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An Empirical Analysis of the Impact of Financialisation on the Rate of Profit for the US (1955–2019)

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ABSTRACT

The purpose of this article is to examine the relationship between financialisation and functional income distribution. To this end, we empirically analyse the relationship between financialisation, the real wage level and the rate of profit in the US (1955–2019) using structural vector autoregressive modelling. According to our results, while an increase in financialisation leads to changes in the rate of profit with ambiguous signs and unclear statistical significance, financialisation has a clear, negative and persistent effect on the real wage level. We conclude with a reconsideration of the role of financialisation in shaping functional income distribution, as it appears to contribute directly to restraining real wage levels rather than directly impacting profitability.

JEL Classification: G20 Financial Institutions and Services: General, E25 Aggregate Factor Income Distribution, E44 Financial Markets and the Macroeconomy

1 | Introduction

The patterns followed by the rate of profit and the rise of financialisation in the US economy have been two points of intense study and debate in recent years. On the one hand, the rate of profit has followed an uneven trajectory, from the highs of the late 1950s and 1960s to the sharp declines of the Volcker era and the Great Recession, and has slowly resumed an upward trend in the last two decades (Basu and Vasudevan 2013; Lapavitsas and Mendieta-Muñoz 2016). On the other hand, financialisation has followed a radically different pattern, intensifying steadily since the late 1970s and experiencing later waves of increasing magnitude until the Great Recession.

However, to the best of our knowledge, no previous study has analysed whether financialisation—interpreted here as a compre-

hensive phenomenon to be captured by a single measure—has affected the pattern of the general rate of profit and, strictly related, the level of the real wage (RW), over a long period of time. To fill this gap in the literature, we pose the following research question: What has been the impact of financialisation on the US general rate of profit?[1] Can we detect a systematic impact of financialisation on the general rate of profit and the RW level, or should we pay more attention to other factors?

Therefore, the main contribution of this article is to empirically assess the impact of financialisation on the rate of profit and, in turn, on the RW level, in the US economy between 1955 and 2019. To this end, we first construct a quarterly dataset covering most of the post-World War II period. Second, we use six different measures of financialisation, grouped into three categories (private debt accumulation, origin and use of profits,

and size of the financial sector) to derive a single composite indicator of financialisation employing a principal component analysis (PCA, hereafter). Third, we employ structural vector autoregressive models (SVAR, hereafter) to build an aggregate macroeconometric model capable of showing if and how financialisation affects functional income distribution. We estimate our model using two different measures of profitability of the US corporate business sector, a measure of the RW and the composite financialisation indicator, as well as additional variables designed to capture the macroeconomic stance (real GDP, GDP deflator, short-term nominal rate of interest, and terms of trade).

Our working hypothesis is that financialisation is not expected to play a primary role in shaping the functional distribution of income in terms of the general rate of profit (Di Bucchianico 2021). Rather, we expect that, for a given inverse relationship between the general rate of profit and the level of the RW rate, financialisation contributes to creating an overall environment in which there is downward pressure on the RW rate. This operates, among other things, through pressure exerted on workers (Kohler, Guschanski, and Stockhammer 2019; Di Bucchianico 2022) and can easily result in a fall in the wage share (Stockhammer 2017).

Our empirical analysis shows the following: first, shocks to the composite measure of financialisation lead to changes in the rate of profit with ambiguous signs and unclear statistical significance, which vary across the estimated models. Second, financialisation has a clear impact on the RW level, causing it to fall in the long run. This second aspect is the main channel through which financialisation can increase profitability. We therefore conclude that the bargaining position of workers is likely to be affected by financialisation. When it comes to functional income distribution in terms of the general rate of profit, financialisation operates primarily in conjunction with the factors that have adversely affected the formation of RW (i.e., declining unionisation, reduced collective bargaining coverage, looser employment protection legislation) rather than as a direct boost to the rate of return on investment. In this sense, the vicious circle between financialisation and various facets of the labour market and industrial relations (such as the role of household debt accumulation and shareholder value orientation in favouring declining union density and the rise of atypical work) can be the subject of further research (Gouzoulis 2023a, 2023b; Gouzoulis, Iliopoulos, and Galanis 2023; Gouzoulis, Galanis, and Iliopoulos 2024).[2]

The remainder of this article is organised as follows. Section 2 reviews the literature on financialisation, its effects on the economy and the measures usually employed to study the phenomenon. Section 3 presents the empirical strategy by describing the data, sources and methods and by presenting the descriptive analysis. Section 4 discusses and comments on the findings of the empirical exercise. Section 5 concludes by summarising our findings.

2 | Literature Review

The phenomenon of financialisation has been deeply discussed in the literature from many perspectives and viewpoints. The most used and very broad definition is the one provided by Epstein:

> Financialisation means the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies (Epstein 2005, 3).

In the late 1970s and early 1980s, largely motivated by a slowdown in growth in Western high-income countries, many different regimes aspired to replace the post-World War II Fordist mode of production (Boyer 2000; Van der Zwan 2014). In this context, a shift in corporate governance towards the so-called shareholder value orientation occurred. The pressure for higher profits, together with the deregulation of the labour market, in particular in the USA, empowered shareholders at the expense of workers (Lazonick and O'Sullivan 2000; Lazonick 2017).[3]

Despite the redistribution of income in favour of higher income groups, consumption in the USA kept rising. Accordingly, a puzzling development is the drop in the saving rate. One of the factors that stimulated consumption, despite the 'depressing demand effects of financialisation', was debt-financed consumption (Hein 2015). On the one hand, the financial boom itself and the rise of asset prices gave firms and households greater collateral to finance consumption (Palley 2013). On the other hand, instruments provided by financial innovations contributed to higher levels of indebtedness (Cynamon and Fazzari 2008). In addition, pressure from trade unions (whose power has been reduced) has gradually been replaced by demands from financial markets (Hein, Dodig, and Budyldina 2014). According to some scholars, the increase in financial profits relative to non-financial profits has led capital owner to allocate their resources to the financial sector (Epstein 2005; Krippner 2005).[4]

