Financialisation, income distribution and aggregate demand in the USA

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This paper investigates the effects of financialisation and functional income
distribution on aggregate demand in the USA by estimating the effects of the
increase in rentier income (dividends and interest payments) and housing and
financial wealth on consumption and investment. The redistribution of income in
favour of profits suppresses consumption, whereas the increase in the rentier income
and wealth has positive effects. A higher rentier income decreases investment.
Without the wealth effects, the overall effect of the changes in distribution on
aggregate demand would have been negative. Thus a pro-capital income distribution
leads to a slightly negative effect on growth, i.e. the USA economy is moderately
wage-led.

Key words: Distribution, Investment, Consumption, Financialisation
JEL classifications: E12, E21, E22, E25

1. Introduction

The notion of financialisation covers a wide range of phenomena: the deregulation of the
financial sector and the proliferation of new financial instruments, the increase in
household debt, the development of the originate-and-distribute model of banking, the
emergence of institutional investors as major player on financial markets, the boom (and
bust) in asset markets, shareholder value orientation and changes in corporate governance
(of non-financial business), and a spectacular rise of incomes in the financial sector and of
financial investments.[1] This paper aims at exploring how some of these changes have
affected aggregate demand in the USA. Thereby we focus on three dimensions of the
various effects of financialisation on the macro economy: (i) the effects of increased rentier

[1] References include Boyer (2000), Lazonick and O'Sullivan (2000), Stockhammer (2004, 2008), Aglietta
and Rebérioux (2005), Epstein (2005), Krippner (2005), Froud *et al.* (2006), Palley (2008).

income, defined as interest and dividend payments out of profits;[2] on investment, (ii) the effects of the increased rentier income on consumption; (iii) the effects of the housing and financial asset prices on consumption.

The USA is a particularly interesting case to analyse these effects. Financialisation is in many respects most developed in the USA. Looking at the stylised facts, several puzzles arise. First, the USA has experienced a consumption-led boom since the mid-1990s, as can be seen in the rise of consumption/GDP in Figure 1. At the same time a change in income distribution in favour of the profit share has occurred (Figure 2). If we accept the standard assumption that the marginal propensity to consume out of profits is lower than that out of wages, this raises a first puzzle: why has consumption increased despite a declining wage share? The USA experienced a stock market boom in the 1990s and bust in the early 2000s and a housing price boom (that is collapsing at the time of writing). Net financial wealth and housing wealth (Figure 3) show wide swings and the associated wealth effects are often thought to explain changes in consumption behaviour. Second, since the 1980s, there has been a sharp decline in the gross private investment/gross operating surplus ratio (Figure 4). Thus, another puzzle arises: given that profits have increased, why has investment not increased in parallel? In the same period, there have been significant changes in the composition of profit income. Since the 1980s there has been a jump in the share of the rentier income, i.e. net interest and dividend payments, as a ratio to total profits (Figure 5). The increase in rentier income was first due to the increase in interest rates in the 1980s, and after the decline of interest rates in the 1990s, the increase in dividend payments helped to hold the rentier income share at high levels. As a consequence the non-rentier profit income (gross operating surplus minus net interest and dividend payments) as a ratio to GDP follows a completely different pattern than the profit share in the 1980s (Figure 6); the fall throughout the 1960s and 1970s was not followed by a major recovery during the post-1980s. Thus, the increase in the profit share was due to the increase in the rentier income share at the expense of not only the wage income but also the non-rentier profit income.

This paper aims to explain these puzzles regarding the increase in consumption and the stagnation in investment during a period of pro-capital redistribution of income in the USA by integrating the effects of financialisation. The basic model addresses the relationship between aggregate demand and distribution using a Kaleckian–Steindlian approach. Earlier neo-Kaleckian models by Rowthorn (1981), Dutt (1984), Taylor (1985), Blecker (1989) and Bhaduri and Marglin (1990) have modelled how an increase in the profit share affects demand. A pro-capital income distribution can have positive as well as negative effects on aggregate demand according to the relative size of the consumption differential out of wage versus profit income, the sensitivity of investment to profits, and the sensitivity of net exports to unit labour costs. Thus, the demand regime can be wage-led or profit-led. The theoretical contribution of this paper is to extend the basic model by incorporating the effects of financialisation on aggregate demand in an open economy context. We then econometrically estimate the effects on changes in income distribution and financialisation

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[2] We discuss rentier income as an income category rather than rentier as a class. Thus we treat rentier income as part of capitalist's income paid out in the form of interest and dividends. There are different conceptual ways of introducing the rentier in post-Keynesian models. Dutt (1992) defines them as a third class, whereas in Dutt (1995) rentier income is introduced as part of household income. Although these conceptual differences can be interesting, the effects on aggregate demand are quite similar to the extent that rentier income has a different marginal propensity to save and they have a negative effect on investable internal funds of the firms.
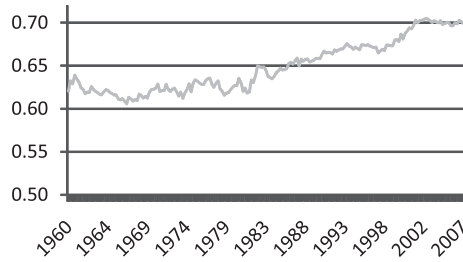
Fig. 1. *Consumption/GDP. Quarterly data from first quarter 1960 to fourth quarter 2007. See Appendix 1 for data sources and definitions*
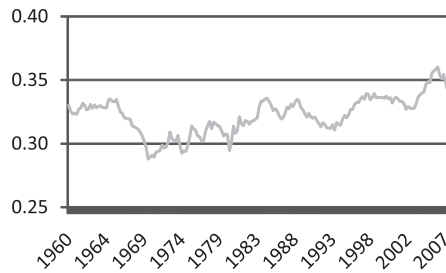
Fig. 2. *Gross operating surplus/GDP. Quarterly data from first quarter 1960 to fourth quarter 2007. See Appendix 1 for data sources and definitions*

on consumption, investment and net exports. In a nutshell our interpretation is the following: the redistribution of income in favour of profits at the expense of wages is expected to suppress consumption. However, the redistribution from non-rentier profits to rentier income has increased consumption due to a higher marginal propensity to consume out of rentier income. The wealth effects of the increase in housing and financial asset prices led to an increase in consumption, even if the debt mechanism proved, with the advantage of hindsight, unsustainable. At the same time a higher rentier income suppresses investment through both lower investable funds available to the firm and shareholder value orientation.[3]

The paper is structured as follows. Section 2 presents the theoretical model. Section 3 summarises the empirical literature. Section 4 presents the estimation results and Section 5 concludes.

