$ ) affects the labour share negatively. This is captured by our simulations in Figures 9a, 9c and 9e, where the red-dotted lines above actual levels indicate that a higher degree of openness resulted in lower labour shares.

Figure 9. Contributions of trade.



The figures show that the acceleration in trade contributed to reduce the labour share by (i) 1.7 pp in the eighties; (ii) 3.8 pp in the nineties; and (iii) two thirds of its 4.9 pp decrease in the noughties ( $\frac{52.3-55.6}{52.3-57.2} = \frac{-3.3}{-4.9} = 67.3$ ). According to this finding, the labour share would have remained close to its nineties values (and even its value in 1981) had trade not increased in the noughties. Hence, our analysis not only confirms the downward influence of globalisation on the labour share, but it also gives a quantitative approximation to this influence.

When looking at the globalisation consequences on the personal income distribution, we observe that the higher degree of openness contributes to increase personal inequality with growing intensity (Figures 9b, 9d, and 9f). Trade contributed to rise the Gini index

by 13.6% in the eighties (0.003 Gini points out of 0.022); 21.1% in the nineties (0.008 out of 0.038); and 57.1% in the noughties (0.008 out of 0.014).

The joint effects of globalisation on the functional-personal income distribution nexus is certainly at the root of the discontents generated by this process (Stiglitz, 2002).

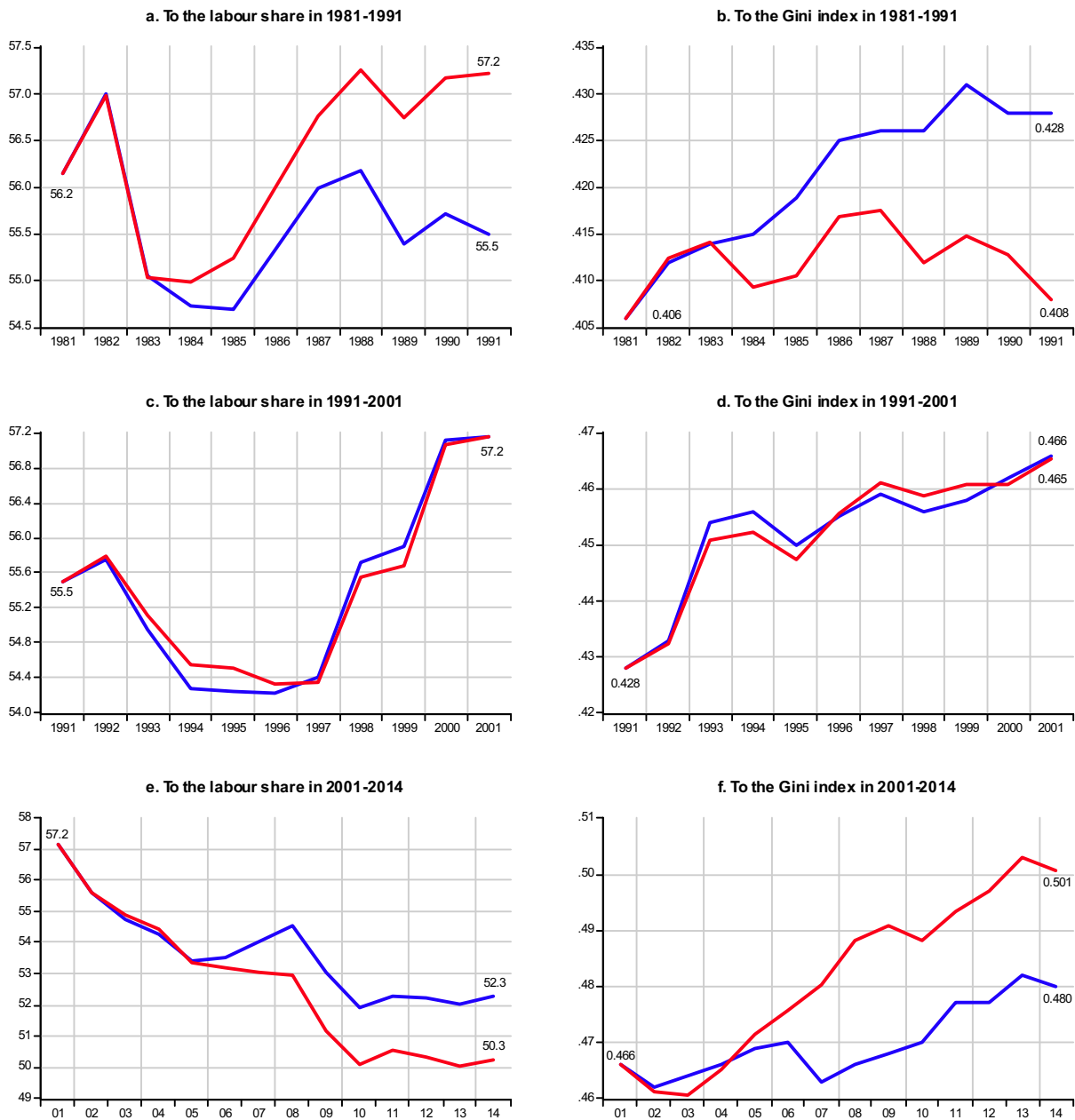
### 6.3 Financialisation Contributions

Unlike capital accumulation and globalisation, financialisation exerts an indirect influence on the functional distribution and has, instead, a direct impact on personal income. The estimated positive relation between the financial factors –assets ( $f_t^a$ ) and payments ( $f_t^p$ )– and inequality is given in Table 3 and portrayed in Figures 10b, 10d and 10f. There is, in contrast, a negative relationship with respect to the labour share (Figures 10a, 10c and 10e).