The literature analysing the impact of financialisation on functional income distribution has become rather thick. At the theoretical level, Hein (2015) pinpoints three main channels through which financialisation can compress the wage share.[5] These are as follows: first, a rising share of the financial business sector in terms of value added by corporate business. Provided that the wage share in the financial sector is lower than that in the non-financial sector, this will cause the aggregate wage share to fall. Second, an increase in interest and dividend payments by the corporate sector as part of the increased income claims of rentiers, which are shown to be inversely related to the wage share pattern in a mark-up pricing framework for determining income distribution. Third, financialisation as a complex phenomenon made up of several trends (new attitudes to corporate governance, labour market deregulation etc.) has a consistent and significant negative impact on trade unions, weakening their bargaining power and thus undermining the ability of workers to resist increased pressures. Lapavitsas and Mendieta-Muñoz (2016) focus specifically on the rate of profit in the US, showing that its rather flat dynamics in recent decades can coexist with a dramatic increase in financial profits. In their view, financial expropriation (i.e., the direct transfer of income and wealth to financial institutions as profit) and the era of ultra-low interest rates are fundamental in shaping these simultaneous trends. They also examine this issue using a model in which total profits are

split into financial and non-financial profits. They analyse the determinants of the ratio of financial to non-financial profits (Lapavitsas and Mendieta-Muñoz 2019a). They find that the net interest margin and banks' non-interest income have a positive effect on the financial to non-financial profits ratio, while the general rate of profit, banks' non-interest expenses and the ratio of the capital stock to interest-bearing assets have a negative effect. These results are also confirmed by means of an econometric analysis. Di Bucchianico (2021, 2022) examines at the theoretical level what impact financialisation can be supposed to have had on the course of the general rate of profit.[6] In this framework, the rise of the financial sector's share of profits does not influence aggregate profitability because it does not affect the total mass of profits, which is determined once the RW is taken as given. Rising household indebtedness has a twofold effect: on one hand, it fosters aggregate demand and hence the realised rate of profit, but this effect is only due to higher capacity utilisation rates. On the other hand, it can enhance surplus value extraction, and by this route, it also positively affects the general rate of profit. Lastly, and most importantly, socio-political factors that reduce workers' bargaining power are in this view the main channel through which financialisation can positively impact profitability.

On the empirical side, we find more contributions devoted to the influence of financialisation on income shares than on the general rate of profit and RW. At the microeconomic level, Alvarez (2015), using firm-level data on nearly 7000 French non-financial firms for the period 2004 to 2013, investigates the relationship between financialisation and functional income distribution in the non-financial sector. The study reveals that the financialisation of non-financial corporations in France proved to be more influential than trade openness or labour market institutions. Specifically, increased reliance on financial earnings contributed to a decline in the wage share by reducing labour's bargaining power. Similarly, Lin and Tomaskovic-Devey (2013) use US industry-level data to show that in the long run, financialisation compresses the labour share while increasing the compensation of top executives.

At the macroeconomic level, Stockhammer (2017) investigates how the decline in the wage share in advanced and developing economies is related to the patterns of financialisation, globalisation, public spending and structural change, and shows that financialisation is likely to have played a major role. On a similar basis, Dünhaupt (2017) assesses the impact of financialisation, globalisation, workers' bargaining power, and government spending in a panel of countries and finds a remarkable and consistent negative role for financialisation. Pariboni and Tridico (2019) also reinforce this type of evidence by showing the negative impact of financialisation, dividend distribution, and globalisation on the wage share for a panel of OECD countries. Kohler, Guschanski, and Stockhammer (2019) study, on the theoretical and empirical sides, several elements that adversely impact the wage share: among them, the degree of financial openness, financial overhead costs and competition on capital markets, and the accumulation of household debt. Focusing on the European Union and using a theoretical framework analogous to that of Hein (2015), Barradas (2019) investigates the relationship between financialisation and the labour share. He finds that financialisation, in the sense of shareholder value orientation, plays an important role in compressing the labour share.

A more specific focus on the rate of profit can be found in the work of Lapavitsas and Mendieta-Muñoz (2019b) who focus on the comparison of profits and profitability of the financial sector with the economy as a whole. They show how financial profits and financial profitability increased dramatically in the US economy until the early 2000s, but that this trend came to a halt during the Great Recession, and it has never returned to its previous path since. Recently, Mendieta-Muñoz and Ossa (2022) decomposed the rate of profit in various rates of return (on equity, assets and the shareholder dividend yield) and investigated the relationship between financial and non-financial profitability. The authors show a progressive change in the relationship between financial and non-financial profitability. While in the 1970s, 1980s and mid-1990s, the profitability of the non-financial sector led that of the financial sector, thereafter the situation was reversed. Gahn (2022) investigates the impact of financial elements on profitability, in particular the impact of monetary policy on the rate of profit in the Euro area. Although his results are not contextualised in a financialisation framework, the author shows a positive long-term relationship between the real interest rate and the net rate of profit.

Despite the fact that the literature has argued extensively that the phenomenon of financialisation has important links with shifts in corporate governance ideology, growth regimes and, most relevant for our investigation, the functional distribution of income, to the best of our knowledge, no previous study has analysed, over a long period of time, whether financialisation has affected the general rate of profit and, the RW level. To address this gap in the literature, our research poses the following questions: What has been the impact of financialisation on the general rate of profit in the USA? Can we identify a systematic effect of financialisation on the general rate of profit and the RW level, or should other factors be taken into account?

Based on the literature reviewed in this section, our hypothesis is that financialisation does not primarily affect the general rate of profit, but rather creates an environment that puts downward pressure on RWs. This pressure on workers can lead to a lower wage share (Di Bucchianico 2021, 2022; Kohler, Guschanski, and Stockhammer 2019; Stockhammer 2017).

3 | Data and Methods

3.1 | Data

To detect the effect of financialisation on the general rate of profit and the RW level, we rely on quarterly data for the US economy during the period 1955q1–2019q4. We preferred to exclude the period after the last quarter of 2019 from our sample, given the long list of exogenous shocks that hit the global economy thereafter, obviously with the outbreak of the Covid-19 pandemic, the start of the Ukraine-Russian War and the rise in inflation in mind. The investigation encompasses the following list of variables (see Table 1 for a complete list of acronyms and

TABLE 1 | List of variables used in the analysis, their definitions and sources of data.

Code	Variable	Description	Source
FIN1	Household debt	One-to-four-family residential mortgages and consumer credit as a percentage of disposable personal income; liability, level	Fed
FIN2	Shareholder value orientation	Net dividends over profits after tax with iva and ccadj (Corporate sector)	BEA
FIN3	Credit to non-financial sector	Total credit to private non-financial sector, adjusted for breaks, in percentage of GDP	BIS
FIN4	Sectorial share of profits	Corporate profits (with inventory valuation and capital consumption adjustments) of the financial corporate sector over total corporate profits	BEA
FIN5	Share of value added of financial sector	Gross value added of financial corporate business over gross value added of corporate business sector	BEA
FIN6	Share of financial sector employees	Employees in finance over total employees in total private sector	Fred
FIN	Financialisation index	Composite indicator of financialisation obtained through the principal component analysis	Authors' calculation
PR1	Profit rate (definition 1)	Net operating surplus over current-cost net stock of private non-residential fixed assets (corporate business)	BEA
PR2	Profit rate (definition 2)	Profits after tax over current-cost net stock of private non-residential fixed assets (corporate business)	BEA
RW	Real wage	Average hourly earnings of production and nonsupervisory employees, manufacturing (dollars per hour) over consumer price index for all urban consumers: all items in US city average, index 2012Q3 = 100	BLS
IR	Interest rate	Federal Funds rate	Fed
p	Price level	Gross domestic product: Implicit price deflator, index 2012 = 100	BEA
Y	Production level	Gross domestic product deflated by GDP deflator	BEA
E	Terms of trade	Terms of trade index	BEA