2. Wage-led versus profit-led demand and financialisation

This section presents the theoretical model that incorporates the effects of financialisation into a neo- Kaleckian model. In this paper we build on the more specific formulation developed in Bhaduri and Marglin (1990). Profit-led as well as wage-led demand regimes are possible because an increase in the wage share will stimulate consumption but lead to a negative effect on investment for a given capacity utilisation rate. It is an empirical

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[3] In this paper we do not deal explicitly with the shift of profits from the non-financial firms to the financial firms. This could be another reason for the decline in investment to profit ratio, since non-financial firms carry out a higher share of the investments. However, the redistribution of profit income in favour of interest payments and dividends must be highly correlated with the increase in the share of financial firms in total profits.
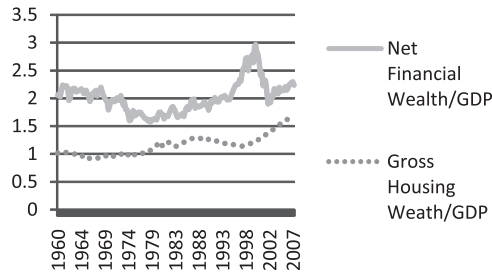
Fig. 3. *Gross housing wealth/GDP and net financial wealth (financial assets – liabilities)/GDP. Quarterly data from first quarter 1960 to fourth quarter 2007. See Appendix 1 for data sources and definitions*
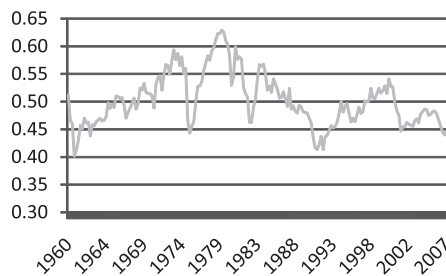
Fig. 4. *Gross domestic investment/gross operating surplus. Quarterly data from first quarter 1960 to fourth quarter 2007. See Appendix 1 for data sources and definitions*

question whether the positive or the negative effect is larger in absolute value. In an open economy additional effects will operate through net exports. Net exports depend negatively on unit labour costs, which are negatively related to the profit share. We focus on the effects on private demand only.[4]

Financialisation affects macroeconomic activity through households' consumption behaviour as well as investment. Financialisation also affects distribution, but in this paper we take distribution to be exogenously determined; however, to avoid endogeneity problems we use only lagged values of distribution as explanatory variables.

2.1 Consumption

The relevance of income distribution in a consumption function is that the propensity to consume out of wages (W), c_w, is higher than that out of profits (R), c_π. Thus, consumption is expected to decrease when the profit share in income (Y), $\pi = R/Y$, rises. Consumption, C, can be modelled as

$$C = c_0 + c_w Y + (c_\pi - c_w)\pi Y \tag{1}$$

The first effect of financialisation on consumption is due to a redistribution of income in favour of the rentier income. We define the rentier income share, π_r, as the net interest and

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[4] As far as fiscal policy influences total demand, it will enter our analysis of investment, consumption and imports, since they are all functions of GDP.
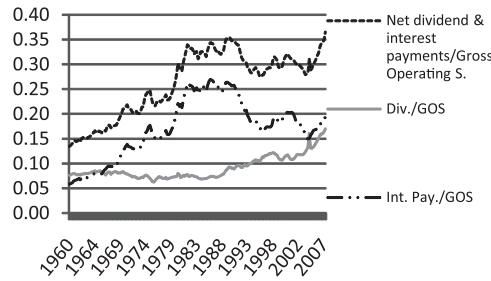
Fig. 5. *Net dividend and interest payments/gross operating surplus. Quarterly data from first quarter 1960 to fourth quarter 2007. See Appendix 1 for data sources and definitions*

Fig. 6. *(Gross operating surplus – dividends – interest pay)/GDP. Quarterly data from first quarter 1960 to fourth quarter 2007. See Appendix 1 for data sources and definitions*

dividend payments as a ratio to GDP, and the non-rentier profit share, π_w, as the gross operating surplus minus net interest and dividend payments as a ratio to GDP.[5] Rentier income with a separate marginal 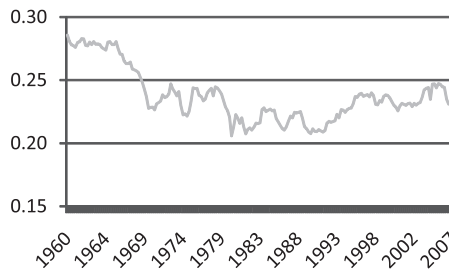propensity to save has been introduced in earlier post-Keynesian models, which emphasise the importance of distribution on spending, hence savings and accumulation (Steindl, 1952; Dutt, 1992; Hein and van Treeck, 2008).

A redistribution in favour of rentier income can take place along with an increase in the profit share at the expense of wage income. In this case, there are two possibilities: the non-rentier profit share may stay constant or increase. In a third possibility, rentier income share can increase at the expense of non-rentier profits with a constant profit share. Finally the rentier income share can increase along with a decline in non-rentier profit share as well as wage share; thus not only the profit share increases but also the distribution of profits shifts in favour of rentier income. This last case is what can be observed in the US in the post-1980s.

Our hypothesis is that the marginal propensity to consume out of rentier income, $c_{\pi r}$, is higher than that out of non-rentier profit income, $c_{\pi nr}$. However we still expect that $c_{\pi r} < c_w$.

