Department of Economics

SOAS University of London

Working Paper Series

ISSN 1753 - 5816

Please cite this paper as:

Lapavitsas, C. and Mendieta-Muñoz, I., 2017, "Explaining the Historic Rise in Financial Profits in the US Economy", SOAS Department of Economics Working Paper Series, No. 205, The School of Oriental and African Studies.

No. 205

Explaining the Historic Rise in Financial Profits in the US Economy

by

Costas Lapavitsas & Ivan Mendieta- Muñoz

October 2017

Department of Economics
School of Oriental and African Studies
London
WC1H 0XG
Phone: + 44 (0)20 7898 4730
Fax: 020 7898 4759
E-mail: economics@soas.ac.uk
http://www.soas.ac.uk/economics/

The **SOAS Department of Economics Working Paper Series** is published electronically by The School of Oriental and African Studies-University of London.

Design and layout: O.G. Dávila

EXPLAINING THE HISTORIC RISE IN FINANCIAL PROFITS IN THE U.S. ECONOMY[1]

Costas Lapavitsas[2] **Ivan Mendieta-Muñoz[3]**

Abstract

The ratio of financial to non-financial profits in the US economy has increased sharply since the 1970s, the period that is often called the financialisation of capitalism. By developing a two-sector theoretical model the ratio of financial to non-financial profits is shown to depend positively on the net interest margin and the non-interest income of banks, while it depends negatively on the general rate of profit, the non-interest expenses of banks, and the ratio of the capital stock to interest-earning assets. The model was estimated empirically for the post-war period and the results indicate that the ratio has varied mainly with respect to the net interest margin, although non-interest income has also played a significant role. The results confirm that in the course of financialisation the US financial sector has been able to extract rising profits through interest differentials and non-interest income, while the general rate of profit has remained broadly constant.

JEL Classification: E11, E44, G20.

Keywords: Rise in financial profits, financialisation, U.S. economy.

[1]We are grateful to Jacob Assa, Korkut Ertürk, Gökçer Özgür, Gary Dymski, Jan Toporowski, Minqui Li, Mark Glick, and seminar participants at the University of Utah and the 8th Annual Conference of the International Initiative for Promoting Political Economy (Berlin, 2017) for helpful suggestions and conversations on previous versions of this paper. All errors are the authors' responsibility.
[2]Department of Economics, SOAS University of London. Office 269, Thornhaugh Street, Russell Square, London WC1H 0XG, UK. Email: cl5@soas.ac.uk
[3]Department of Economics, University of Utah. Office 213, Building 73, 332 South 1400 East, Salt Lake City, Utah 84112, USA. Email: ivan.mendietamunoz@utah.edu

1. Introduction

The financial sector has grown enormously in the USA and in other developed economies during the last four decades. Several indicators confirm its growth: higher income share of finance; rising ratios of debt-to-GDP, of financial assets to GDP, and of financial assets to tangible assets; higher average wages in finance; and accelerated growth of financial claims and contracts, including stocks, bonds, derivatives, and mutual fund shares.[i]

Related literature in political economy, sociology and economic geography has described this phenomenon as "financialisation".[ii] One of the most salient aspects of the financialisation of the US economy has been the rise of profits earned through financial activities, including lending and borrowing of money capital, managing money stocks, insurance, trading in financial assets, and even dealing in assets that are not directly financial but have acquired a strong financial dimension, such as housing and real estate.

The rise in financial profits is crucial for the analysis of financialisation since there is a clear difference between profits from financial activities and profits from the production and sale of commodities. Financial activities involve the borrowing and lending of money, the provision of financial services, and the purchase and sale of commodity-like assets (for instance, bonds). Finance is integral to production in a mature contemporary economy, but it is also, by construction, an intermediary activity. The ultimate sources of financial profits lie outside the financial sphere. It is striking, therefore, that the literature on financialisation has not provided an explanation for the historic rise of financial profits. More generally, "surprisingly little is known about which activities contributed to the rapid growth of the financial sector" (Greenwood and Scharfstein, 2013, p. 5).

Following the analysis of financialisation as a historic period in the development of mature capitalism, we construct a two-sector theoretical model that explicitly relates financial to non-financial profits.[iii] The model corresponds closely to the analysis of finance in the tradition of Classical Economists, but also in the tradition of Marx and Keynes. The ratio of financial to non-financial profits is shown to depend positively on the net interest margin of the financial sector, *i.e.*, on net interest income relative to interest-earning assets; and on the non-interest income earned by financial institutions. The ratio depends negatively on the non-interest expenses of financial institutions; on the average profit rate across the economy; and on the ratio of the total capital stock to interest-earning assets. In this light, the extraordinary rise of financial profits in the period of financialisation would be expected to result primarily from the positive effects associated with the net interest margin and with the non-interest income of banks.

The empirical relevance of the model has subsequently been tested using data for the US economy during the periods 1955-2014 and 1974-2014. Cointegration analyses and error correction model estimations were employed, allowing for long-run to be distinguished from short-run effects for each variable. The most important results can be summarised as follows:

1. The main determinant of the ratio of financial to non-financial profits both in the short- and long-run has been the net interest margin.
2. The impact of the net interest margin both in the short- and long-run was higher during 1974-2014 than during 1955-2014.
3. Non-interest income has played an important role in the rise of financial profits. The long-run positive effects of non-interest income were higher during 1974-2014 than during 1955-2014.

4. The short-run elasticities associated with both the net interest margin and the non-interest income were higher than the respective long-run elasticities during both estimation periods.

These results confirm the existence of a "period" of financialisation in the US economy after 1974. During the latter, the financial sector has been able to extract increasing profits through interest and non-interest income, while the average rate of profit has remained broadly stagnant. This is, perhaps, the most telling feature of financialisation.

The paper is organised as follows. Section 2 presents the most relevant empirical evidence in the present context; section 3 discusses the theoretical model; section 4 presents the empirical results; finally, the conclusions are presented in section 5.

2. Empirical evidence

Figure 1 shows the ratio of the profits earned by financial institutions relative to, first, total domestic profits in the US economy and, second, profits earned by non-financial corporations:[iv]

[INSERT FIGURE 1 ABOUT HERE]

Summarily put, financial profits have generally increased since 1955; they have experienced explosive growth from the late 1970s/early 1980s to the early 2000s; they have declined rapidly in the course of the real estate bubble in the 2000s, and collapsed in the course of the Great Recession of 2007-9; and they have rebounded strongly after 2009.[v]

Further insight into these trends can be achieved by decomposing the ratio of financial to non-financial profits, showing each component separately as an index (1955=100):

[INSERT FIGURE 2 ABOUT HERE]

Figure 2 offers a clear view of the rise of the ratio of financial profits to non-financial profits shown in Figure 1: financial profits have generally grown more rapidly than non-financial profits during the post-war era in the US economy. The growth of financial profits has been striking during the period that commenced in the 1970s.

3. Theorising financial profits

To analyse the formation of financial profits and their relationship to non-financial profits, a stylised two-sector model of a capitalist economy is constructed in this section comprising:

1. A non-financial sector that owns the entire productive and commercial capital stock of the economy.
2. A financial sector that generates all credit and issues all financial assets that are held by the non-financial sector.

The model is based on the distinction between non-financial (or functioning) capitalists and financial capitalists. These are not two separate social groups since there is nothing to stop a capital owner from investing simultaneously in both sectors. Rather, the distinction is deployed to capture important functional differences between the institutions involved in the two sectors.[vi] By splitting the economy into these two sectors it is possible to demonstrate the generic division of total profits, when production and commerce take place with the support of a financial sector.

The analysis of the interactions between the two sectors requires specifying the balance sheets that sum up the activities of both:

[INSERT TABLE 1 ABOUT HERE]

K denotes the total capital stock, which is financed in part through direct ownership by the non-financial capitalists, S, and in part through borrowing from the financial sector, L. Functioning capitalists also hold financial assets in the normal course of their activities, B, which are issued by financial institutions. There is, moreover, capital invested in running the financial sector, G, which is owned by financial capitalists. Thereby, S can be regarded as the equity of the non-financial capitalists, B as the money stock –or deposits– in the economy, and G as the equity of the financial capitalists.[vii]

To summarise, non-financial capitalists invest their own capital, S, together with borrowed capital, L, while also holding financial assets, B, with the aim of carrying out the production process and generating the total profits of the economy. The financial sector is an intermediary of the production process. Financial capitalists invest their own capital, G, to provide credit, L, which supplements the capital of non-financial capitalists in production. Provision of credit by financial capitalists also depends on issuing financial assets, B, which are held by non-financial capitalists and form the money stock or deposits of the economy. Thus, financial capitalists provide services other than credit that are necessary for production, for example, they manage the money stocks and money transactions of functioning capitalists. They are not mere intermediary cogs but profit-seeking agents who manage their assets and liabilities in order to obtain a share of the total profit generated by the productive sector.

Total profit is, therefore, generically divided into a non-financial and a financial part, a division that reflects the profit-making plans of individual agents and the overall balance between the two sectors. There are two conditions that ultimately determine this division:

1. The balance sheet of each sector must balance, *i.e.*, $\mathrm{K} + \mathrm{B} = \mathrm{S} + \mathrm{L}$ and $\mathrm{L} = \mathrm{B} + \mathrm{G}$.
2. A general rate of profit holds across the economy.