Abbreviations: BEA, Bureau of Economic Analysis; BIS, Bank for International Settlements; BLS, Bureau of Labor Statistics; Fed, Federal Reserve.
Source: Authors' elaboration.

descriptions): six measures of financialisation (*FIN*1 to *FIN*6) that are used to build the composite indicator *FIN*, the gross domestic product deflator (*P*), the real gross domestic product (*Y*), two measures of the rate of profit (*PR*1 and *PR*2), the RW level, the short-term interest rate (*I*) and the terms of trade (*E*). Real variables are computed by deflating nominal variables by the GDP deflator. All data are retrieved from the NIPA tables provided by the Bureau of Economic Analysis (BEA), the Bank for International Settlements (BIS), the Federal Reserve (Fed) and the Bureau of Labor Statistics (BLS).

The selected measures of financialisation are drawn from the empirical literature on the topic and are proxies for three main aspects: first, the two measures of household debt and non-financial sector debt capture the rise in private debt accumulation; second, the two measures of shareholder value orientation and financial profits as a share of total profits capture the use and origin of profits; third, the two variables of financial sector gross value added as a share of total corporate business gross value added and financial sector employment as a share of total private sector employment capture the size of the financial sector.

Of course, these elements do not exhaust all possible variables to encompass, but they include some of the most important aspects that have been repeatedly highlighted as primary features of the financialisation process. It is also important to stress that the analysis focuses on the aggregate corporate sector, so the relationships examined should not be easily generalised to the whole economy: financialisation is also a feature of smaller and larger but unlisted firms.

Similar to Duménil and Lévy ([2016](#)), to calculate the first broader measure of the rate of profit, we use the following formula:

$$PR1_t = \frac{NOS_t}{NK_t}$$

The net operating surplus of the corporate business sector (NOS_t) is put to a ratio to the net stock of private fixed non-residential assets (NK_t). As only annual data are available for the stock of capital, we have used a Denton interpolation procedure to obtain quarterly frequency data (Ramey and Zubairy [2018](#)). The second measure is analogous in construction but narrower in definition, as we use in the numerator a measure of profits after tax of the
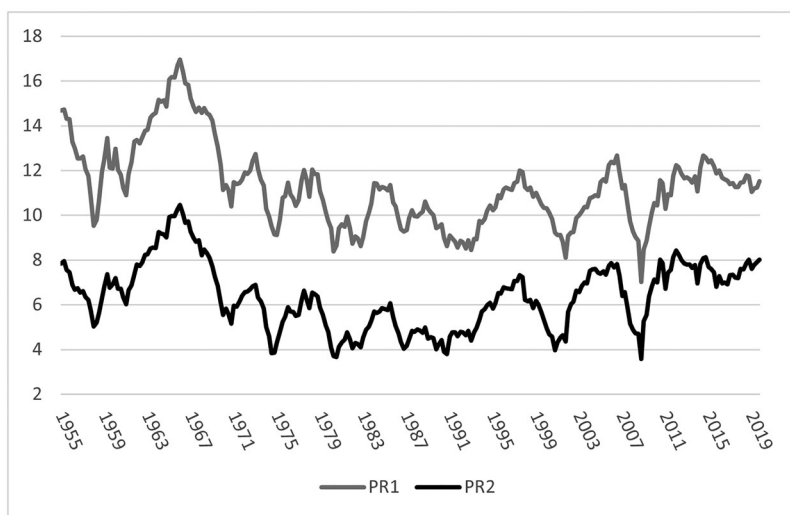
FIGURE 1 | Two measures of the rate of profit in the US (1955q1–2019q4). *Source:* authors' elaboration.

corporate business sector ($Prof_t$):[7]

$$PR2_t = \frac{Prof_t}{NK_t}$$

Before turning to the empirical analysis, let us briefly review, at the descriptive level, the trends over time for the main variables of our interest. We start with the dynamics of the measures of the rate of profit. As shown in Figure 1 for our quarterly version of the rate of profit, we observe a trend that is common in the literature. Namely, the rate of profit gradually declines from the highs reached during the Korean War to reach a plateau during the Volcker monetarist experiment. From there onwards, it slowly but steadily tends to regain higher values. Yet, first, such a trend experiences broad fluctuations (the major two being the dot-com bubble burst and the Great Recession), and second, the rate of profit never recovers the previous (on average) higher levels (Basu and Vasudevan 2013). Different definitions of the rate of profit affect the magnitude of the variable: the restricted definition (PR2) consistently yields lower values than the broader version (PR1), but the long-term pattern remains unaffected. It is also worth noting that the gap between the two rates of profit (PR1 and PR2) seems to be narrowing at the beginning of the new millennium, whereas it has remained broadly constant for decades.

The dynamics of RW (see Figure 2) are also in line with the available literature (Stirati 2018; Di Bucchianico 2022). A sustained pace of growth is clearly visible until the mid-1970s. During the Volcker shock, there is an initial sharp drop, which later turns into a substantial decline. The recovery begins in the early 1990s and, although there is an improvement, it never fully returns to its peak.

Another variable considered in this empirical investigation is private debt accumulation (Figure 3), which is one of the most commonly used measures in the literature to empirically assess the role of financialisation in the economy (Alexiou and Trachanas 2020; Gouzoulis 2021; Wood 2020; Kohler, Guschanski,

and Stockhammer 2019; Kim, Lima, and Setterfield 2019). The ratio between household debt and disposable income of US households displays a broadly flat trend between the 1960s and early 1980s. From that moment on, it steeply accelerates at first and then skyrockets at the beginning of the 2000s to reach a peak right before the unravelling of the Great Recession. Thereafter, the deleveraging process takes over, and we observe a steady decline in this indicator. The picture is less clear for the ratio of total credit to the non-financial sector, where the process of increase seems to have followed a fairly steady path. Nonetheless, in this case too, we can see a faster pace of accumulation during the early 1990s, culminating in the Great Recession. From then on, the deleveraging process characterises both the non-financial and the household sectors, as we have already seen.