Figure 10a reveals a negative contribution of 1.7 pp to the labour share in the eighties. Had financial assets and payments remained at their 1981 values, rather than increased massively (as shown in Figures 7c and 7d), the labour share would have reached 57.2% (and hence increased by 1pp in the eighties) rather than the actual 55.5% (which implied a fall of 0.7 pp). During the nineties, financial assets kept their upward trend, but financial payments decreased and did not regain their previous level until the end of the decade. These two counterbalancing evolutions caused the financialisation process to be rather innocuous with respect to its distributional consequences (Figure 10c and 10d). Financial assets stabilised in the noughties (Figure 7c), while payments fell, first on account of the 9/11 and the early noughties recession, then due to the GFC. This fall prevented the labour share to fall further by 2 pp, in which case it would have reached 50.3% in 2014, instead of the actual 52.3% (Figure 8e).

Figure 10b shows that financial payments account for 90.9% of the increase in the Gini index over the 1981-1991 period ( $\frac{0.408-0.406}{0.428-0.406} = \frac{0.020}{0.022} = 90.9$ ); recall that the rest of this period’s inequality increase (around 13.6%) is explained by globalisation, with capital intensity exerting a counterbalancing effect of similar magnitude. In turn, the financialisation factors prevented a further increase in the Gini index of 0.21 Gini points during the noughties, in which case the Gini coefficient would have reached 0.501 in 2014, instead of the actual 0.480 (Figure 10f). Note that the contribution of the financialisation process is very similar in magnitude in the eighties and noughties, although with the opposite sign.

**Figure 10. Contributions of financial payments to the Gini index.**



## 7 Conclusions

This paper explored the role of the wage-productivity gap and the Gini index in the income distribution nexus. The determining factors of the labour share and inequality were jointly identified with a two-equation model, where (i) the personal income distribution mainly depends on the labour share and financialisation, and (ii) the functional income distribution is mainly driven by inequality, capital accumulation and globalisation.

Estimating the ARDL selected specifications of the system with 3SLS over the 1968-2014 period in the US, we documented (i) the positive impact of financial assets and payments and the negative impact of the labour share on inequality; and (ii) the negative

effect of inequality, capital intensity, and trade on the labour share. Measuring the chain reactions of the (endogenous) labour share and Gini variables to the shocks in the system, we evaluated the distributional consequences of capital accumulation, globalisation and financialisation.

Our counterfactual simulations indicated that the most significant contributors to the labour share trajectory in the eighties were globalisation and financialisation (both pushing it down by 1.7 pp), while the fall in capital accumulation was a partial counterbalance (1.2 pp up). Accelerated globalisation in the nineties was the sole leading factor pushing the labour share down by 3.8 pp, with no significant influence from financialisation, and a counterbalancing effect from falling capital accumulation (which pushed the labour share up by 2.3 pp). Then, in the noughties, globalisation was again the main driver (pushing the labour share down by 3.3 pp), while financialisation contributed to an increase of 2.0 pp on account, mainly, of the fall in financial payments brought by the initial recession and later by the GFC. The oscillations in capital intensity added 0.5 pp to the downward effect of trade.

With respect to personal inequality, we find capital accumulation and globalisation playing a more influential role across periods (accounting, respectively, for 9.1% and 13.6% of the changes in the Gini index in the eighties, 15.8% and 21.1% in the nineties, and 28.6% and 57.1% in the noughties). The difference between the two is that, in the first case, the sign of the impact depends on whether investment accelerates or decelerates, while globalisation exerts an unanimous upward influence. Financialisation is the phenomenon with the largest absolute influence in personal inequality, but its influence is twofold. On one side, there is a structural increase in financial assets (which move in parallel with the top 1% income share) while, on the other side, the volatility in financial payments becomes a relieve for income inequality in bad times.

In this way, trade appears as the most stable and unidirectional driver of the downward trend in the labour share, while financialisation is the most important phenomenon (relative to the growing relevance of capital accumulation and globalisation) driving personal inequality. Existing literature has examined the negative relationship between financialisation and capital accumulation, which is not covered in our analysis of the functional-personal distribution nexus. Given our results, the transmission channel of financialisation to the functional income distribution needs further understanding, since capital intensity and financialisation seem to act at times as communicating vessels. During the eighties, for example, capital intensity decreased in full coincidence with the financialisation process taking off, resulting in labour share counterbalancing effects. This is an important avenue for future research, which is connected to Stockhammer's (2017) claim that a more detailed analysis of the mechanisms by which financialisation affects income distribution is needed. This study seeks to be a stepping stone towards this aim.

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