The first condition reflects the basic accounting principle of any capitalist economy. The second condition results from competition across the economy, and, more fundamentally, from the ability of a capital owner to invest in any sector.

In this framework, the profits generated by the non-financial sector, *i.e.*, the total profits of the economy, Π, are given by:

$$\Pi = rK = r(S + L - B) \quad \dots \dots \dots \quad (1)$$

where r is the general rate of profit. Equation (1) states that total profits result from the productive and commercial operations of non-financial capitalists.[viii]

Financial profits, F, on the other hand, reflect the intermediary activities of financial institutions:

$$F = i_L L - i_B B + \delta\Pi - \gamma\Pi \quad \dots \dots \dots \quad (2)$$

where i_L is the interest rate on loans, L, made by financial institutions, and thus $i_L L$ represents interest income; i_B is the interest rate on the financial assets (borrowing), B, issued by financial institutions, and thus $i_B B$ represents interest expense. Financial institutions also earn non-interest income, NII, and face non-interest expenses, NIE, as they interact with the non-financial sector –for instance, fees and commissions as well as wages and salaries for employees. The simplest way to formalise both components is as constant proportions of Π, so that $NII = \delta\Pi$ and $NIE = \gamma\Pi$, where $0 < \delta < 1$ and $0 < \gamma < 1$.

Furthermore, since the general rate of profit holds across both sectors:

$$F = rG \quad \dots \dots \dots \dots \quad (3)$$

$$r = \frac{\Pi}{K} = \frac{F}{G} \quad \dots \dots \dots \quad (4)$$

The profit that actually remains to functioning capitalists after all transfers of value have been completed between the two sectors – the "profit of enterprise" – E, is given by:

$$E = \Pi - F - \gamma\Pi = rK + i_B B - i_L L - \delta\Pi \quad \dots\dots\dots \quad (5)$$

Hence the rate of profit for functioning capitalists relative to their own equity is: $e = E/S$.

It is also possible to express equation (5) as:

$$E + F = \Pi - \gamma\Pi = (1 - \gamma)\Pi \quad \dots\dots\dots \quad (6)$$

It is apparent from equation (6) that while NII is a transfer of profits among the two sectors, NIE is a net subtraction from total profits, and thus a net aggregate cost to the economy imposed by the existence of the financial system. Thus, NIE represents a "faux frais" of production, a type of expense by productive investment capital that does not add value to output.

Dividing equation (2) by equation (1):

$$\frac{F}{\Pi} = \frac{i_L L - i_B B + \delta\Pi - \gamma\Pi}{rK} = \frac{i_L L - i_B B}{rK} + \delta - \gamma = \frac{i_L L - i_B B}{rK} + \delta - \gamma \quad \dots\dots\dots \quad (8)$$

Dividing equation (8) by L/L:

$$\frac{F}{\Pi} = \frac{(i_L L - i_B B)/L}{rK/L} + (\delta - \gamma)\left(\frac{L}{L}\right) = \frac{(i_L L - i_B B)/L}{r(K/L)} + \delta - \gamma \quad \dots\dots\dots \quad (9a)$$

Alternatively, equation (9a) can also be expressed as:

$$\frac{F}{\Pi} = \frac{(i_L L - i_B B)/L}{\Pi/L} + (\delta - \gamma)\left(\frac{L}{L}\right) = \frac{(i_L L - i_B B)/L}{\Pi/L} + \delta - \gamma \quad \dots\dots\dots \quad (9b)$$

From equations (9a) and (9b) it is possible to identify the following elements for empirical analysis. First, $(i_L L - i_B B)/L$ represents the Net Interest Margin (NIM) of the financial sector, that is, net interest income, or the difference between interest income and interest expense, divided by interest-earning assets. Second, δ and γ represent, respectively, non-interest income and non-interest expense as proportions of total profit in the economy. Third, r denotes the average rate of profit, and (K/L) can be interpreted as an index of the indebtedness of the non-financial sector.[ix] Finally, Π/L represents total profit as proportion of interest-earning assets.

Hence, it is possible to rewrite equations (9a) and (9b) as follows:

$$\frac{F}{\Pi} = \frac{NIM}{r(K/L)} + \delta - \gamma \quad \ldots\ldots\ldots \quad (10a)$$

$$\frac{F}{\Pi} = \frac{NIM}{\Pi/L} + \delta - \gamma \quad \ldots\ldots\ldots \quad (10b)$$

According to equation (10a), the determinants of the ratio F/Π are: NIM, δ, γ, r and K/L; alternatively, according to equation (10b), the determinants are NIM, δ, γ and Π/L. Specifically, F/Π is a positive function of NIM and δ; and a negative function of γ, r and K/L; alternatively, it is a negative function of Π/L.

Both equations (10a) and (10b) depict simple theoretical formulations of the ratio of financial to non-financial profits that are suitable for empirical testing and analysis. They allow for an econometric investigation of the trajectory of financial profit in the US economy in the post-war years.

4. Empirical analysis of financial profits in the USA, 1955-2014

The variables used for the empirical analysis of the US economy during the period 1955-2014 have been constructed on the basis of (10a) and (10b). Annual data from insured commercial banks has served as a *proxy* for the financial sector, and annual data from the non-financial corporate sector as a *proxy* for the non-financial sector. Table 2 summarises the data, together with the definitions and sources used to construct the variables:

[INSERT TABLE 2 ABOUT HERE]

The series described in table 2 are presented in figures 3 to 7 below:

[INSERT FIGURE 3 ABOUT HERE]

[INSERT FIGURE 4 ABOUT HERE]

[INSERT FIGURE 5 ABOUT HERE]

[INSERT FIGURE 6 ABOUT HERE]

[INSERT FIGURE 7 ABOUT HERE]

4.1. Unit roots tests

The order of integration of the series was examined by using four different unit roots tests: Augmented Dickey-Fuller (ADF; Said and Dickey, 1984); Dickey–Fuller Generalized Least Squares (DF-GLS; Elliott at al., 1996); Modified Phillips-Perron (M-PP) tests (Ng and Perron, 2001); and the KPSS test (Kwiatkowski et al., 1992). The unit roots tests were carried out as follows:

1. The highest lag order selected was determined from the sample size (n) according to the method proposed by Schwert (1989): $12[n/100]^{1/4} = 12[60/100]^{1/4} \approx 10$.
2. With the exception of the KPSS test (in which the Bartlett kernel was employed as spectral estimation method with a Newey-West bandwith), the optimal lag order for all unit root tests was selected according to the Modified Akaike Information Criterion (MAIC) proposed by Ng and Perron (2001) since this criterion reduces size distortions substantially.
3. A constant and a trend were included as exogenous regressors (both required to capture appropriately the actual behaviour of the series).

4. With respect to the M-PP, OLS-detrended data was employed for the Autoregressive (AR) spectral estimation method tests since the latter can be considered a solution to the drawback that, for non-local alternatives, the power of the M-PP tests can be very small (Perron and Qu, 2007).

Table 3 reports the results of the unit root tests. For the great majority of the series, the null hypothesis of a unit root of the ADF, DF-GLS, and M-PP tests is not rejected. The null hypothesis of a unit root is rejected when the first differences of the series are considered. These results are corroborated by the KPSS test, which shows rejection of the null hypothesis of a stationary process for the great majority of the series in levels, and does not reject the null hypothesis of a stationary process when the first differences of the series are considered.

[INSERT TABLE 3 ABOUT HERE]

Thus, the majority of the tests show that the variables under consideration are non-stationary series integrated of order 1, that is, $I(1)$ processes. Given this, it is necessary to deploy appropriate econometric methodologies to tackle the problem of spurious regressions and to obtain unbiased estimators.

4.2. Estimation results

Given the single equation settings depicted in equations (10a) and (10b) and the presence of unit roots in the series under consideration, tests for cointegration were carried out using, first, the bounds testing approach in the context of an Autoregressive Distributed Lag (ARDL) framework developed by Pesaran and Shin (1999) and Pesaran et al. (2001)[x]; and, second, Hansen's (1992) parameter instability test.[xi] The estimation periods were 1954-2014 and 1974-2014, the latter of which can be considered as the period of financialisation.[xii]

The estimated ARDL models included two lags of both the dependent and explanatory variables following the representation in equations (10a) and (10b):

$$\left(\frac{\mathrm{F}}{\Pi}\right)_t = \beta_0 + \sum_{i=1}^{2} \psi_i \left(\frac{\mathrm{F}}{\Pi}\right)_{t-i} + \sum_{j=1}^{5}\sum_{i=0}^{2} \boldsymbol{\beta_{j,i}}\mathbf{X_{j,t-i}} + u_t \quad \dots\dots\dots \quad (11a)$$

$$\left(\frac{\mathrm{F}}{\Pi}\right)_t = \beta_0{}' + \sum_{i=1}^{2} \psi_{1,i} \left(\frac{\mathrm{F}}{\Pi}\right)_{t-i} + \sum_{j=1}^{3}\sum_{i=0}^{2} \boldsymbol{\beta_{1,j,i}}\mathbf{X_{1,j,t-i}} + u_{1,t} \quad \dots\dots\dots \quad (11b)$$

where β_0 and $\beta_0{}'$ are the intercepts in equations (11a) and (11b), respectively; ψ_i and $\psi_{1,i}$ are the coefficients associated with the lags of $(\mathrm{F}/\Pi)_t$ in equations (11a) and (11b), respectively; $\boldsymbol{\beta_{j,i}}$ is a 1X5 vector of coefficients associated with $\mathbf{X_{j,t-i}} = \left(\mathrm{NIM}_t, \delta_t, \gamma_t, \mathrm{r}_t, \left(\frac{\mathrm{K}}{\mathrm{L}}\right)_t\right)'$ in equation (11a); $\boldsymbol{\beta_{1,j,i}}$ is a 1X4 vector of coefficients associated with $\mathbf{X_{1,j,t-i}} = \left(\mathrm{NIM}_t, \delta_t, \gamma_t, \left(\frac{\Pi}{\mathrm{L}}\right)_t\right)'$ in equation (11b); and u_t and $u_{1,t}$ are the error terms that satisfy the standard statistical properties.