Next, we turn to two indicators that provide information on the distribution of profits. These are (Figure 4), first, a proxy for the shareholder value orientation in the US corporate sector and, second, a measure of the size of financial sector profits as a share of total profits. The choice of these indicators is inspired by the literature on the origin and use of profits and the shift in the distribution of profits between the financial and non-financial sectors (Krippner 2005; Barba and de Vivo 2012; Lapavitsas and Mendieta-Muñoz 2016, 2019a). Rising shareholder value implied a progressive increase in the share of after-tax profits distributed in the form of net dividends, which often ranged between 60% and 80% in the last part of the sample. In addition, the financial sector's share of profits experienced a dramatic boom, peaking just before the Great Recession and then collapsing. In recent years, this indicator has remained at levels above the average for the US economy in previous decades.

Another strand of the empirical literature on financialisation has investigated the role of the size of the financial sector (Palley 2013; Krippner 2005; Assa 2012). This element is proxied both by the share of gross value added of the corporate financial business sector in the gross value added of the corporate business sector and by the share of employees in the financial sector in the total number of employees in the private sector (Figure 5). These
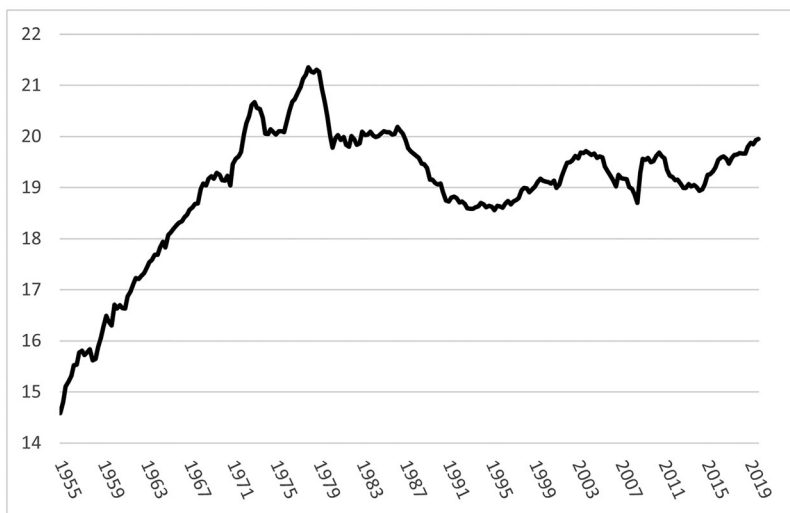
FIGURE 2 | The real wage level in the US (1955q1–2019q4). *Source:* authors' elaboration.
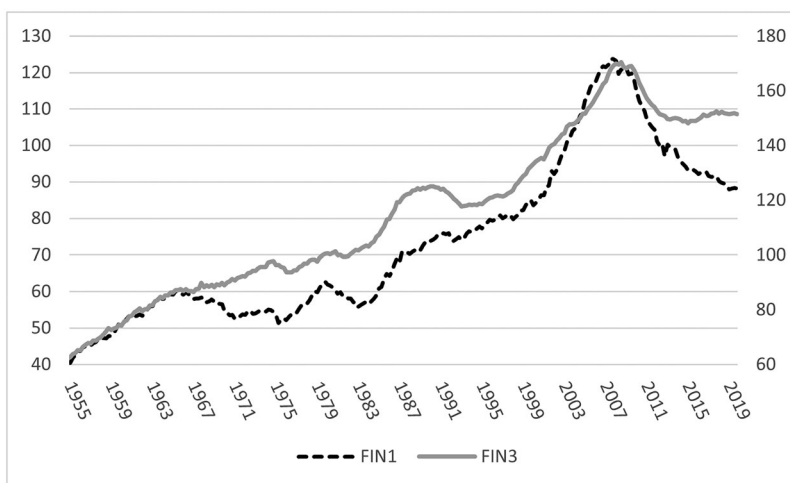

FIGURE 3 | Left axis: Household debt (mortgage and consumer credit) over disposable income in the US (1955q1–2019q4). Right axis: Ratio of total credit to private non-financial sector and GDP in the US (1955q1–2019q4). *Source:* authors' elaboration.
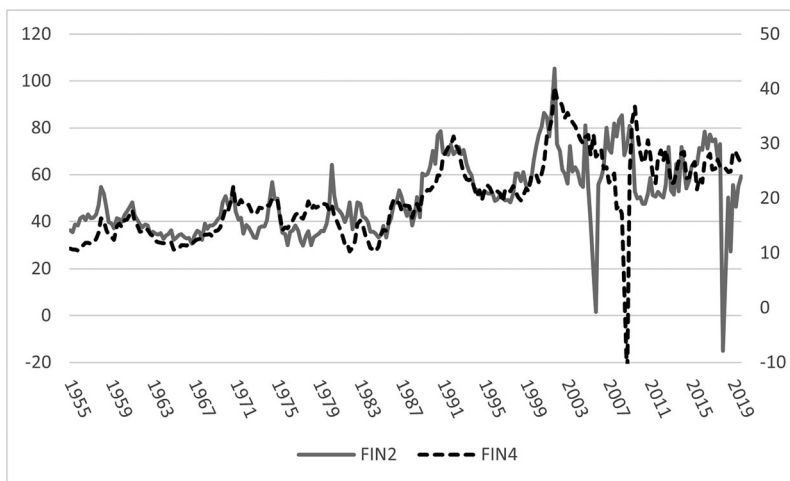