The second effect of financialisation on consumption is the wealth effect. In the 1990s the wealth effect in the consumption function has been rediscovered, motivated by the increase in private consumption expenditures in the USA, which was attributed to the rise in the value of financial assets during the stock market boom. In the late 1990s a 5% marginal propensity to consume out of financial wealth was often quoted (with some more qualification for European countries; e.g. Boone *et al.*, 1998). After the stock market crash in 2000, the

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[5] This includes the retained earnings as well as proprietors' income, depreciation and taxes. Thus it is expected that there is consumption out of proprietor's income.

unabated consumption boom was then explained by booming house prices. Several studies claimed to find substantially higher marginal propensity to consume out of property wealth than out of financial assets (Case *et al.*, 2001; Catte *et al.*, 2004; Girouard *et al.*, 2006), since residential property is more frequently accepted as collateral. Furthermore Cynamon and Fazzari (2008) and Brown (2008) discuss the role of changing social norms in explaining the unprecedented increase in consumption led by household debt. As wages have stagnated in many countries, but consumption norms have increased, many households have been driven into debt. The potentially positive effects of higher wealth on consumption are also taken into account in recent post-Keynesian theoretical models from Boyer (2000), Lavoie and Godley (2001–2), Skott and Ryoo (2008) and van Treeck (2009).

Disaggregating π as π_r and π_{nr}, and integrating the wealth effect, by distinguishing net financial wealth, FW, and gross housing wealth, HW, of households, the extended consumption function becomes

$$C = c_0 + c_w Y + (c_{\pi r} - c_w)\pi_r Y + (c_{\pi nr} - c_w)\pi_{nr} Y + c_{FW} FW + c_{HW} HW \qquad (2)$$

The expectation regarding wealth effects is that $c_{HW} > c_{FW} > 0$. We use *gross* housing wealth instead of housing wealth net of mortgages in order to better reflect the debt channel backed by rising house prices. However in order to capture the possible future contractionary effects of debt, we use net financial assets, i.e. financial wealth minus liabilities, which include mortgages. Bhaduri *et al.* (2006) argue that the wealth effect may even turn negative beyond a point due to increased interest payments and risk of default. Godley and Lavoie (2007), Hein and van Treeck (2008), Dutt (2006), and Palley (1996) also point at these conflicting flow and stock effects of higher debt. Furthermore because of high debt levels, the fragility of the economy to the possible shocks in the credit market increases, as is being observed now after the financial crisis. In this paper we take the debt and wealth accumulation as exogenous; so our model involves the effects of future debt payments through exogenously changing income distribution and net financial wealth.[6]

Another important aspect of financialisation has been the increase in the share of managerial wages, which has been documented by Piketty and Saez (2003) for the USA. We expect that the marginal propensity to consume out of managerial wages is also lower than that out of the rest of the wages. However these data exist only at annual frequency and for econometric reasons we prefer to use quarterly data, and therefore we are unable to include managerial wages in our estimations.

2.2 Investment

In the basic Bhaduri–Marglin model investment is a positive function of output, which is the standard accelerator effect, and the profit share, which is a proxy for expected profitability as well as the availability of internal finance. So investment, I, is expressed as

$$I = i_A + i_Y Y + i_\pi \pi \qquad (3)$$

where i_A is autonomous investment, and all parameters are expected to be positive.

One of the most important effects of financialisation on investment behaviour is due to the increased role of shareholders in the firm (Boyer, 2000; Stockhammer, 2004, 2005–6).

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[6] Gross financial wealth and debt could be used as separate explanatory variables, but at the estimation stage we need to include generous numbers of lags for each variable, in particular wealth, in order to capture the time lags in the effect of wealth on consumption; this limits our degrees of freedom to include financial wealth and debt as separate explanatory variables.

Lazonick and O'Sullivan (2000) argue that a shift in management behaviour from 'retain and reinvest' to 'downsize and distribute' has occurred. Financial market-oriented remuneration schemes based on short-term profitability increased the orientation of management towards shareholders' objectives.

We again disaggregate the profit share as π_r and π_{nr},[7] and rewrite the investment function:

$$I = i_A + i_Y Y + i_{\pi nr}\pi_{nr} + i_{\pi r}\pi_r \tag{4}$$

Our hypothesis is that $i_{\pi nr} > 0$ and $i_{\pi r} < 0$. We suggest that the appropriate variable to capture the effect of profitability on investments is π_{nr} rather than π, since it reflects the available internal funds of the firm for investment. The expected negative effect of π_r indicates the significance of the shareholder value orientation in suppressing investment beyond its direct negative effect on the investable funds.[8] The negative effect of higher dividend or interest payments on investment is also incorporated in the theoretical post-Keynesian models by Hein (2006, 2007, 2008A, 2008B), Lavoie (1995, 2008), Lavoie and Godley (2001–2), van Treeck (2009) and Skott and Ryoo (2008). The models by Skott and Ryoo (2008) and van Treeck (2009) also include the effects of the leverage ratio and Tobin's q. Higher dividends and share buybacks increase firms' dependence on debt as well as share prices and thereby Tobin's q. We do not include the Tobin's q for both theoretical and empirical reasons. Empirical evidence has failed to support the q theory (Ford and Poret, 1991; Chirinko, 1993; Medlen, 2003). Theoretically, it is unclear why an increase in Tobin's q, which is primarily an outcome of share buybacks and increasing dividend payments in the 2000s would lead to rising investment (Hein, 2008B).

Three caveats of our investment function can be mentioned. First, the debt stock is not included explicitly in our model; thus the effect of debt on investment is incorporated through the exogenously changing interest payments. Second, as a consequence of financialisation firms also face a higher degree of uncertainty, which may make physical investment projects less attractive (Carruth et al., 2000, Stockhammer and Grafl, 2010). This is ignored here. Third, we are not testing the effect of the changes in the distribution of the profits between financial and non-financial firms on investments.

2.3 Total effects on aggregate demand

The effect of a change in the profit share on total private demand will depend on the effects on consumption, investment, and net exports:

$$\frac{\partial Y}{\partial \pi} = \left(c_{\pi nr} - c_w\right)\frac{\pi_{nr}}{\pi} + \left(c_{\pi r} - c_w\right)\frac{\pi_r}{\pi} + i_{\pi nr}\frac{\pi_{nr}}{\pi} + i_{\pi r}\frac{\pi_r}{\pi} + \frac{\partial NX}{\partial \pi} \tag{5}$$

$\partial Y/\partial \pi$ is private excess demand, that is, the change in demand caused by a change in income distribution given a certain level of income.[9] The sign of $\partial Y/\partial \pi$ is ambiguous and depends on the relative magnitudes of the effects of distribution on consumption, investment, and net exports, where $\left(c_{\pi nr} - c_w\right)\frac{\pi_{nr}}{\pi} + \left(c_{\pi r} - c_w\right)\frac{\pi_r}{\pi} < 0$ and $i_{\pi r}\frac{\pi_r}{\pi} < 0$, but

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[7] We use gross private profits since private investments are also gross.