The ARDL models were selected according to the Akaike information criterion and do not present problems of serial correlation (up to order 3) or heteroskedasticity (no ARCH effects) at the 5% level. However, they present problems of non-normality and, more significantly, they present problems of parameter instability. Because of this, it was necessary to introduce dummy variables to capture possible outliers –which were defined as any data point for which the residuals were in excess of 2 standard deviations from the fitted model. The dummy variables identified in this way corresponded to the economic crises of 2001 and 1987 (for different models); and the final ARDL models that incorporated these dummy variables satisfy all correct specification tests.[xiii]

With respect to Hansen's (1992) parameter instability test, long-run coefficients were first computed using the Dynamic OLS (DOLS) estimator developed by Stock and Watson (1993) according to the specifications in equations (10a) and (10b).[xiv] A fixed lag and lead length of 1 were employed as well as heteroskedasticity and autocorrelation consistent (HAC) standard errors using the Newey-West estimator.[xv] The approach developed by Hansen (1992) was subsequently used to test for cointegration.

The results obtained from the cointegration tests are presented in table 4 below:

[INSERT TABLE 4 ABOUT HERE]

In all cases: 1) the null hypothesis of cointegration of Hansen's (1992) parameter instability test is not rejected; and 2) the null hypothesis of no cointegration of the bounds test is rejected. Thus, it is possible to conclude that both tests yield similar results, showing the presence of a cointegrating or long-run relationship in the variables considered during both the period 1955-2014 and the sub-period 1974-2014.

Given the presence of cointegration between the variables, table 5 shows the estimation of the long-run coefficients obtained from the DOLS estimator and from the conditional long-run model derived from the reduced-form of the ARDL models:

[INSERT TABLE 5 ABOUT HERE]

The estimated coefficients are statistically significant in the great majority of estimations. They also show similar effects and the expected signs: negative elasticities of $(\mathrm{F}/\Pi)_t$ with respect to γ_t, $\mathrm{r}_t, (\mathrm{K}/\mathrm{L})_t$ –or, alternatively, $(\Pi/\mathrm{L})_t$; and positive elasticities of $(\mathrm{F}/\Pi)_t$ with respect to NIM_t and δ_t.

The results presented in table 5 can be summarised as follows. First, the highest long-run positive effect on $(\mathrm{F}/\Pi)_t$ is associated with NIM_t, which was 3.25% during the period 1955-2014, and 8.29% during the period 1974-2014, on average. The effect of δ_t during the periods 1955-2014 and 1974-2014 was approximately 0.96% and 1.11%, respectively.

Second, the largest long-run negative elasticity is associated with r_t, followed by γ_t and $(\mathrm{K}/\mathrm{L})_t$. During the period 1955-2014, the negative effects on $(\mathrm{F}/\Pi)_t$ were approximately

-1.37%, -0.59% and -0.06%, for each of the three variable, respectively. During the period 1974-2014 the negative elasticities were, on average, -4.16%, -0.99% and -0.22%.

The long-run elasticities of $(\mathrm{F}/\Pi)_t$ with respect to the different explanatory variables were higher during the period 1974-2014. During the period of financialisation, the long-run positive effects on $(\mathrm{F}/\Pi)_t$ of NIM_t and δ_t were substantially larger (by approximately 5.05 percentage points (pp) and 0.15 pp). The same holds for the long-run negative effects on $(\mathrm{F}/\Pi)_t$ of γ_t, r_t and $(\mathrm{K}/\mathrm{L})_t$ (by approximately 0.40 pp, 2.79 pp and 0.16 pp, respectively).[xvi] Thus, the estimations show that the increase in the long-run positive effect by NIM_t and δ_t outweighed the increase in the long-run negative effect by γ_t, r_t and $(\mathrm{K}/\mathrm{L})_t$. The substantial rise of financial profits in the USA was due primarily to the strong effect of interest margins and non-interest income gains by banks.

Subsequently, error correction representations of the models were estimated, allowing for short-run to be distinguished from long-run parameter estimates:

$$\Delta\left(\frac{\mathrm{F}}{\Pi}\right)_t = \sum_{i=1}^{p}\gamma_i\Delta\left(\frac{\mathrm{F}}{\Pi}\right)_{t-i} + \sum_{j=1}^{4}\sum_{i=0}^{q}\boldsymbol{\theta_{j,i}\Delta X_{j,t-i}} + \mu(\mathrm{CE}_{t-1}) + \eta_t \quad \ldots\ldots\ldots \quad (12a)$$

$$\Delta\left(\frac{\mathrm{F}}{\Pi}\right)_t = \sum_{i=1}^{p}\gamma_{1,i}\Delta\left(\frac{\mathrm{F}}{\Pi}\right)_{t-i} + \sum_{j=1}^{3}\sum_{i=0}^{q}\boldsymbol{\theta_{1,j,i}\Delta X_{1,j,t-i}} + \mu_1(\mathrm{CE}_{t-1}) + \eta_{1,t} \quad \ldots\ldots\ldots \quad (12b)$$

where γ_i and $\gamma_{1,i}$ are the coefficients associated with the lags of $\Delta(\mathrm{F}/\Pi)_t$ in equations (12a) and (12b), respectively; $\boldsymbol{\theta_{j,i}}$ is a 1X5 vector of coefficients associated with $\boldsymbol{\Delta X_{j,t-i}} = \left(\Delta(\mathrm{NIM}_t), \Delta(\delta_t), \Delta(\gamma_t), \Delta(\mathrm{r}_t), \Delta\left(\frac{\mathrm{K}}{\mathrm{L}}\right)_t\right)'$ in equation (12a); $\boldsymbol{\theta_{1,j,i}}$ is a 1X4 vector of coefficients associated with $\boldsymbol{\Delta X_{1,j,t-i}} = \left(\Delta(\mathrm{NIM}_t), \Delta(\delta_t), \Delta(\gamma_t), \Delta\left(\frac{\Pi}{\mathrm{L}}\right)_t\right)'$ in equation (12b); μ and μ_1 are the coefficients associated with the cointegrating equations in time $t-1$

(CE_{t-1}), obtained either from the DOLS technique or from the ARDL approach; and η_t and $\eta_{1,t}$ are the error terms that satisfy the standard statistical properties.

As regards the estimation of equations (12a) and (12b) using the CE obtained from the DOLS estimation technique, the general-to-specific modelling approach was deployed, starting with $p = 2$ and $q = 2$ as the initial general model, and then reduced in complexity by eliminating statistically non-significant variables.[xvii] With respect to the CE obtained from the ARDL approach, p and q were determined according to the Akaike information criterion.[xviii]

The final error correction representations for the periods 1955-2014 and 1974-2014 are presented in table 6:

[INSERT TABLE 6 ABOUT HERE]

The final models presented in table 6 satisfy the standard correct specification tests. The short-run coefficients on the different variables show the expected signs (including the coefficients on the CE, which are negative and significant), are statistically significant, and show similar effects.

Two main conclusions follow from these results. First, the largest short-run positive effect on $(\mathrm{F}/\Pi)_t$ is associated with NIM_t, followed by δ_t; and the largest short-run negative effect on $(\mathrm{F}/\Pi)_t$ is associated with r_t, followed by γ_t and $(\mathrm{K}/\mathrm{L})_t$. On average, during the period 1955-2014 the short-run elasticities of $(\mathrm{F}/\Pi)_t$ with respect to NIM_t and with respect to δ_t were 5.25% and 1.32%, respectively; whereas during the period 1974-2014 the elasticities were approximately 9.53% and 1.12%, respectively. Similarly, during the period 1955-2014 the short-run elasticities of $(\mathrm{F}/\Pi)_t$ with respect to r_t, γ_t and $(\mathrm{K}/\mathrm{L})_t$ were, on average, -1.86%, -0.81% and -0.13%, respectively; whereas during the period 1974-2014 the respective elasticities were -3.2%, -0.86% and -0.05%.

Second, with the exceptions of δ_t and $(K/L)_t$, the short-run elasticities of $(F/\Pi)_t$ with respect to the different variables were higher during the period 1974-2014 than during the period 1955-2014. Specifically, the short-run positive effect of NIM_t on $(F/\Pi)_t$ was approximately 4.28 pp larger; whereas the short-run negative effects of γ_t and r_t on $(F/\Pi)_t$ were approximately 0.05 pp and 1.34 pp larger.[xix] The increase in the short-run positive effect of NIM_t outweighed the increase in the short-run negative effect of γ_t and r_t.