FIGURE 4 | Left axis: Net dividends over profits after tax in the US corporate sector (1955q1–2019q4). Right axis: Ratio of the financial corporate business sector profits to total corporate business sector profits in the US (1955q1–2019q4). *Source:* authors' elaboration.
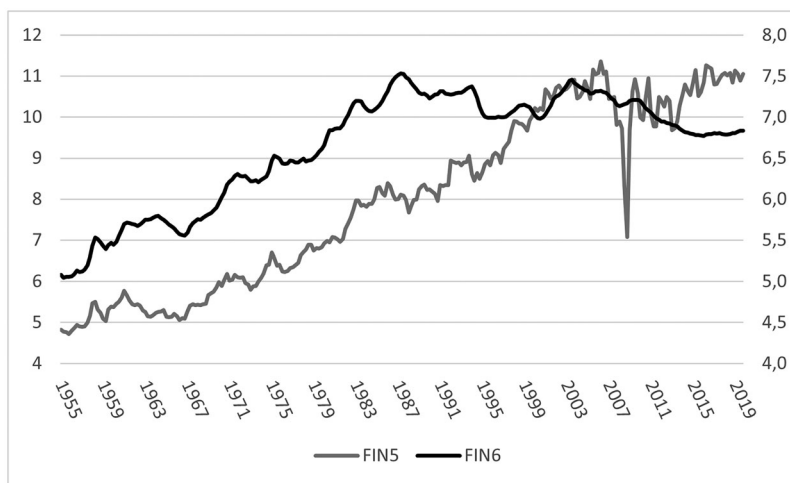
FIGURE 5 | Left axis: Share of gross value added of the domestic corporate financial business sector in total gross value added of the corporate business sector in the US (1955q1–2019q4). Right axis: Share of domestic financial sector employees in total private sector employees in the US (1955q1–2019q4). *Source:* authors' elaboration.
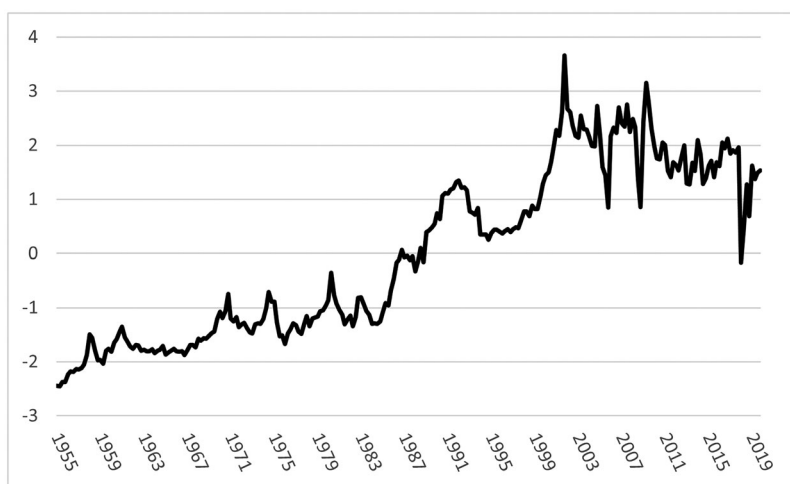

FIGURE 6 | Composite indicator of financialisation obtained through the principal component analysis. *Source:* authors' calculation.

indicators showed a simultaneous upward trend until the late 1980s, after which they followed different patterns. Since then, the share of gross value added has continued to rise, only to fall abruptly during the Great Recession. Notwithstanding this noticeable drop due to the Great Recession, the indicator stabilised at a level not far from its peak. Differently, the employment share experienced a steady decline, characterised by various oscillations, but it never regained values comparable to its peak, apart from a short-lived increase corresponding to the early years of the new millennium.

Overall, all the variables we will use as proxies for this phenomenon displayed a marked acceleration in the post-Volcker era, only to come to an abrupt halt later on, coinciding with the outbreak of the Great Recession (Lapavitsas and Mendieta-Muñoz 2018). At last, by means of the PCA (described in detail in Appendix A),[8] we obtain the financialisation index FIN which combines the various elements of the phenomenon described so far in a single variable whose dynamics are as follows (Figure 6).

3.2 | Methods

To assess the effect of financialisation on the profit rate and the RW, we employ SVAR modelling[9] techniques to four different model specifications using two different measures of profitability.[10]

Before estimating the SVAR models, a reduced-form VAR is estimated as represented in the following equation:

$$y_t = c + \sum A_i y_{t-p} u_t \qquad (1)$$

where y_t is the $k \times 1$ vector of considered variables, c is the constant term, A_i is the $k \times k$ matrix of reduced-form coefficients, and u_t is a $k \times 1$ vector of the error terms.

Subsequently, given that $A_i = B_0^{-1} B_i$ and $u_t = B_0^{-1} \omega_t$, the structural model can be retrieved from Equation (1) as represented in

the following equation:

$$B_0 y_t = a + \sum_{i=1}^{p} B_i y_{t-p} + w_t \qquad (2)$$

where y_t is the $k \times 1$ vector of considered variables, a is the constant term, B_i is the $k \times k$ matrix of autoregressive slope coefficients, and w_t is a $k \times 1$ vector of structural shocks. To isolate w_t from Equation (2), an identification strategy needs to be imposed in B_0 which represents the matrix of contemporaneous relationships between the k variables in y_t. In this model, we apply short-run zero restrictions to B_0. Once restrictions are imposed, and SVAR coefficients and structural shocks are estimated through the maximum likelihood method, impulse response functions (IRFs) are calculated. IRFs presented in the next section show the dynamic effect produced by a one standard deviation (SD, henceforth) shock on the remaining variables included in the model.[11] Standard errors are estimated using Hall's studentised bootstrapping (1000 repetitions), and IRFs are reported with 90% confidence interval bands over 40 quarters time-horizon.

The selected lag is equal to 4, and all models include a constant and a deterministic trend. Variables that express a percentage, such as the rate of interest, the rate of profit and the measures of financialisation, are used in levels, and the others are expressed in log-levels to preserve any cointegration relationship that may exist among considered variables (Kilian and Lütkepohl 2017). Structural models have been identified through a Cholesky factorisation following Christiano, Eichenbaum, and Evans (1999, 2005) based on the following recursive ordering:

$$[FIN_t; P_t; Y_t; PR_t; RW_t; IR_t; E_t]$$

As the aim of this empirical contribution is to detect the effect of financialisation shocks on the two alternative measures of profitability (PR1, PR2) and RWs, we consider a composite variable to measure financialisation (FIN) applying a PCA using six variables (FIN1, FIN2, FIN3, FIN4, FIN5, FIN6).[12] In Appendix A, we show how we performed the PCA to get the variable FIN.[13] In the matrix B_0, financialisation is the most exogenous variable. The idea behind such a perspective is that financialisation is a long-term historical process, spanning decades (Arrighi 1994; Fasianos, Guevara, and Pierros 2018; Vercelli 2013), rather than being influenced by more contingent changes in the macroeconomic variables under consideration. Monetary policy—measured by the short-term interest rate (Bernanke and Blinder 1992)—affects output, prices and distribution with a lag. In other words, the basic assumption guiding our identification strategy is that economic information can influence the Fed in setting the short-term rate of interest (see, among others, Bernanke and Blinder 1992; Bernanke and Gertler 1995; Christiano, Eichenbaum, and Evans 1999; Castelnuovo and Surico 2010).[14] In addition, price and output levels may simultaneously affect the RW and profitability for two reasons: (i) the RW is constructed as the ratio of nominal hourly earnings to the consumer price level; (ii) the rates of profit are effective real rates of profit that are affected by capacity utilisation, which in turn is affected by business cycle fluctuations embedded in output dynamics. Furthermore, in our identification, monetary policy (IR) can simultaneously affect the terms of trade (E). In

line with Eichenbaum and Evans (1995) and Grilli and Roubini (1996), we assume that the Fed does not react contemporaneously to changes in the exchange rate, while the latter can be affected by monetary policy within the quarterly observation.