[8] One could also argue that there is an additional relation between current dividends and investments in the future. If firms have pessimistic expectations about the future, they do not plan to invest in the next years; therefore they do not retain earnings, but rather distribute dividends. However, the relation is then between future investments and current dividends, since it takes a while for investments to be planned, and therefore does not result in a problem of endogeneity for our study.

[9] In order to find the total effect of a distributional change on Y, this total partial effect of π on Y has to be multiplied by the multiplier, i.e. $\frac{1}{1 - \left(\frac{\partial C}{\partial Y} + \frac{\partial I}{\partial Y} + \frac{\partial NX}{\partial Y} + \frac{\partial G}{\partial Y}\right)}$.

$i_{\pi nr}\frac{\pi_{nr}}{\pi} > 0$ and $\partial NX/\partial\pi > 0$. If the total effect is positive ($\partial Y/\partial\pi > 0$), the demand regime is called profit led, and if $\partial Y/\partial\pi < 0$, it is called wage led. If the reaction of consumption to an increase in the profit share is strong due to high consumption differentials, and if the share holder value orientation effect on investment is high compared to the positive effect of an increase in π_{nr}, and the positive effects of π on net exports are low, then demand will be wage-led. Thus if $\left| \left(c_{\pi nr} - c_w\right)\frac{\pi_{nr}}{\pi} + \left(c_{\pi r} - c_w\right)\frac{\pi_r}{\pi} + i_{\pi r}\frac{\pi_r}{\pi} \right| > i_{\pi nr}\frac{\pi_{nr}}{\pi} + \frac{\partial NX}{\partial\pi}$, then the economy is wage-led.

Next we discuss the effect of a redistribution in favour of rentier income and at the expense of non-rentier profits with a constant π, thus the case where $\Delta\pi_r = -\Delta\pi_{nr}$. The effect on private excess demand will be:

$$\frac{\partial Y}{\partial\left(\frac{\pi_r}{\pi}\right)}\bigg|_{\bar{\pi}} = -\left(c_{\pi nr} - c_w\right)\frac{\pi_{nr}}{\pi} + \left(c_{\pi r} - c_w\right)\frac{\pi_r}{\pi} - i_{\pi nr}\frac{\pi_{nr}}{\pi} + i_{\pi r}\frac{\pi_r}{\pi} \qquad (6)$$

If $-\left(c_{\pi nr} - c_w\right)\frac{\pi_{nr}}{\pi} < \left| \left(c_{\pi r} - c_w\right)\frac{\pi_r}{\pi} - i_{\pi nr}\frac{\pi_{nr}}{\pi} + i_{\pi r}\frac{\pi_r}{\pi} \right|$, then a pro-rentier income redistribution at the expense of the non-rentier profits is decreasing private demand, thus it is contractionary. The effect of such redistribution on investment is unambiguously negative. The effect on consumption is positive if $-\left(c_{\pi nr} - c_w\right)\frac{\pi_{nr}}{\pi} > \left| \left(c_{\pi r} - c_w\right)\frac{\pi_r}{\pi} \right|$. A pro-rentier income redistribution at the expense of the non-rentier profits can be expansionary if the positive effect on consumption is high enough to more than offset the negative effect on investment.

Our expansionary case is similar to the 'intermediate' case in Hein (2008B) and van Treeck (2009), where the effect of financialisation on the accumulation rate is negative, although the effect on capacity utilisation and consumption is positive.[10] This differs from the finance-led regime of Boyer (2000), where financialisation also has a positive effect on accumulation.

The effect of a pro-rentier income redistribution at the expense of wage income with a constant π_{nr} is, however, unambiguously negative.

Finally the positive wealth effects can enhance the possibility of expansionary effects of financialisation along with a rising profit share. However, the sustainability of these expansionary effects is questionable. But the issue of sustainability is only indirectly captured here as we treat financial variables as exogenous.

3. Empirical literature

There are a number of contributions on the identification of the demand regime based on the basic neo-Kaleckian approach. However, empirical work on the effects of financialisation on the demand regime is rather limited, despite the increasing amount of theoretical work on financialisation.

The tests of the basic models can be grouped into two estimation strategies. The first group of papers tries to estimate the full model, that is, a goods market equilibrium relation and a distribution function. Stockhammer and Onaran (2004) estimate a structural Vector Autoregression (VAR) model for the USA, UK and France, where they conclude that the impact of income distribution on demand and employment is very weak and statistically insignificant. Onaran and Stockhammer (2005) employ a similar model for Turkey and Korea and find some indication for wage-led demand regimes in these countries.

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[10] Hein (2008B) and van Treeck (2009) identify contractive ('normal'), intermediate and expansive ('puzzling') cases, following Lavoie's (1995) model of the effects of the interest rate on the capacity utilisation, profit and accumulation. In the contractive case all these variables are negatively affected. In the 'puzzling' case all three variables are positively affected.

Barbosa-Filho and Taylor (2006) estimate a VAR with demand and distribution equations for the US economy. The effects for individual components of demand are then decomposed from the aggregate results (rather than estimated as behavioural equations). They find that the USA has a profit-led demand regime. However, Stockhammer and Stehrer (2011) argue that the results by Barbosa-Filho and Taylor (2006) suffer autocorrelation problems and are very sensitive to the lag length.