Finally, a comparison between the long-run and short-run effects reveals that the short-run positive sensitivity of $(F/\Pi)_t$ with respect to NIM_t and δ_t were, on average, higher than the respective long-run elasticities.

4.3. A first attempt at a decomposition analysis over decades

The econometric results –both the cointegration analysis and the respective error correction representations– offer strong support for the model developed in section 3. Visual inspection of the variable series further reveals that the NIM_t (figure 4) peaked in 1992, declined dramatically until 2008, rose sharply to 2010 and fell equally sharply since then. On the other hand, during the period 1992-2001 the ratio $(F/\Pi)_t$ (figure 3) continued to rise systematically, while the δ_t ratio (figure 5) also increased significantly. Thus, it is possible that during the 1990s the effects of non-interest income on financial profits might have been more significant.

To pursue further the possibility of time-varying effects, it would be inappropriate to carry our econometric estimations for different decades, given the relatively small sample size (60 observations in total). One way to gain some insight may be to compute the percentage changes in the variables during different decades. The results are presented in table 7:

[INSERT TABLE 7 ABOUT HERE]

The most important results shown in table 7 are the large increases in δ_t and γ_t during the two decades of 1984-2003, compared to the relative decline in NIM_t during 1994-2003. Specifically, during the periods 1984-1993 and 1994-2003: $(\text{F}/\Pi)_t$ increased by approximately 9.52 pp and 9.30 pp, respectively; δ_t increased by approximately 12.21 and 14.30 pp, respectively; γ_t increased by approximately 13.52 pp and 12.09 pp, respectively; and NIM_t increased by approximately 0.46 pp and decreased by approximately -0.54 pp, respectively.

Thus, although the econometric results show that $(\text{F}/\Pi)_t$ in the USA has reacted mainly to NIM_t during the post-war era, including during the period of financialisation, there has also been a significant rise in δ_t and γ_t. Non-interest earnings and non-interest expenses by banks have marked the trajectory of financial profits, and thus of financialisation, in the USA.[xx]

5. Concluding remarks

Financial profits in the USA have risen remarkably during the four decades since the mid-1970s. This period represents the financialisation of the US economy and its most striking feature has been precisely the rise in financial relative to non-financial profits.

The reasons for this development were examined in this paper, first, by theoretically establishing the determinants of financial profits through a benchmark two-sector macroeconomic model derived from the political economy analysis of financialisation. The proposed theoretical formulation innovates by capturing the fundamental interactions between the non-financial and the financial sector (provision of credit and of non-credit services) and, thus, by establishing the generic division of total profit into a financial and a non-financial component. The ratio of the two was shown to depend positively on the net interest margin as well as on the non-interest income earned by financial institutions. It was further shown to depend negatively on the non-interest expenses of financial institutions, on the general profit rate, and on the ratio of the capital stock to interest-earning assets.

The empirical relevance of the model was tested for the US economy for the periods 1955-2014 and 1974-2014, the latter being the period of financialisation. The most important empirical findings were as follows. First, both the long-run and the short-run elasticities reveal that the main determinant of the ratio of financial to non-financial profits has been the net interest margin of banks. Second, both the long-run and the short-run effects of the net interest margin were higher during the period 1974-2014 than during the period 1955-2014. The profits of financialisation have, thus, depended primarily on the net interest margin. Third, non-interest income has also played an important role in the rise of financial profits during the entire period, although there is no evidence to suggest that the short-run effects of non-interest income have increased during the period of financialisation. Finally, given the large increase of non-interest income and non-interest expenses from the early 1980s to the early 2000s, there is reason to think that the effect of both components on financial profits was stronger during the period of high financialisation.

References

Dos Santos, P. 2011. Production and consumption credit in a continuous-time model of the circuit of capital. *Metroeconomica*, vol. 62, no. 4, pp. 729–758.

Dos Santos, P. 2014. A note on credit allocation, income distribution and the circuit of capital. *Metroeconomica*, vol. 65, no. 2, pp. 212–236.

Dünhaupt, P. 2017. Determinants of labour's income share in the era of financialisation. *Cambridge Journal of Economics*, vol. 41, no. 1, pp. 283-306.

Elliott, G., Rothemberg, T. and Stock, J. 1996. Efficient tests for an autoregressive unit root. *Econometrica*, vol. 64, no. 4, pp. 813-836.

Greenwood, R. and Scharstein, D. 2013. The growth of finance. *Journal of Economic Perspectives*, vol. 27, no. 2, pp. 3-28.

Hansen, B. 1992. Tests for parameter instability in regressions with I(1) processes. *Journal of Business and Economic Statistics*, vol. 10, no. 3, pp. 45-59.

Hein, E. 2015. Finance-dominated capitalism and re-distribution of income: A Kaleckian perspective. *Cambridge Journal of Economics*, vol. 39, no. 3, pp. 907-934.

Johansen, S. 1991. Estimation and hypothesis testing of cointegration vectors in Gaussian Vector Autoregressive models. *Econometrica*, vol. 59, no. 6, pp. 1551–1580.

Johansen, S. 1995. *Likelihood-based Inference in Cointegrated Vector Autoregressive Models*. Oxford: Oxford University Press.

Kwiatkowski, D., Phillips, P., Schmidt, P. and Shin, Y. 1992. Testing the null hypothesis of stationarity against the alternative of a unit root. *Journal of Econometrics*, vol. 54, no. 1-3, pp. 159-178.

Kliman, A. and Williams, S. 2015. Why 'financialisation' hasn't depressed US productive investment. *Cambridge Journal of Economics*, vol. 39, no. 1, pp. 67-92.

Lapavitsas, C. 2013. *Profiting Without Producing*. London and New York: Verso.

Ng, S. and Perron, P. 2001. Lag length selection and the construction of unit root tests with good size and power. *Econometrica*, vol. 69, no. 6, pp. 1519-1554.

Onaran, O., Stockhammer, E. and Grafl, L. 2011. Financialisation, income distribution and aggregate demand in the USA. *Cambridge Journal of Economics*, vol. 35, no. 4, pp. 637-661.

Orhangazi, Ö. 2008. Financialisation and capital accumulation in the non-financial corporate sector: A theoretical and empirical investigation on the US economy: 1973–2003. *Cambridge Journal of Economics*, vol. 32, no. 6, pp. 863-886.

Palley, T. 2013. *Financialization. The Economics of Finance Capital Domination*. London: Palgrave Macmillan.

Perron, P. and Qu, Z. 2007. A simple modification to improve the finite sample properties of Ng and Perron's unit root tests. *Economics Letters*, vol. 94, no. 1, pp. 12-19.

Pesaran, M. and Shin, Y. 1999. An autoregressive distributed lag modelling approach to cointegration analysis. In Strøm, S. (ed.) *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium*. New York: Cambridge University Press, pp. 371-413.

Pesaran, M., Shin, Y. and Smith, R. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, vol. 16, no. 3, pp. 289–326.

Philippon, T. and Reshef, A. 2013. An international look at the growth of modern finance. *Journal of Economic Perspectives*, vol. 27, no. 2, pp. 73-96.

Philippon, T. 2015. Has the U.S. finance industry become less efficient? On the theory and measurement of financial intermediation. *American Economic Review*, vol. 105, no. 4, pp. 1408-1438.

Said, S. and Dickey, D. 1984. Testing for unit roots in autoregressive-moving average models of unknown order. *Biometrika* vol. 71, no. 3, pp. 599-607.

Schwert, W. 1989. Tests for unit roots: A Monte Carlo investigation. *Journal of Business and Economic Statistics*, vol. 7, no. 2, pp. 147-159.

Skott, P. and Ryoo, S. 2008. Macroeconomic implications of financialisation. *Cambridge Journal of Economics*, vol. 32, no. 6, pp. 827-862.

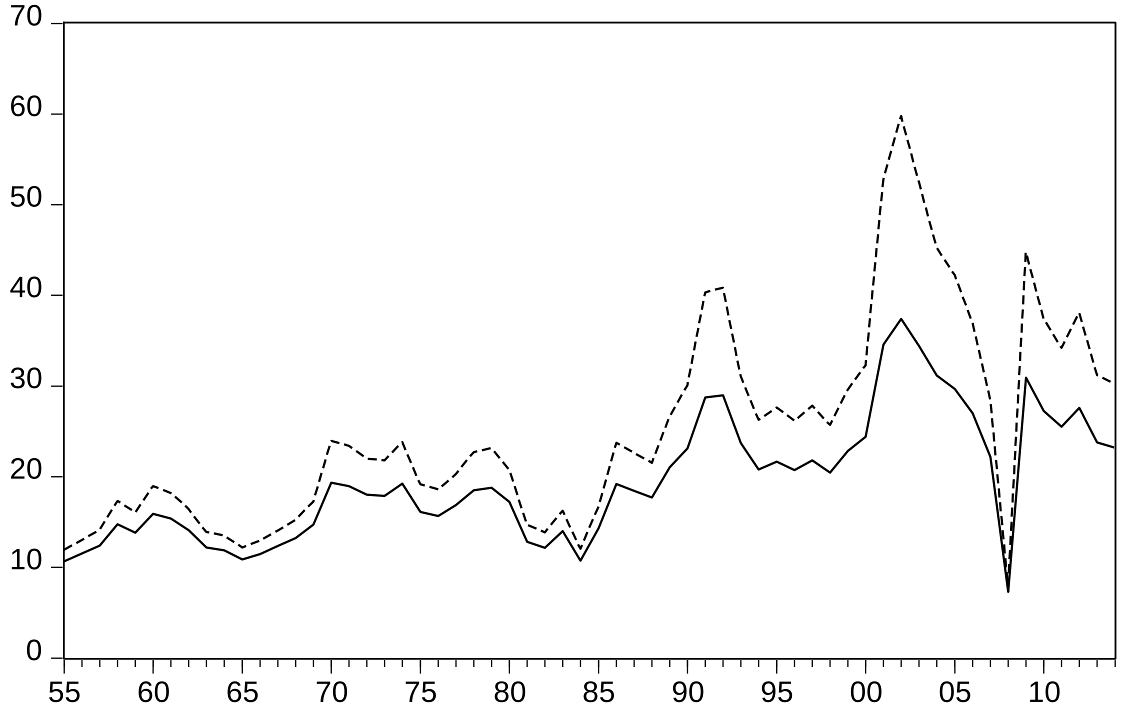
Stock, J. and Watson, M. 1993. A simple estimator of cointegrating vectors in higher order integrated systems.