In short, we estimate the following two models:

$$\text{Model 1}: [FIN; P; Y; PR1; RW; IR; E]$$

$$\text{Model 2}: [FIN; P; Y; PR2; RW; IR; E]$$

4 | Empirical Findings and Discussion

In this section, we report the empirical findings of Models 1 and 2.[15] In Figures 7 and 8, we report IRFs. As the aim of our study is to assess the effect of financialisation on the rate of profit and on the RW level, in the figures, we report the responses of the two alternative measures for the profit rate (PR1 and PR2) and of the RW rate to structural shocks in the financialisation variable (FIN). Moreover, to visualise other relevant dynamics in the model, we also show the responses of output (Y) and the profit rate to a change in the RW rate. In Appendix B, we report IRFs of the full models.

In short, the IRFs show that, on average, an increase in financialisation leads to changes in the rate of profit of ambiguous signs and unclear statistical significance, but that financialisation also has a clear, negative and persistent effect on the RW.

In particular, the IRFs displayed in Figure 7 show that a one SD shock in financialisation (FIN) leads to a positive and statistically significant effect on the profit rate (PR1) between the 15th and 20th quarters, reaching its maximum effect of around 0.07% in the 17th quarter.[16] On the contrary, a positive shock to financialisation leads to a negative, persistent and statistically significant effect on RWs, which peaks in the 7th quarter with a reduction of about 0.003% in RW. The model also shows a positive, persistent and statistically significant endogenous response of output (Y) to a one SD increase in the RW level, peaking around 0.004% in the 11th quarter. In addition, another endogenous response to a positive change in the RW level is that of the profit rate PR1: a one SD increase in RWs leads to a negative, persistent and statistically significant effect on the rate of profit, which peaks at around −0.07% after 22 quarters.[17]

When analysing the IRFs of Model 2 (FIN; P; Y; PR2; RW; IR; E), our results remain almost unchanged compared to Model 1 (see Figure 8). In particular, the IRFs show that a one SD shock in the financialisation variable (FIN) has a positive and statistically significant effect on the profit rate (PR2) between the 11th and 22nd quarters, reaching its maximum effect of about 0.08% in the 15th quarter. On the contrary, a positive shock to financialisation leads to a negative, persistent and statistically significant effect on RWs, which peaks in the 5th quarter with a reduction of around 0.003% in RWs. We observe a positive, persistent and statistically significant endogenous response of output (Y) to a one SD increase in the RW level, which reaches its peak effect at around 0.004% in the 11th quarter. Finally, a one SD increase in RWs leads to a negative, persistent and statistically
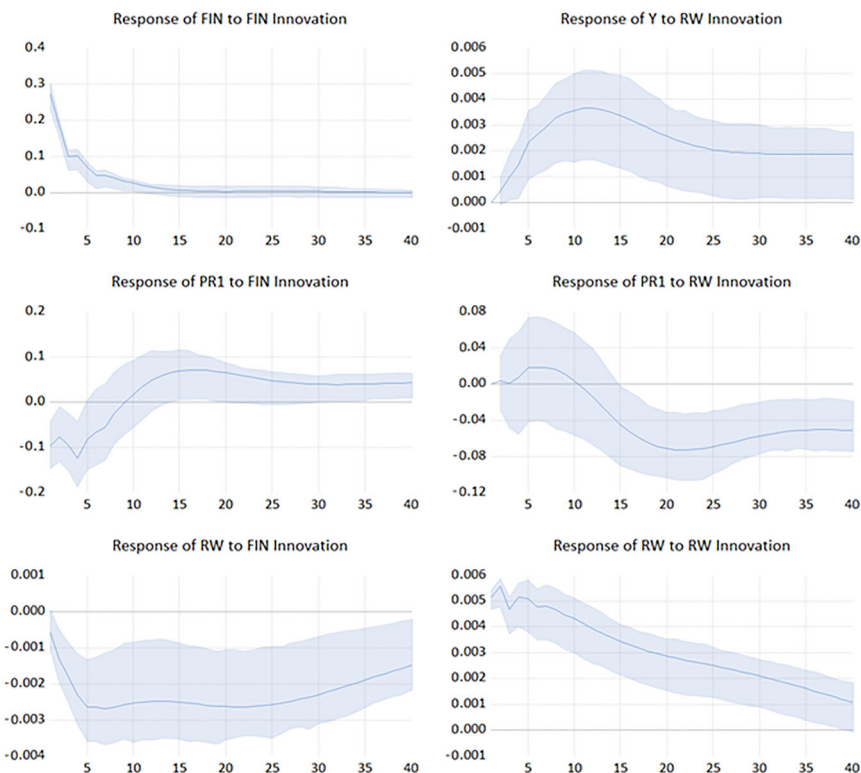
FIGURE 7 | Impulse Response Functions (IRFs), Model 1 (1955q1–2019q4)—figures display IRFs of *FIN*, *PR*1, *RW* and *Y* and to shock in *FIN* and *RW*. Quarters on-axis. Light grey lines denote 90% confidence bands calculated through bootstrapping (1000 runs). [Colour figure can be viewed at wileyonlinelibrary.com]
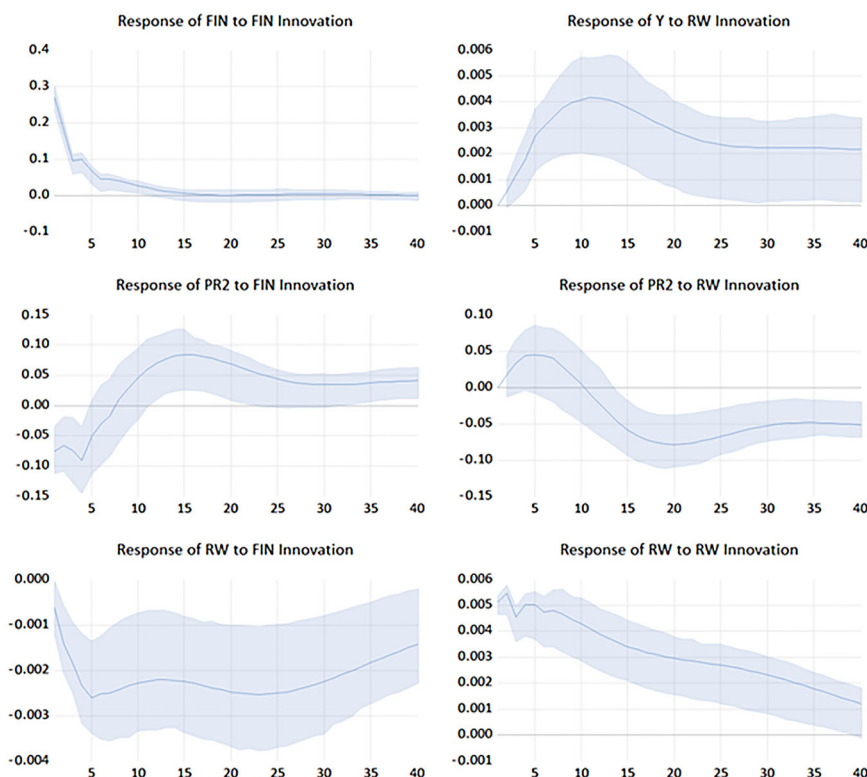