The second, larger, group of papers analyses the goods market in isolation. Typically, behavioural functions are estimated for consumption, investment and net exports. The first paper along these lines was from Bowles and Boyer (1995), who find that France, Germany and Japan are profit-led, and the UK and the USA are wage-led. Naastepad and Storm (2007) for eight and Hein and Vogel (2008) for six OECD countries are more recent examples. All of them use annual data and look at long run effects. Naastepad and Storm (2007) find a profit-led regime in the USA and Japan, and a wage-led regime in the other countries. The profit-led effect is primarily due to a very strong investment effect; the effect of distribution on exports is negligible, and the effect on imports is ignored. Hein and Vogel (2008) find wage-led regimes in the USA, France, Germany and the UK, and profit-led regimes in Austria and the Netherlands. Their findings about the profit-led regimes are due to very low or insignificant effects of the profit share on both investment and net exports. Stockhammer *et al*. (2009) for the Euro area offer a more sophisticated treatment of international trade by estimating separate price, import and export equations. They find a wage-led regime in the Euro area. Stockhammer *et al*. (2011) find a wage-led regime for Germany.

The literature discussed above does not include control variables for financialisation effects. If financialisation has affected consumption and investment behaviour, then the results summarised above are biased. Empirical literature in terms of integrating the effects of financialisation on aggregate demand has been, until now, rather limited. Hein and Ochsen (2003) estimate the effect of the interest rate within a post-Kaleckian growth model for several OECD countries for the period 1960–95; however, rather than actual interest payments (which are not readily available for most countries) they multiply the interest rate with the nominal capital stock and assume that this amount is distributed to households. This proxy will differ from actual interest payments because not the entire capital stock is debt-financed and the interest rates on commercial credit typically differ from interest rates for government bonds. Van Treeck (2008), Orhangazi (2008) and Stockhammer (2004) estimate only the effect of financialisation on investment. Stockhammer (2004) uses rentier income of non-financial business as a proxy for shareholder value orientation and finds that financialisation may explain a substantial part of the slowdown in accumulation; but the results vary widely across countries. Van Treeck (2008) estimates the effect of the interest and dividend payments on private non-financial investment in the USA for the period 1965–2004, and finds that both variables of financialisation have a negative effect. However, the profit share itself is insignificant. Orhangazi (2008) finds negative effects of financialisation on investment in the USA for the period 1973–2003 using firm level data.

In this paper we address several caveats of the existing literature on the effect of financialisation on demand: we incorporate the financial and housing wealth effects on consumption. We disaggregate the effects of rentier income share and non-rentier profit share on investment. We discuss the overall effects on private demand in the open-economy context, in order to make our results comparable with the former estimations of the basic open economy neo-Kaleckian model.

4. Empirical results

The model is estimated by means of separate single equations for consumption, investment, exports and imports. We use quarterly data for the period 1960:q1–2007:q4. Variable definitions can be found in the Appendix (Table A1). For econometric reasons all variables enter the estimation in logarithmic form. Unit root tests suggest that all these variables are integrated of order one I(1). Following standard practice in modern econometric modelling, we first checked the applicability of the error correction models (ECM) and, where there was no indication of cointegration, a general autoregressive distributed lag (ADL) model in difference form was used. We start from a general model including eight lags of the variables, but no contemporaneous values to avoid endogeneity problems, and gradually reduce the number of lags by dropping the most insignificant lag and repeating the estimation until only significant variables remain. In all equations reported below, the Breusch–Godfrey test for autocorrelation fails to reject the null-hypothesis of no serial correlation. We estimate the basic neo-Kaleckian specification as well as the extended model with the effects of financialisation.

The single-equation approach used here has some advantages. In particular it allows for a flexible modelling of the individual equations. Its main drawback is that it does not account properly for the endogeneity of the distributional variables (and, potentially, also of our measures of financialisation). Thus, lagged variables are used to circumvent this problem. The main alternative to this, a structural VAR approach, would require substantially simplifying the model as these models cannot handle more than five endogenous variables.

4.1 Consumption

For the convenience of estimation and calculation we divide both sides of the consumption function in equation (1) by GDP, Y:[11]

$$\frac{C}{Y} = c_w + \frac{c_0}{Y} + (c_\pi - c_w)\pi \tag{7}$$

The ECM specification did not give statistically significant results. Specification 1 in Table 1 reports the regression results for the ADL specification in difference form for the basic specification (equation 7), The hypothesis that consumption propensities vary between profit and wage income is confirmed.[12] Since the estimation is in logarithmic differences, we have to convert the elasticity into a marginal effect. At the sample mean the difference in the marginal propensity to consume out of wages and profits is 0.17.[13]

Specification 1 may suffer from omitted variables due to the absence of the effects of financialisation. Next we estimate the extended consumption function as in equation (2). Again, dividing both sides by Y, the equation to be estimated becomes

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[11] Both C and Y are nominal values.

[12] Since the function is estimated in difference form, the c_w in the theoretical model is dropping out. Thus, we can only estimate the differentials in the marginal propensity to consume, and not their levels.

[13] The elasticity is calculated as the summation of the coefficients of the explanatory variable divided by one minus the summation of the coefficients of the lagged dependent variable. The conversion from the elasticity of consumption with respect to π, thus $e_{C\pi}$, to the marginal effect on C for a given Y is as follows: $\frac{\partial C/Y}{\partial \pi} = e_{C\pi}\frac{C}{R}$.

Table 1. *Regression results for consumption*

Equation:	1		2	
	$\Delta C/Y$		$\Delta C/Y$	
Dependent variable:				
	1962:q2–2007:q4		1962:q2–2007:q4	
Estimation period:				
Variable	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic
Constant	0.00**	2.11	0.00**	2.34
$\Delta C/Y_{t-1}$	−0.41**	−4.74	−0.41**	−4.96
$\Delta C/Y_{t-2}$	−0.21**	−2.30	−0.17**	−2.45
$\Delta C/Y_{t-8}$	0.14*	1.66		
$\Delta \pi_{t-1}$	−0.12**	−3.02		
$\Delta \pi_{t-4}$	−0.09**	−2.31		
$\Delta \pi_{t-5}$	0.09**	2.38		
$\Delta FW/Y_{t-7}$			0.03**	2.97
$\Delta HW/Y_{t-2}$			0.06*	1.81
$\Delta \pi_{nr\ t-1}$			−0.09**	−3.36
$\Delta \pi_{r\ t-1}$			−0.08**	−3.41
$\Delta \pi_{r\ t-2}$			0.06**	2.74
ΔY_{t-1}	−0.22**	−3.15	−0.24**	−3.94
ΔY_{t-2}	−0.16**	−2.19		
ΔY_{t-3}	0.09*	1.78		
ΔY_{t-8}	0.17**	2.73	0.12**	2.68
Adjusted R^2	0.24		0.26	
DW	2.03		2.02	