Stockhammer, E. 2004. Financialisation and the slowdown of accumulation. *Cambridge Journal of Economics*, vol. 28, no. 5, pp. 719-741.

Van Treeck, T. 2009. A synthetic, stock–flow consistent macroeconomic model of ‘financialisation’. *Cambridge Journal of Economics*, vol. 33, no. 3, pp. 467-493.

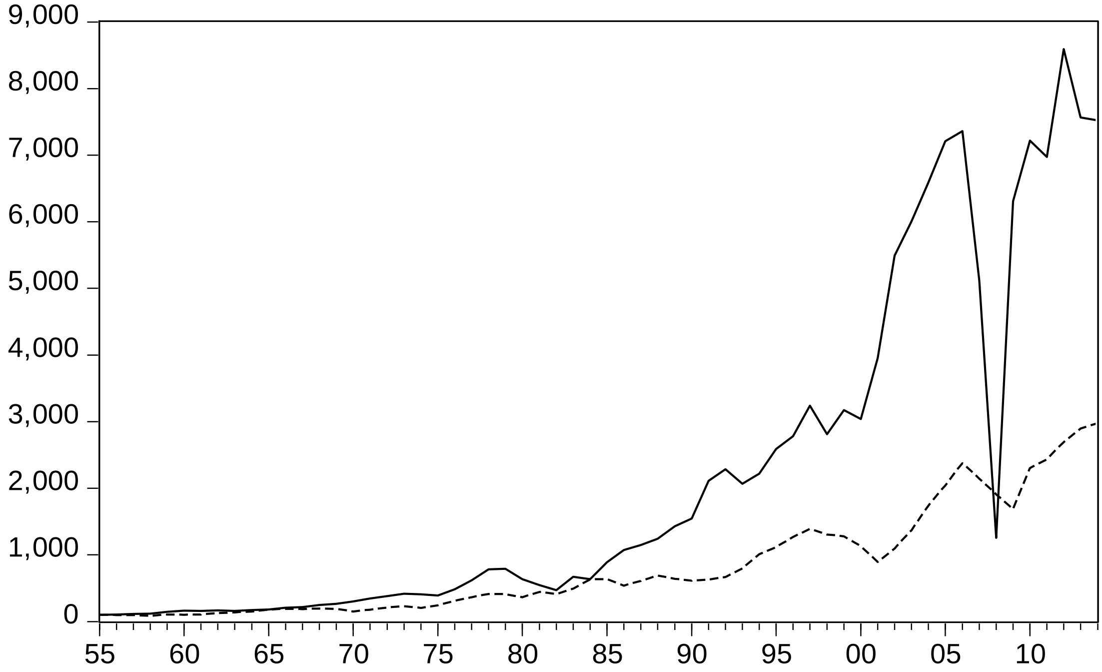
Figures and Appendix A

Figure 1. US, 1955-2014. Financial profits as percentage of domestic corporate profits (solid line) and as percentage of non-financial corporate profits (dotted line)



Source: Own elaboration using data obtained from the National Income and Product Accounts (NIPA), Bureau of Economic Analysis (BEA)

Figure 2. US, 1955-2014. Index (1955=100) of financial profits (solid line) and non-financial profits (dotted line)



Source: Own elaboration using data shown in figure 1.

Table 1. Balance sheets of the non-financial and financial sectors

Non-financial sector		*Financial sector*	
Assets	*Liabilities*	*Assets*	*Liabilities*
K	S	L	B
B	L		G

Table 2. Empirical variables, 1955-2014[a]

Variable	*Definition*	*Data sources and variable construction*[b]
$\left(\frac{\mathbf{F}}{\mathbf{\Pi}}\right)_t$	Ratio of financial profits to non-financial profits	Pre-tax NOI of ICB (FDIC, Table CB04) divided by pre-tax NFC profits (NIPA, BEA, Table 1.14)
$\mathbf{NIM}_t$	Net interest margin	Net Interest Income of ICB (FDIC, Table CB04) divided by TIEA of ICB (FDIC, Table CB09)
$\boldsymbol{\delta}_t$	Ratio of non-interest income to non-financial profits	Non-Interest Income (FDIC, Table CB07) divided by pre-tax NFC profits (NIPA, BEA, Table 1.14)
$\boldsymbol{\gamma}_t$	Ratio of non-interest expense to non-financial profits	Non-Interest Expense (FDIC, Table CB07) divided by pre-tax NFC profits (NIPA, BEA, Table 1.14)
$\mathbf{r}_t$	Rate of profit	Pre-tax NFC profits (NIPA, BEA, Table 1.14) divided by current-cost net stock of NFC fixed assets in the previous year (K_{t-1}, BEA, Table 6.1)[c]
$\left(\frac{\mathbf{K}}{\mathbf{L}}\right)_t$	Ratio of capital stock to interest earning assets	Current-cost net stock of NFC fixed assets in the previous year (K_{t-1}, BEA, Table 6.1)[c] divided by TIEA of ICB (FDIC, Table CB09)
$\left(\frac{\mathbf{\Pi}}{\mathbf{L}}\right)_t$	Ratio of non-financial profits to interest-earning assets	Pre-tax NFC profits (BEA, Table 1.14) divided by TIEA of ICB (FDIC, Table CB09)

Notes: [a]All variables were measured in percentages; [b]NOI: Net Operating Income; ICB: Insured Commercial Banks; FDIC: Federal Deposit Insurance Corporation; NFC: Non-Financial Corporate; NIPA: National Income and Product Accounts; BEA: Bureau of Economic Analysis; TIEA: Total Interest Earning Assets; [c]$\mathbf{K}_{t-1}$was employed since NIPA lists the capital stock at the end of the year.

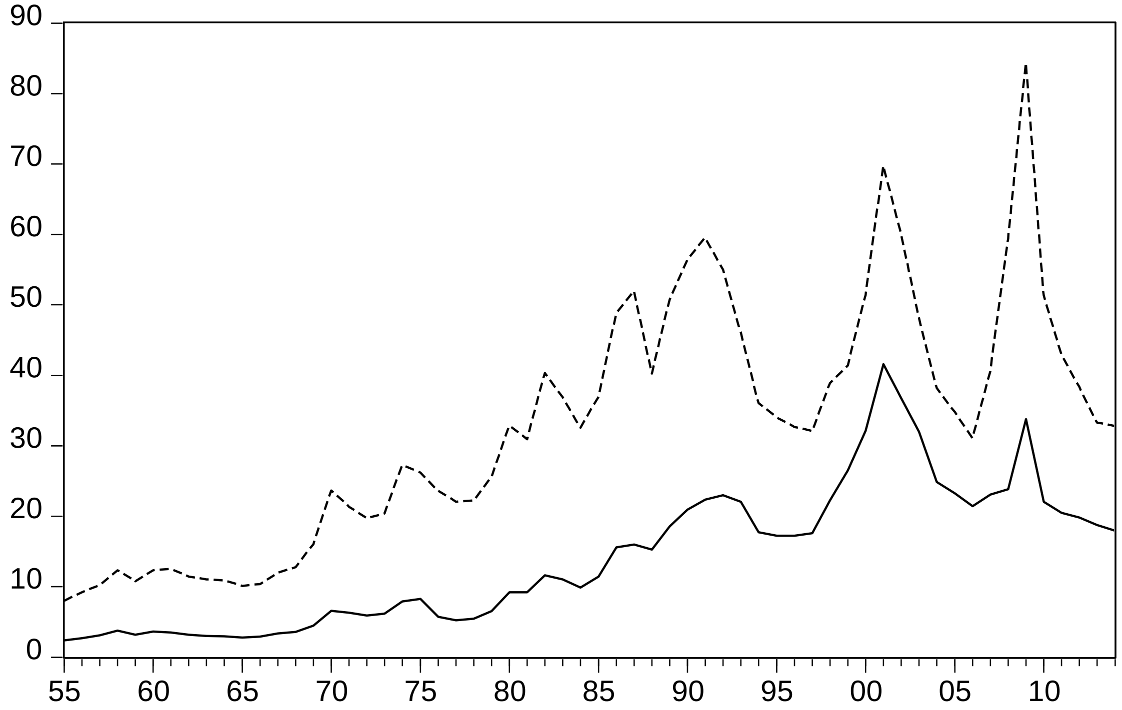
Figure 3. US, 1955-2014. $\left(\frac{F}{\Pi}\right)_t$: Ratio of financial profits to non-financial profits, in percentage

Source: Own elaboration as explained in table 2.