FIGURE 8 | Impulse Response Functions (IRFs), Model 2 (1955q1–2019q4)—figures display IRFs of *FIN*, *PR*2, *RW* and *Y* and to shock in *FIN* and *RW*. Quarters on-axis. Light grey lines denote 90% confidence bands calculated through bootstrapping (1000 runs). [Colour figure can be viewed at wileyonlinelibrary.com]

significant endogenous response of the rate of profit, which peaks at around −0.08% after 20 quarters.[18]

These results should also be qualified in the light of two additional outcomes that we would like to highlight. The first relates to the fact that the RW is not only the variable which, together with the rate of profit, defines the type of functional income distribution we are interested in, but it also constitutes a fundamental source of aggregate demand. In fact, if we decompose the rate of profit (r) as in Equation (3), it is the product of three components (Weisskopf 1979; Basu 2018):

$$r = \frac{P}{K} = \frac{P}{Y}\frac{Y}{Z}\frac{Z}{K} \tag{3}$$

where P is total profits, K the capital stock, Y output and Z capacity output. The three ratios are as follows: the profit share $\frac{P}{Y}$, the rate of capacity utilisation $\frac{Y}{Z}$, and the normal output-capital ratio $\frac{Z}{K}$. It is possible to analyse the rate of profit in the long run only if short-run fluctuations in demand are taken into account. In particular, we account for RW positive shocks to demand in order to capture this pattern. As can be seen, this happens consistently in all estimated models. Indeed, within the endogenous dynamics generated in our macroeconometric model, we find that GDP (Y) responds positively and persistently to an increase in the RW level. Such a pattern, we suppose, is capable of generating the positive short-run increase in the rate of profit that is observed in all the model estimates. Nevertheless, the endogenous longer-term dynamics that emerge for the rate of profit in all the models presented is that of a decline following a positive one SD change in the RW rate.

The second is that while financialisation does not appear to have a consistent impact on the rate of profit, it could still affect profitability by putting pressure on the wage rate. Therefore, we also report evidence related to this second channel through which financialisation impacts functional income distribution. We can see that this channel is present in all estimated models. As we show in Appendix B, it is possible to see how *FIN1, FIN3* and *FIN4*, namely household debt-to-disposable income ratio, private non-financial sector credit-to-GDP ratio and the share of financial profits in total corporate business profits, impart a declining pattern to RW in the long run. The role of *FIN3* seems to be in line with recent literature highlighting the possibility that private debt accumulation may put pressure on workers, making them more vulnerable to adverse labour market dynamics and less able to bargain for wage increases (Di Bucchianico 2022; Gouzoulis 2021; Kim, Lima, and Setterfield 2019; Kohler, Guschanski, and Stockhammer 2019). In our framework, this also extends to *FIN1*. There is evidence that debt accumulation in the non-financial sector leads to lower trade union density (Gouzoulis, Galanis, and Iliopoulos 2024), which could lead to lower RW levels. The fact that *FIN4* has an analogous effect on the RW level is less easy to interpret when we consider that it stands for the share of financial profits in total profits. A higher ratio could be associated with 'downsize and distribute' stategies, which also affect working conditions, but it is then puzzling to see that *FIN2*, i.e. shareholder value orientation, does not fit this type of evidence. This apparent puzzle can be the subject of further research, also in the light of the discussions

about corporate governance in a financialised environment and the need for workers to find new ways of mobilising in it (Rothstein 2022).

From a broader perspective, our evidence can also be linked to those contributions that emphasise how financialisation and the prevalence of the shareholder value orientation in corporate governance have led to profound changes in the field of industrial relations, disadvantaging workers in terms of functional distribution, union density and the use of employment contracts more favourable to companies. In this line of research, Darcillon (2015, 2016) shows that changes in financial/credit and labour market regulations have an impact on income distribution. In addition to this, recent contributions highlight the role of private debt and firms' changing organisational strategies in the context of financialisation to understand specific channels through which functional income distribution is affected. For example, Wood (2017) and Gouzoulis (2021) highlight the importance of housing and corporate finance in the system of industrial relations for several countries and over long periods of time. In particular, Wood (2017) employs the Varieties of Capitalism approach to analyse the correlation between the total stock of mortgages and the wage share in the case of Sweden, Denmark, the US and the UK. The results show a negative relationship between mortgage credit and the wage share, with the association observed mainly in the case of the US and the UK. Gouzoulis (2021) finds a similar effect focusing on France (1911–2010) and Sweden (1891–2000). In his analysis, mortgage debt accumulation is found to consistently reduce the labour share in both countries, although government spending and unionisation are found to be more influential than financial indicators in the capital–labour relationship. The study emphasises that the impact of financial and trade liberalisation on functional income distribution is specific to the post-1970 period, while industrial relations and welfare spending have historically played a dominant role.

More recently, the focus of analysis has also included various facets of industrial relations. Gouzoulis (2023a), for example, addresses the phenomenon of declining union density in Sweden, Japan and South Korea by highlighting the role of rising household indebtedness. He argues that individuals burdened with debt, fearing unemployment and default, tend to be more self-disciplined and thus avoid union participation. Accordingly, the econometric analysis reveals a consistently strong negative relationship between the household debt-to-GDP ratio and union density in all three cases. Very similar results are also found by the same author (Gouzoulis 2023b) for the US and the UK. Finally, it is well known that the operational behaviour of firms is subject to shareholder value orientation, and this aspect also contributes to shaping industrial relations. Indeed, Gouzoulis, Iliopoulos, and Galanis (2023) focus on the relationship between financialisation, the labour process and atypical work. Building on existing research suggesting that shareholder value orientation contributes to labour market insecurity and using a panel dataset of OECD economies from 1997 to 2018, the article argues that financialisation increases managerial pressure to resort to atypical work, in particular involuntary part-time work. These effects are more pronounced for women, while older workers are less affected. This evidence is complemented by Gouzoulis, Galanis, and Iliopoulos (2024), who find evidence that shareholder value orientation and non-financial corporate

debt weaken trade unions and are detrimental to trade union membership.

As we can see, these works highlight channels that are consistent with the evidence reported in this article, thus providing both a general scenario that is compatible with the results we find and an avenue for further research on the financialisation-industrial relations nexus.