Significant at *10% and **5% levels, respectively.

$$\frac{C}{Y} = c_w + \frac{c_0}{Y} + (c_{\pi r} - c_w)\pi_r + (c_{\pi nr} - c_w)\pi_{nr} + c_{FW}\frac{FW}{Y} + c_{HW}\frac{HW}{Y} \qquad (8)$$

Specification 2 in Table 1 shows the results for equation (8). After cointegration tests failed to indicate cointegration,[14] a distributed lag model in difference form was adopted. Calculating the marginal effects, we find a differential in marginal propensity to consume between the wage and non-rentier profit income of 0.16 and a differential in consumption propensity between the wage and the rentier income of 0.10 at the sample mean. The calculation of marginal effects at the sample mean is in Table 2. Thus, there is indeed a high consumption out of rentier income. To make the results comparable with the basic specification, we take a weighted average of the two consumption differentials (as suggested in the first part of equation 5), and find that the average difference in the

[14] The ECM specification again did not give statistically significant results. The results are available upon request. The t-ratio of the coefficient of adjustment, thus the coefficient of $\Delta(C/Y)$ is −2.28, which is way below the critical value of 3.67 at the 10% level (see Banerjee *et al.*, 1998). The Johansen test also unambiguously rejected cointegration. Girouard and Blondal (2001) estimates an ECM specification for the USA with financial wealth, housing wealth and the short-term interest rate in the long term relationship, and unemployment as an additional short-run control variable, the coefficients have the expected signs, but indeed the *t*-values of the ECM coefficient in two different specifications are −1.8 and −2.6 respectively. Both are well below the critical values for a cointegration relation (see Banerjee *et al.*, 1998). Moreover, this specification is very sensitive to the exclusion of the interest rate or the unemployment rate.

Table 2. *Regression results for investment*

Equation:	1		2		3	
Dependent variable:	ΔI		ΔI		ΔI	
Estimation period:	1962:q2–2007:q4		1962:q2–2007:q4		1962:q2–2007:q4	
Variable	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic
Constant	−1.11**	−2.86	−0.81**	−3.74	−1.20**	−3.33
I_{t-1}	−0.21**	−4.42	−0.20**	−4.33	−0.19**	−3.75
GDP_{t-1}	0.29**	−4.26	0.26**	4.21	0.27**	3.65
$\pi_{nr\ t-1}$	0.04	0.62	0.10**	2.00		
$\pi_{r\ t-1}$	−0.03	−0.93			−0.05**	−2.06
ΔI_{t-6}	0.11*	1.77	0.11*	1.77		
ΔI_{t-8}	0.23**	2.30	0.23**	2.31	0.22**	2.16
ΔY_{t-1}	1.07**	2.73	1.01**	2.61	1.13**	2.86
ΔY_{t-2}	1.11**	2.91	1.05**	2.79	0.97**	2.46
ΔY_{t-4}	0.75*	1.82	0.67*	1.67	0.98**	2.46
ΔY_{t-8}	−1.48**	−2.71	−1.53**	−2.82	−1.33**	−2.47
$\Delta \pi_{nr\ t-1}$	0.44**	2.52	0.44**	2.54	0.55**	3.00
$\Delta \pi_{nr\ t-4}$	0.44**	2.36	0.41**	2.25	0.35*	1.85
$\Delta \pi_{nr\ t-5}$	−0.64**	−3.54	−0.67**	−3.69	−0.61**	−3.36
$\Delta \pi_{r\ t-1}$					0.26*	1.78
$\Delta \pi_{r\ t-2}$					−0.25*	−1.74
$\Delta \pi_{r\ t-4}$	0.29*	1.91	0.26*	1.73	0.35**	2.40
$\Delta \pi_{r\ t-5}$	−0.34**	−2.37	−0.37**	−2.62	−0.31**	−2.17
Adjusted R^2	0.32		0.32		0.33	
DW	2.07		2.06		2.07	

Significant at *10% and **5% levels, respectively.

marginal propensity to consume between the wage and total profit income is 0.14 at the sample mean, which is lower than in the basic specification, but the latter ignores the relatively higher marginal propensity to consume out of rentier income. Our results are qualitatively similar to those of Naastepad and Storm (2007) and Hein and Vogel (2008), who fail to distinguish between rentier and non-rentier profits. The net financial and gross housing wealth has positive coefficients. The marginal propensity to consume out of net financial wealth is 0.007 and that out of gross housing wealth is 0.02. Both are lower than in conventional estimations, but our estimations are in differences and are not directly comparable to the ECM results of the previous studies, which concentrate on wealth effects but ignore distributional effects.[15] 12.4% of the change in the consumption share from 1980 to 2007 is explained by changes in housing wealth and 5.5% by changes in financial wealth.[16]

[15] Girouard and Blondal (2001) finds that the marginal propensity to consume out of net financial wealth is 0.03 and that out of gross housing wealth is 0.05 during the period of 1970:q1–1999:q2 in the USA. Our attempts to replicate these estimations suggested that results are extremely sensitive to minor changes in the specification.

[16] The economic significance of the wealth effects are calculated by multiplying the marginal effects with the actual changes in $(FW)/Y$ and $(HW)/Y$, and take the ratio to the actual change in C/Y.

4.2 Investment

The investment function is first estimated in the basic form (equation 3) in an ECM form. The most important result of this estimation is that investment is cointegrated with Y but not with the profit share.[17] This result is robust to the use of the level of real profits instead of the profit share. There is no long-run relation between the profit share and investment. However, this estimation may be biased since it does not take into consideration the effects of rentier income.

In order to address this puzzle, we disaggregate the profit share as π_r and π_{nr}. However, the estimation of this revised investment function poses an interesting econometric problem: including the profit variables separately we find statistically significant effects, but including them simultaneously we obtain economically meaningful effects that are not statistically significant. Specification 1 in Table 2 shows the results when both the rentier and non-rentier income are included in the cointegrating relation. Although the coefficients are statistically insignificant, economically they are indicative: we find an elasticity of 0.22 with respect to π_{nr} and –0.14 with respect to π_r. The corresponding marginal effects are 0.15 and –0.29 for π_{nr} and π_r, respectively. The overall (weighted) marginal effect of a 1%-point increase in the profit share is then 0.03%-point increase in I/Y calculated as in equation (5).