Figure 4. US, 1955-2014. NIM_t: Net interest margin, in percentage

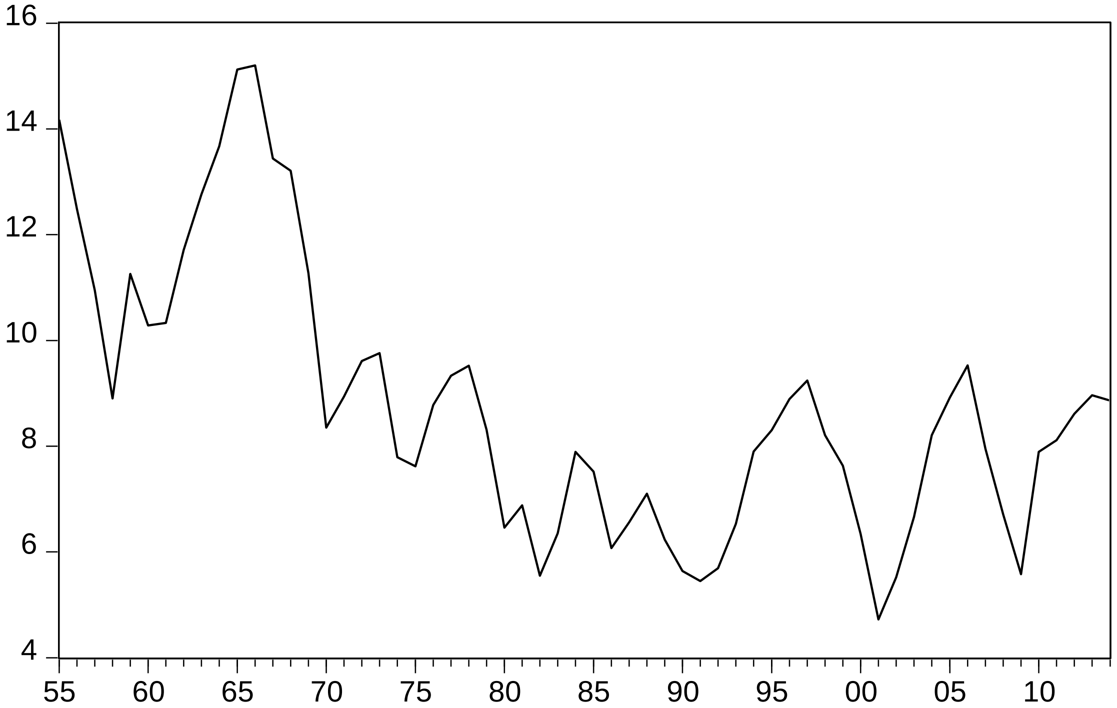
Source: Own elaboration as explained in table 2.

Figure 5. US, 1955-2014. δ_t: Ratio of non-interest income to non-financial profits (solid line) and γ_t: Ratio of non-interest expense to non-financial profits (dotted line), in percentages



Source: Own elaboration as explained in table 2.

Figure 6. US, 1955-2014. r_t: General rate of profit, in percentage



Source: Own elaboration as explained in table 2.

Figure 7. US, 1955-2014. $\left(\frac{K}{L}\right)_t$: Ratio of capital stock to interest-earning assets (solid line, left axis) and $\left(\frac{\Pi}{L}\right)_t$: Ratio of non-financial profits to interest-earning assets (dotted line, right axis), in percentages

Source: Own elaboration as explained in table 2.

Table 3. Unit root tests

Series[a]:	ADF[b,c]	DF-GLS[b,c]	M-PP[b,c]	KPSS[b,d]
$\left(\frac{F}{\Pi}\right)_t$	-2.66	-2.71	-11.78	0.07
$\Delta\left(\frac{F}{\Pi}\right)_t$	-6.60***	-6.70***	-28.49***	-
NIM_t	-0.41	-0.70	-0.83	0.22***
$\Delta(NIM_t)$	-6.55***	-6.03***	-25.23***	0.08
δ_t	-2.05	-2.18	-9.25	0.11
$\Delta(\delta_t)$	-4.66***	-4.75***	-26.41***	-
γ_t	-2.80	-2.93	-14.33*	0.16**
$\Delta(\gamma_t)$	-6.51***	-6.62***	-28.50***	0.11
r_t	-1.47	-1.56	-7.79	0.19**
$\Delta(r_t)$	-6.14***	-5.79***	-25.32***	0.03
$\left(\frac{K}{L}\right)_t$	-2.58	-2.64	-10.31	0.11
$\Delta\left(\frac{K}{L}\right)_t$	-6.19**	-1.85	-19.86**	-
$\Delta^2\left(\frac{K}{L}\right)_t$	-	-10.70***	-	-
$\left(\frac{\Pi}{L}\right)_t$	-2.39	-2.01	-6.99	0.79***
$\Delta\left(\frac{\Pi}{L}\right)_t$	-7.61***	-7.64***	-28.55***	0.17

Notes: [a]Δ and Δ^2 denote the first and second differences of the series, respectively; [b]ADF: Augmented Dickey-Fuller; DF-GLS: Dickey–Fuller Generalized Least Squares; M-PP: Modified Phillips-Perron; KPSS: Kwiatkowski et al. (1992); [c]Null hypothesis: the series has a unit root; [d]Null hypothesis: the series is a stationary process.

*, **, and *** denote rejection of the null hypothesis at the 10%, 5% and 1% level, respectively.

Table 4. Cointegration tests

Equations:	*Hansen's (1992) parameter instability test*[a]	*ARDL bounds test (Pesaran et al., 2001)*[b]
	Period: 1955-2014	
Equation (10a)	0.08	-
Equation (10b)	0.08	-
Equation (11a): ARDL(1,1,2,2,1,1)[c]	-	3.92**
Equation (11b): ARDL(1,1,2,2,1)[d]	-	5.0***
	Period: 1974-2014	
Equation (10a)	0.67	-
Equation (10b)	0.17	-
Equation (11a): ARDL(1,1,1,1,2,2)[c]	-	3.53**
Equation (11b): ARDL(1,2,1,1,1)[d]	-	7.07***

Notes: [a]$\boldsymbol{L_c}$ statistic. Null hypothesis: Series are cointegrated; [b]*F*-statistic. Null hypothesis: Series are not cointegrated; [c]*ARDL(p,q1,q2,q3,q4,q5)*, where p,q_1,q_2,q_3,q_4,q_5 denote the optimal lag length for $\boldsymbol{\Delta}\left(\frac{\mathbf{F}}{\boldsymbol{\Pi}}\right)_{\mathbf{t}}$, $\boldsymbol{\Delta}(\mathbf{NIM_t})$, $\boldsymbol{\Delta}(\boldsymbol{\delta_t})$, $\boldsymbol{\Delta}(\boldsymbol{\gamma_t})$, $\boldsymbol{\Delta}(\mathbf{r}_t)$, and $\boldsymbol{\Delta}\left(\frac{\mathbf{K}}{\mathbf{L}}\right)_{\mathbf{t}}$ in the unrestricted error correction model, respectively; [d]*ARDL(p,q1,q2,q3,q4)*, where p,q_1,q_2,q_3,q_4 denote the optimal lag length for $\boldsymbol{\Delta}\left(\frac{\mathbf{F}}{\boldsymbol{\Pi}}\right)_{\mathbf{t}}$, $\boldsymbol{\Delta}(\mathbf{NIM_t})$, $\boldsymbol{\Delta}(\boldsymbol{\delta_t})$, $\boldsymbol{\Delta}(\boldsymbol{\gamma_t})$ and $\boldsymbol{\Delta}\left(\frac{\boldsymbol{\Pi}}{\mathbf{L}}\right)_{\boldsymbol{t}}$ in the unrestricted error correction model, respectively.

** and *** denote rejection of the null hypothesis at the 5% and 1% level, respectively.

Table 5. Long-run coefficients[a]

Coefficient on:	*1955-2014*		*1974-2014*	
	Model represented by equation (10a)			
	DOLS[b]	*ARDL*[c]	*DOLS*[b]	*ARDL*[c]
Intercept	24.59***	32.14***	79.0***	50.95***
	(6.36)	(6.81)	(17.64)	(13.98)
$\mathbf{NIM}_t$	3.40***	1.74	9.17**	7.14**
	(0.92)	(1.21)	(3.45)	(2.83)
$\boldsymbol{\delta}_t$	1.04***	0.89***	1.16***	0.99***
	(0.08)	(0.09)	(0.05)	(0.08)
$\boldsymbol{\gamma}_t$	-0.65***	-0.57***	-1.11***	-0.82***
	(0.06)	(0.07)	(0.17)	(0.11)
$\mathbf{r}_t$	-1.34***	-1.39***	-5.08***	-3.23***
	(0.30)	(0.36)	(1.08)	(0.87)
$\left(\frac{\mathbf{K}}{\mathbf{L}}\right)_t$	-0.05***	-0.06***	-0.26**	-0.17**
	(0.01)	(0.02)	(0.11)	(0.08)
$\mathbf{Dummy}_{2001}$	-	12.10***	-	12.75***
		(2.77)		(4.01)
	Model represented by equation (10b)			
Intercept	13.57***	16.91***	34.20***	31.05***
	(4.03)	(4.82)	(2.73)	(4.68)

$\mathbf{NIM}_t$	3.73***	2.63**	8.88***	7.99***
	(0.98)	(1.13)	(0.78)	(0.98)
$\boldsymbol{\delta}_t$	1.02***	0.87***	1.20***	1.10***
	(0.07)	(0.08)	(0.05)	(0.06)
$\boldsymbol{\gamma}_t$	-0.62***	-0.54***	-1.08***	-0.97***
	(0.05)	(0.06)	(0.06)	(0.07)
$\left(\frac{\mathbf{\Pi}}{\mathbf{L}}\right)_t$	-0.69***	-0.72***	-2.97***	-2.65***
	(0.12)	(0.15)	(0.25)	(0.35)
$\mathbf{Dummy}_{1987}$	-	-7.01***	-	-
		(1.61)		
$\mathbf{Dummy}_{2001}$	-	11.96***	-	10.43***
		(2.34)		(2.22)

Notes: [a]Standard errors are shown in parentheses; [b]Dynamic OLS estimator; [c]ARDL cointegrating coefficients.

*, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively.

Table 6. Error correction representations[a,b]

Coefficient on:	*1955-2014*		*1974-2014*	
	Final models derived from equation (12a)			
	DOLS[c]	*ARDL[d]*	*DOLS[c]*	*ARDL[d]*
Intercept	-0.28*	-	-0.02	-
	(0.16)		(0.13)	

$\Delta(\mathbf{NIM}_t)$	6.27***	4.64***	8.33***	7.51***
	(0.91)	(0.92)	(1.05)	(0.82)
$\Delta(\boldsymbol{\delta}_t)$	1.34***	1.23***	1.14***	1.08***
	(0.11)	(0.10)	(0.08)	(0.07)
$\Delta(\boldsymbol{\gamma}_t)$	-0.80***	-0.76***	-0.87***	-0.87***
	(0.04)	(0.04)	(0.03)	(0.02)
$\Delta(\boldsymbol{\gamma}_{t-1})$	-	-0.11**	-	-
		(0.04)		
$\Delta(\mathbf{r}_t)$	-1.89***	-1.82***	-3.70***	-3.66***
	(0.18)	(0.17)	(0.26)	(0.18)
$\Delta(\mathbf{r}_{t-1})$	-	-	0.54***	0.42***
			(0.14)	(0.11)
$\Delta\left(\left(\frac{\mathbf{K}}{\mathbf{L}}\right)_t\right)$	-0.15***	-0.11***	-0.12***	-0.12***
	(0.03)	(0.03)	(0.03)	(0.02)
$\Delta\left(\left(\frac{\mathbf{K}}{\mathbf{L}}\right)_{t-1}\right)$	-	-	0.07**	0.08***
			(0.03)	(0.02)
$\mathbf{Dummy}_{2001}$	4.43***	4.85***[e]	4.73***	5.61***[e]
	(1.19)	(0.85)	(0.87)	(0.58)
$\mathbf{CE}_{t-1}$[f]	-0.49***	-0.49***	-0.48***	-0.54***
	(0.13)	(0.09)	(0.16)	(0.08)
Adjusted R^2	0.89	0.97[g]	0.96	0.98[g]
Short-run elasticity with respect to $\mathbf{NIM}_t$	6.27	4.64	8.33	7.51
Short-run elasticity with respect to $\boldsymbol{\delta}_t$	1.34	1.23	1.14	1.08

Short-run elasticity with respect to $\boldsymbol{\gamma}_{\mathbf{t}}$	-0.80	-0.87	-0.87	-0.87
Short-run elasticity with respect to $\mathbf{r}_{\mathbf{t}}$	-1.89	-1.82	-3.16	-3.24

Table 6 (continuation). Error correction representations[a,b]

Coefficient on:	*1955-2014*		*1974-2014*	
	Final models derived from equation (12a)			
Short-run elasticity with respect to $\left(\frac{\mathbf{K}}{\mathbf{L}}\right)_t$	-0.15	-0.11	-0.05	-0.04
Adjustment length (years)	2.04	2.04	2.08	1.85
	Final models derived from equation (12b)			
Intercept	-0.19	-	-0.14	-
	(0.15)		(0.10)	
$\boldsymbol{\Delta}(\mathbf{NIM}_t)$	5.57***	4.52***	9.29***	10.55***
	(0.85)	(0.81)	(0.73)	(0.73)
$\boldsymbol{\Delta}(\mathbf{NIM}_{t-1})$	-	-	-	2.52***
				(0.73)
$\boldsymbol{\Delta}(\boldsymbol{\delta}_t)$	1.29***	1.13***	1.18***	1.09***
	(0.11)	(0.10)	(0.06)	(0.06)
$\boldsymbol{\Delta}(\boldsymbol{\delta}_{t-1})$	-	0.30***	-	-

		(0.10)		
$\Delta(\gamma_t)$	-0.76***	-0.68***	-0.85***	-0.86***
	(0.04)	(0.04)	(0.03)	(0.03)
$\Delta(\gamma_{t-1})$	-	-0.11***	-	-
		(0.04)		
$\Delta\left(\left(\frac{\Pi}{L}\right)_t\right)$	-1.06***	-0.93***	-2.35***	-2.37***
	(0.11)	(0.09)	(0.13)	(0.11)
$\Delta\left(\left(\frac{\Pi}{L}\right)_{t-1}\right)$	-	-	0.24***	-
			(0.07)	
$\mathbf{Dummy_{1987}}$	-	-3.53***[e]	-	-
		(0.74)		
$\mathbf{Dummy_{2001}}$	4.50***	4.66***[e]	4.41***	5.06***
	(1.24)	(0.83)	(0.70)	(0.51)
$\mathbf{CE}_{t-1}$[f]	-0.52***	-0.45***	-0.51***	-0.60***
	(0.12)	(0.09)	(0.12)	(0.08)
Adjusted R^2	0.88	0.97[g]	0.97	0.98[g]
Short-run elasticity with respect to $\mathbf{NIM}_t$	5.57	4.52	9.29	13.07
Short-run elasticity with respect to $\boldsymbol{\delta}_t$	1.29	1.43	1.18	1.09

Table 6 (continuation). Error correction representations[a,b]

Coefficient on:	*1955-2014*		*1974-2014*	
	Final models derived from equation (12b)			
Short-run elasticity with respect to $\boldsymbol{\gamma}_t$	-0.76	-0.79	-0.85	-0.86

Short-run elasticity with respect to $\left(\frac{\Pi}{L}\right)_t$	-1.06	-0.93	-2.11	-2.37
Adjustment length (years)	1.92	2.22	1.96	1.67

Notes: [a]Models satisfied all correct specification tests; [b]Standard errors are shown in parenthesis; [c]Cointegrating equation derived from the DOLS long-run coefficients; [d]Cointegrating equation derived from the ARDL cointegrating coefficients; [e]Coefficients on the first differences of $\mathbf{Dummy_{1987}}$ and $\mathbf{Dummy_{2001}}$: $\mathbf{\Delta}(\mathbf{Dummy_{1987}})$ and $\mathbf{\Delta}(\mathbf{Dummy_{2001}})$, respectively; [f]**CE**: Cointegrating Equation; [g]Adjusted R^2 from the original ARDL representation.

*, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively.

Table 7. Percentage point changes in the variables of analysis during different periods

Periods:	$\Delta\left(\frac{F}{\Pi}\right)_t$	$\Delta(NIM_t)$	$\Delta(\delta_t)$	$\Delta(\gamma_t)$	$\Delta(r_t)$	$\Delta\left(\left(\frac{K}{L}\right)_t\right)$	$\Delta\left(\left(\frac{\Pi}{L}\right)_t\right)$
1955-2014	10.44	0.04	15.54	24.77	-5.31	-79.38	-17.04
1955-1973	3.63	0.40	3.78	12.40	-4.41	-41.68	-12.38
1974-2014	5.20	-0.24	10.01	5.51	1.07	-28.29	-1.03
1974-1983	-1.59	0.46	3.13	9.65	-1.44	28.45	-0.18
1984-1993	9.52	0.46	12.21	13.52	-1.36	-0.04	-2.15
1994-2003	9.30	-0.54	14.30	12.09	-1.24	-22.38	-3.38
2004-2014	-4.44	-0.38	-6.95	-5.44	0.65	-12.38	-0.30