5 | Conclusion

Financialisation is a phenomenon whose scope and importance can hardly be overestimated. However, when it comes to functional income distribution, there is a relative lack of discussion in the literature about its impact on profitability and its relevance compared to more traditional factors such as the bargaining process over RWs. To fill this gap, we analyse the case of the US, arguably the most important economy where financialisation has run its course over the decades. We contribute to this literature by assessing the impact of financialisation on the rate of profit and the RW level in the US (1955–2019) using SVAR models in which we employ a financialisation indicator composed of six different measures of financialisation calculated through a PCA.

We show that while a positive shock to financialisation leads to changes in the rate of profit with ambiguous signs and unclear statistical significance, the same shock causes a long-run decline in the RW level.

These results are in line with studies on the relationship between financialisation and the dynamics of industrial relations. As noted, recent literature suggests that financialisation, in its various aspects such as the prevalence of shareholder value orientation, the liberalisation of financial and labour markets and the increase in household indebtedness, has contributed and continues to contribute to the weakening of workers. The effects of financialisation are especially felt in trade union participation, the use of atypical work arrangements and, as our study confirms, the level of RWs. The vicious circle between financialisation and various facets of the labour market and industrial relations can thus be the subject of further research.

Ethics Statement

The authors have nothing to report.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Endnotes

[1] With the term 'general rate of profit', we define an aggregate measure of the rate of profit such as that calculated by using for the corporate business sector either the gross operating surplus or total profits after tax over private non-residential capital stock at current cost (see Section 3.1). This allows to have a broad specification of profitability at the macroeconomic level.

[2] Another instance is the need for workers to find new strategies to mobilize in the context of financialised firms (Rothstein 2022).

[3] Lazonick (2017) argued that this shift in corporate governance is also the cornerstone for understanding the slowdown in productivity and the vanishing of the middle class.

[4] This theme has been subject of heated debate, giving rise to a substantial body of literature (Hein and Van Treeck 2010). The adverse effect of financialisation on investment in fixed assets and growth is further confirmed by Tomaskovic-Devey et al. (2015) and Tori and Onaran (2018, 2020). Numerous studies delved into the topic, yielding mixed results regarding the existence of decoupling. For instance, Fiebiger (2016) criticises the idea that financialisation has led to a reduction in fixed capital investment in the USA, considering the expansion of foreign subsidiaries of companies since the mid-1990s, which contradicts the tendency to abandon growth targets. Rabinovich (2019) doubts that one of the aspects of financialisation is the increase in the proportion of total income from financial accumulation. Available data, according to Rabinovich, would instead show that the proportion of the total revenue of non-financial corporations derived from financial assets had oscillated from the beginning of the 1990s until 2005, after which it would begin to decline. Similarly, Soener (2021) shows that the reduction in investment in fixed assets did not go hand in hand with an increase in investment in finance in the 37 large economies analysed over the 1991–2017 period.

[5] Hein and Van Treeck (2010) also assess the influence of increasing shareholder value orientation on three main variables, namely, the rates of capacity utilisation, profit and accumulation.

[6] See Di Bucchianico and Salvati (2023) for an enquiry in the history of thought that deals with Marxian visions of financialisation from the same viewpoint.

[7] In principle, it would have been more precise to also correct our measures of profits for the presence of self-employed workers. However, given the fact that the measures of full-time equivalent workers, part-time workers, self-employed and so forth needed to operate the correction are available at an annual frequency, we preferred not to resort to higher frequency interpolation methods too much, and we limited its use to the stock of capital.

[8] This technique works through linear combinations of the original variables which allow for the maximal explanation of the variance of all the variables included in the model. Using this index, it is possible to concomitantly exploit all the measures of financialisation weighted by their contribution to the variance of the composite indicator that we include in the VAR.

[9] Using SVAR modelling, we are able 'to study the average response of the model variables to a given one-time structural shock' (Kilian 2013, 515). In this sense, relying on this methodology, we can identify the structural shocks that drive the dynamics of the system. To do so, we have to impose short-run exclusion restrictions, which are retrieved from economic theory (Kilian and Lütkepohl 2017). Once identified, these structural shocks can be used to analyse the impact of exogenous shocks on the variables in the system (as shown in the IRFs estimated), which 'may be used to quantify causal relationships' (Kilian and Lütkepohl 2017, 211).

[10] We repeat the estimations using two alternative samples (1955q1–2007q4 and 1971q1–2019q4), dropping out the post-great financial crisis and excluding the Golden Years. For space constraints, we present these results in the Appendix.

[11] It is worth noting that as our estimated structural shocks are of 1 SD, the magnitudes of the response of one variable to different structural shocks are not comparable.

[12] Further models were also estimated using one of the six different measures of financialisation at a time resulting in additional different models. For space constraints, the results of the IRFs of these alternative models are reported in Appendix B.

[13] It is worth noting that by employing PCA to investigate the effect of financialisation on considered variables, we can reduce all six measures of financialisation into a single composite measure. Additionally, it is important to highlight that the composite index (*FIN*) can be expressed as a weighted sum of the six principal components, with the weights being the eigenvalue (variances) associated with each component (refer to Appendix A for further details). Moreover, as one of the main caveats of relying on PCA is its vulnerability to outliers, we have also dropped those values from our sample and re-estimated our models to assess the robustness of our results. In doing so, our results remained unchanged and are available upon request.

[14] Following the recent empirical literature grounded on the endogenous money approach (Barbieri Góes and Deleidi 2022; Barbieri Góes 2023; Cesaratto and Di Bucchianico 2020; Di Bucchianico and Lofaro 2024), Models 1 and 2 have also been estimated considering the interest rate as the most exogenous variable after financialisation. In doing so, our results remain unchanged. See Appendix.

[15] Diagnostics tests confirming the stationarity of residuals and the absence of serial correlation have been conducted and are available upon request.

[16] It is worth noting that the profit rate (*PR*1) moves to the positive territory after real wages have gone down, this is also true for PR2.

[17] As a robustness check, we re-estimate Model 1 (*FIN*; *P*; *Y*; *PR*1; *RW*; *IR*; *E*) dropping out the post-crisis period and excluding from our sample the years before 1971 (see Supporting Information Figures A.1 and A.2). In doing so, the results remain almost unchanged, and the only exception is the response of output to a positive shock in real wages which is reabsorbed after the 25th and 20th quarters in Supporting Information Figures A.1 and A.2, respectively. However, this result can be explained by the transitory nature of the shock in real wages in both subsamples.

[18] As previously, we drop the post-crisis period as well as the period before 1971 and re-estimate Model 2 (see Supporting Information Figures B.1 and B.2). Similarly, to what is observed when estimating Model 1 dropping the period after the crisis (Supporting Information Figure A.1) and the period before 1971 (Supporting Information Figure A.2), in Model 2 output (*Y*) exhibits an endogenous positive response to a one SD increase in the RW level, which is completely re-absorbed after the 27th and 20th quarters, respectively.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.