Specification 2 of Table 2 reports the results of a restricted ECM model, where the long run effect of π_r on investment is restricted to zero, and only short-run effects are allowed. This indicates a long-run cointegration relation between investment, GDP and the non-rentier profit share. The long-run elasticity of investment with respect to the non-rentier profit share is 0.48. The short-run effects of both π_r and π_{nr} are in the expected direction. Calculating the marginal effect at the sample average shows that a 1%-point increase in the non-rentier profit share leads to a 0.33%-point increase in private real investment as a ratio to GDP at the sample mean. However, since non-rentier profits are only 73.1% of the gross operating surplus, a 1%-point shift in income distribution in favour of capital creates only a 0.24%-point increase in investments as a ratio to GDP. Specification 1 estimates a much lower effect of π_{nr} on investment compared to the results of specification 2, but specification 2 may be mis-specified since it restricts the long run effect of π_r to zero.

Alternatively, when we restrict the long-run effect of π_{nr} to be zero, we find that π_r has a negative long run effect on investment (specification 3 in Table 2). In this specification the non-rentier profits, π_{nr}, have only a short-run positive effect, whereas the rentier income share has a positive short-run effect, which is counterintuitive. In this specification the long-run elasticity of investment with respect to the rentier income share is –0.23, which corresponds to a marginal effect of –0.47 at the sample mean.

Combining the long run marginal effect of π_{nr} (0.33%-point based on specification 2) and the long run marginal effect of π_r (–0.47 based on specification 3), the effect of a rise in the gross profit share by 1%-point on investment/GDP is 0.12%-point. Rather than working with a single point estimate we will proceed by noting that the effect of a 1%-point increase on the profit share on I/Y lies between 0.03%-points and 0.12%-points. Table 3 summarises the calculation of the marginal effects for π_r and π_{nr} and corresponding weighted marginal effects of the profit share on investment for the three different specifications. The marginal effects with a constant elasticity calculated at different period

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[17] The ECM estimations are available upon request. When the equation is estimated in difference form, π has a significant and positive effect with a marginal effect of 0.11 on I/Y; however, this estimation is biased since it ignores the cointegrating long run relation between I and Y.

Table 3. *Marginal effect of a 1%-point change in the profit share on investment (1962:q1 to 2007: q4)*

	Marginal effect			Weighted marginal effect		
	$i_{\pi nr} + i_{\pi r}$					
	A	B	C	D	E	F
π_{nr}	0.150	0.330	–	0.110	0.242	–
π_r	–0.290	–	–0.470	–0.078	–	–0.126
$i_{\pi nr}(\pi_{nr}/\pi) + i_{nr}(\pi_r/\pi)$				0.032	0.115	

Notes: Column A is calculated based on the estimates from Table 3, specification 1, as described in the text.
Column B is calculated based on the estimates from Table 3, specification 2.
Column C is calculated based on the estimates from Table 3, specification 3.
Columns D, E. and F are calculated based on columns A, B and C.
The final line of columns D and E-F are calculated as $i_{\pi nr}(\pi_{nr}/\pi) + i_{nr}(\pi_r/\pi)$

averages are discussed in Section 4.4. We also checked whether the elasticities were changing for different sub-periods, but the results were insignificant or implausible.

This overall low effect of the gross profit share on investment is in line with the literature on aggregate investment functions, which usually finds a lower profit elasticity of investment (Chirinko, 1993), compared with firm-level investment functions, which usually find a larger effect of cash flow on investment (Fazzari and Mott, 1986). Our specification that addresses financialisation by disaggregating the profit share as non-rentier profits and rentier income share is an improvement compared with the recent empirical work on the USA in the tradition of the neo-Kaleckian model, e.g. Hein and Vogel (2008), van Treeck (2008), and Stockhammer and Onaran (2004), who find no effect of the aggregate profit share on investments.

Multiplying the marginal effects with the actual change in the rentier income and non-rentier profit shares, we can explain 29–49% of the actual decline in investment/GDP.

Demand is playing a key role in determining investment expenditures, again in accordance with the literature (Ford and Poret, 1991; Chirinko, 1993). The accelerator effects are well above one, i.e. the marginal effect of a 1% increase in GDP increases the investment/GDP ratio by 1.3–1.4%-point in the long run.

The real interest rate is not included in the estimations since the effect of the interest payment on investable funds is captured by disaggregating profits as non-rentier profits and rentier income. Another important function of the interest rate in mainstream investment functions, however, is to capture the effect of cost of capital relative to labour; our estimations do not capture this relative cost effect on investment. When we include the (*ex post*) real long-term interest rate in the ECM specification, it had a (statistically significant) positive, i.e. perverse, long-run effect on investment.

4.3 Net exports

To estimate the effects of distribution on net exports we follow the stepwise approach of Stockhammer *et al.* (2009) and estimate imports and exports as functions of export and import prices (and a demand variable), and domestic prices and export prices as functions of nominal unit labour costs and import prices. The estimated effect of nominal unit labour

costs (ULC) on domestic prices allows us to calculate by how much an increase in real unit labour costs raises domestic prices.[18]

Table 4 summarises the estimation for the domestic price deflator as a function of the nominal ULC and import prices. Table 5 shows the estimation for export prices as a function of domestic prices and import prices. Both estimations were performed in difference form after ECM specifications proved unsuccessful. An increase of nominal unit labour costs by 1% increases domestic inflation by 0.21 and export prices by 0.31.

Table 6 summarises the estimation results for exports as a function of export prices relative to import prices and the trading partners' GDP, which is the real GDP of the OECD minus the GDP of the USA. Since no support for a cointegrating relation was found, the equation was estimated in difference form. The elasticity of exports with respect to relative prices is –0.16, although it is statistically insignificant. In the import equation, the explanatory variables are export prices relative to import prices, and the real GDP of the USA. Although the ECM model was applicable in this case, we choose to estimate the import equation in difference form in order to be consistent with the other equations. Table 7 reports the difference specification. The elasticity of imports with respect to relative prices is 0.56.