APPENDIX A. VAR-based cointegration tests

VAR-based cointegration tests were performed using the methodology developed by Johansen (1991, 1995). An unrestricted 6-dimensional VAR was estimated using the variables in equation (10a) and an unrestricted 5-dimensional VAR using the variables in equation (10b):

$$\mathbf{Y}_{\boldsymbol{t}} = \mathbf{A} + \mathbf{B}(\mathbf{L})\mathbf{Y}_{\boldsymbol{t}} + \boldsymbol{\varepsilon}_{\boldsymbol{t}} \quad \dots\dots\dots \quad \text{(A1)}$$

$$\mathbf{Y}_{\mathbf{1},\boldsymbol{t}} = \mathbf{A}_{\mathbf{1}} + \mathbf{B}_{\mathbf{1}}(\mathbf{L})\mathbf{Y}_{\mathbf{1},\boldsymbol{t}} + \boldsymbol{\varepsilon}_{\mathbf{1},\boldsymbol{t}} \quad \dots\dots\dots \quad \text{(A2)}$$

where $\mathbf{Y}_{\boldsymbol{t}} = \left(\left(\frac{\mathrm{F}}{\Pi}\right)_t, \mathrm{NIM}_t, \delta_t, \gamma_t, \mathrm{r}_t, \left(\frac{\mathrm{K}}{\mathrm{L}}\right)_t\right)'$ in equation (A1); and $\mathbf{Y}_{\mathbf{1},\boldsymbol{t}} = \left(\left(\frac{\mathrm{F}}{\Pi}\right)_t, \mathrm{NIM}_t, \delta_t, \gamma_t, \left(\frac{\Pi}{\mathrm{L}}\right)_t\right)'$ in equation (A2); $\mathbf{A}$ and $\mathbf{A}_{\mathbf{1}}$ are 6X1 and 5X1 vectors of constant terms, respectively; $\mathbf{B}(\mathbf{L})$ and $\mathbf{B}_{\mathbf{1}}(\mathbf{L})$ are 6X6 and 5X5 matrices polynomials of unrestricted constant coefficients in the lag operator *L*, respectively; and $\boldsymbol{\varepsilon}_{\boldsymbol{t}}$ and $\boldsymbol{\varepsilon}_{\mathbf{1},\boldsymbol{t}}$ are 6X1 and 5X1 vectors of white noise errors with covariance matrices $\boldsymbol{\Sigma}_{\boldsymbol{\varepsilon}}$ and $\boldsymbol{\Sigma}_{\boldsymbol{\varepsilon}_{\mathbf{1}}}$, respectively. A trend was included in the different VAR models, but it was found to be statistically non-significant in all cases.

Equations (A1) and (A2) were estimated for the periods 1955-2014 and 1974-2014. The optimal lag lengths for the VAR models were selected according to the Akaike information criterion and the sequential modified likelihood ratio test, which indicated: two lags for both VAR models during the period 1955-2014; two lags for equation (A1) during the period 1974-2014; and three lags for equation (A2) during the period 1974-2014. These VAR models do not present problems of serial correlation (up to order 4) or heteroskedasticity (at the 10% level of significance); however, they present non-normality problems. (These results are available on request).

The presence of cointegration in the vectors $\mathbf{Y}_t$ and $\mathbf{Y}_{1,t}$ was tested by using Johansen's (1991; 1995) cointegration trace test:

Table A1. Unrestricted cointegration rank tests[a]

Null hypothesis[b]	*Trace statistic*	*5% Critical value*	*p-value*
	1955-2014		
	Equation (A1)		
$r = 0$	86.50	95.75	0.18
$r \leq 1$	62.08	69.82	0.18
$r \leq 2$	38.67	47.86	0.27
$r \leq 3$	19.72	29.80	0.44
$r \leq 4$	9.04	15.49	0.36
$r \leq 5$	2.56	3.84	0.11
	Equation (A2)		
$r = 0$	67.77	69.82	0.07
$r \leq 1$	42.59	47.86	0.14
$r \leq 2$	23.32	29.80	0.23
$r \leq 3$	6.90	15.49	0.59
$r \leq 4$	2.99	3.84	0.08
	1974-2014		
	Equation (A1)		
$r = 0$	117.60	95.75	0.00**
$r \leq 1$	75.25	69.82	0.02**
$r \leq 2$	40.87	47.86	0.19
$r \leq 3$	24.74	29.80	0.17
$r \leq 4$	13.50	15.49	0.10

$r \leq 5$	5.13	3.84	0.02**
	Equation (A2)		
$r = 0$	100.19	69.82	0.00**
$r \leq 1$	53.38	47.86	0.01**
$r \leq 2$	28.68	29.80	0.07
$r \leq 3$	11.82	15.49	0.17
$r \leq 4$	2.51	3.84	0.11

Notes: [a]The test was carried out assuming that the level data have linear trends but the cointegrating equations have only intercepts. Different specifications of the tests did not change the conclusions. The maximum eigenvalue test also corroborates these results; [b]r: Number of cointegrating vectors.

** denotes rejection of the null hypothesis (no cointegration) at the 5% level.

From table A1 it follows that, both for equations (A1) and (A2), the trace test shows: no evidence of cointegration at the 5% level during the period 1955-2014; and the presence of two cointegrating equations during the period 1974-2014.

Endnotes

[i]See Greenwood and Scharfstein (2013), Phillipon and Reshef (2013), and Philippon (2015) for recent studies compiling evidence for the USA and for other developed countries.

[ii]Very selectively, the macroeconomic consequences of financialisation have been considered by Skott and Ryoo (2008), Van Treek (2009) and Palley (2013). The link between financialisation and productive investment has been discussed by Stockhammer (2004), Orhangazi (2008) and Kliman and Williams (2015). The impact of financialisation on income distribution has been explored by Onaran et al. (2011), Hein (2015) and Dünhaupt (2017).

[iii]For an analysis of financialisation as a historical period see Lapavitsas (2013).

[iv]Ideally, the measure of financial profits should also include profits made by other economic agents through financial activities –*e.g.*, profits made by households through trading in financial assets– as well as profits made by non-financial corporations through engaging in purely financial activities –*e.g.*, through share transactions. However, there is no data that would allow for such an estimation. Thus, the best estimate of aggregate financial profits is given by the profits of financial institutions, *i.e.*, mostly banks.

[v]Financial profits rebounded strongly in 2009, but the ratio has not reached previous heights and has even exhibited a downward trend. On this evidence, it seems plausible that the era of high financialisation in the US economy may have come to an end in the early 2000s.

[vi]Along the lines discussed by Lapavitsas (2013).

[vii]A more comprehensive model would have incorporated wage-labour employed by the functioning capitalists, and thus a wage-earning household sector. However, that would have complicated the analysis, without adding much additional insight into the extraordinary rise of financial profits in the US. This is clear from the empirical analysis presented in section 4.

[viii]Since wage-labour has been left out of account, there is no need explicitly to consider cost conditions.

[ix]Note that the leverage ratio of the non-financial sector in this simplified two-sector model would be L/S.

[x]The model was also tested for cointegration in the context of Vector Autoregressive (VAR) models using the methodology developed by Johansen (1991, 1995). The results are presented in Appendix A. In brief, Johansen's cointegration tests find no evidence of cointegration during the period 1955-2014; and show the presence of two cointegrating equations during the period 1974-2014. The standard procedure would be to estimate the VAR models in first differences for the first period, and Vector Error Correction (VEC) models for the second period.

However, there are no theoretical foundations to provide guidance for the identification of the systems using these methodologies. Without the latter, it is not possible to provide meaningful impulse response functions and variance decompositions analyses. In the same vein, as documented by Pesaran and Shin (1999), the small sample properties of the bounds testing approach are superior to that of the traditional Johansen (1991, 1995) cointegration approach, which typically requires a large sample size for the results to be valid –specifically, Pesaran and Shin (1999) show that the ARDL approach has better properties in sample sizes up to 150 observations. Because of these reasons, it is more appropriate to follow the single equation settings shown in equations (10a) and (10b).

[xi]Hansen (1992) outlines a test of the null hypothesis of cointegration against the alternative of no cointegration, noting that under the alternative hypothesis of no cointegration, one should expect to see evidence of parameter instability.

[xii]The period 1974-2014 was selected in order to provide estimations for the last four decades. Given the relatively small sample size, it was not possible to perform any endogenous breakpoint tests. However, the breakpoint in 1974 was statistically verified in both models by the rejection of the null hypothesis of the Chow breakpoint test (no breakpoint in 1974), which yielded likelihood ratios of 37.78 (*p*-value=0.0) and 49.04 (*p*-value=0.0) for the ARDL models depicted in equations (11a) and (11b), respectively.

[xiii]Nevertheless, the estimation results for equations (11a) and (11b) for the period 1955-2014 presented heteroskedasticity problems when the ARCH tests incorporated two lags. Consequently, heteroskedasticity and autocorrelation consistent (HAC) standard errors were employed by using the Newey-West estimator.

[xiv]The DOLS estimator allows for the resulting cointegrating equation error term to be orthogonal to the entire history of the stochastic regressor innovations (Stock and Watson, 1993).

[xv]Different specifications did not change the main conclusions.

[xvi]Alternatively, the long-run negative sensitivity of $(\mathrm{F}/\Pi)_t$ with respect to $(\Pi/\mathrm{L})_t$ was -0.71% and -2.81% during the periods 1955-2014 and 1974-2014, respectively, which represents an increase of approximately 2.10 pp.

[xvii]An intercept was also included in the estimation of these models.

[xviii]Note that the optimal lag structure of the initial ARDL models is shown in table 4.

[xix]Alternatively, the short-run negative sensitivity of $(\mathrm{F}/\Pi)_t$ with respect to $(\Pi/\mathrm{L})_t$ was -0.99% during the period 1955-2014 and -2.24% during the period 1974-2014, thus increasing by approximately 1.25 pp.

[xx]The analysis of financialisation should, therefore, place considerable emphasis on the related transformation of banking activities. An important phenomenon in this respect has been the increase in household debt and its

implications for interest and non-interest income of banks, as is discussed by Lapavitsas (2013). The models presented by Dos Santos (2011; 2014) are important developments in this field.