Table 8 shows the calculation of the effects of an increase in the profit share on exports and imports at the sample average. The total effect of a change in profit share on exports includes the effect of real unit labour costs on nominal ULC,[19] the effect of nominal ULC on prices, the effect of prices on export prices, and the effect of export prices on exports. Then this value has to be transformed from an elasticity into a marginal effect.[20] A similar procedure is followed for imports. Overall, an increase in the profit share by 1%-point currently leads to an increase in exports by 0.005%-points of GDP and a decline in imports by 0.02%-points of GDP. So the marginal effect of an increase in the profit share on net exports is 0.024%-points at the sample average. As the economy becomes more open, the net export effect is growing gradually up to 0.04%-points for 2002–07.

Comparing our results with the previous work of Hein and Vogel (2008), who do not find any significant effect of the profit share on net exports based on a single equation estimation for net exports, we conclude that our stepwise approach is preferable. Indeed Naastepad and Storm (2007), who only estimate the effects on exports, also find an export elasticity of 0.16 with respect to the profit share.

4.4 Total effects

Table 9 combines the partial effects of a pro-capital redistribution on consumption, investment and net exports. Here we also calculate different marginal effects for the mean values for each business cycle.

The results of the basic specification without disaggregating the profit share would indicate a clearly wage-led economy due to the negative consumption effect (the first column of Table 9) and the lack of positive effects on investment. Overall our

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[18] We measure the *real* unit labour costs simply by the wage share, thus 1 – the gross profit share $(1 - \pi)$.

[19] $\frac{\partial \ln ULC}{\partial \ln RULC} = \frac{1}{1 - \beta_{ulc}}$ where β_{ulc} is the effect of ULC on domestic prices. For this elasticity we use the estimation for the domestic prices.

[20] $\frac{\partial X/Y}{\partial \pi} = -\frac{1}{1 - \beta_{ulc}} e_{P_x ULC} e_{XP_x} \frac{X}{Y} \frac{1}{1 - \pi}$ where $e_{P_x ULC}$ is the effect of ULC on export prices, and e_{XP_x} is the effect of export prices on exports. The final two terms are to convert the elasticity to marginal effect by using the average values for the total sample as well as sub-periods. The whole term is multiplied by -1, since the effect of an increase in the profit share is the inverse of the effect of an increase in the wage share (i.e. real unit labour costs).

Table 4. *Regression results for price*

Dependent variable:	ΔP	
Estimation period:	1962:q2–2007:q4	
Variable	Coefficient	*t*-Statistic
Constant	0.00**	2.76
ΔULC_{t-1}	0.05**	1.98
$\Delta P_{M\,t-1}$	0.04**	4.02
$\Delta P_{M\,t-2}$	0.03**	2.74
$\Delta P_{M\,t-3}$	0.03**	2.57
$\Delta P_{M\,t-8}$	−0.04**	−3.75
ΔP_{t-1}	0.31**	4.71
ΔP_{t-4}	0.29**	4.81
ΔP_{t-6}	0.18**	3.21
Adjusted R^2	0.86	
DW	2.04	

Significant at *10% and **5% levels, respectively.

Table 5. *Regression results for export prices*

Dependent variable:	ΔP_X	
Estimation period:	1962:q2–2007:q4	
Variable	Coefficient	t-Statistic
Constant	0.00	1.23
ΔULC_{t-1}	0.25**	3.08
ΔULC_{t-3}	−0.13*	−1.66
$\Delta P_{M\,t-1}$	0.14**	3.32
$\Delta P_{M\,t-3}$	0.11**	3.05
$\Delta P_{X\,t-1}$	0.37**	4.49
Adjusted R^2	0.57	
DW	2.05	

Significant at *10% and **5% levels, respectively.

basic specification indicates that a 1%-point increase in the profit share leads to 0.14%-point decline in total private excess demand as a ratio to GDP at the sample mean.

Taking into account the effects of financialisation, the economy is still wage-led at the sample mean, but the magnitude of the effect is more moderate. Depending on the specification of the investment function, our estimations suggest that a 1%-point increase of the profit share leads to a decrease of private domestic excess demand by 0.03 to 0.11%-point of GDP at sample means. The major improvement compared with the basic specification is the presence of significant effects of the profit share on investment; however, since the positive effects of the non-rentier profits are partly offset by the negative rentier income share effect, the investment effect still remains modest compared with the negative consumption effect. The result is not very different for sub-periods, but the domestic economy becomes slightly less wage-led during the period 1975–82, and the

Table 6. *Regression results for exports*

| Dependent variable: | ΔX | |
| Estimation period: | 1962:q2–2007:q4 | |
Variable	Coefficient	*t*-Statistic
Constant	0.01*	1.82
$\Delta Y_{F\ t-2}$	1.25**	2.56
$\Delta Y_{F\ t-3}$	1.96**	3.67
$\Delta Y_{F\ t-4}$	−1.21**	−2.42
$\Delta Y_{F\ t-6}$	−1.05**	−2.17
$\Delta P_X/P_{M\ t-3}$	−0.19	−1.22
ΔX_{t-1}	−0.34**	−5.07
ΔX_{t-6}	0.17**	2.45
Adjusted R^2	0.22	
DW	2.00	

Significant at *10% and **5% levels, respectively.

Table 7. *Regression results for imports*

| Dependent variable: | ΔM | |
| Estimation period: | 1962:q2–2007:q4 | |
Variable	Coefficient	*t*-Statistic
Constant	0.02**	3.54
ΔY_{t-1}	1.90**	6.62
ΔY_{t-2}	0.50*	1.66
ΔY_{t-7}	−0.49*	−1.79
ΔY_{t-8}	−0.88**	−3.06
$\Delta P_X/P_{M\ t-4}$	0.52**	3.48
$\Delta P_X/P_{M\ t-5}$	0.30*	1.90
ΔM_{t-1}	−0.36**	−4.76
ΔM_{t-2}	−0.24**	−3.39
ΔM_{t-7}	0.14**	2.02
Adjusted R^2	0.33	
DW	1.99	

Significant at *10% and **5% levels, respectively.

Table 8. *Calculation of marginal effects on net export for different time periods: 1962: q1 to 2007: q4*

	$\frac{1}{1-\beta_{ulc}}$	e_{P_xULC}	$\frac{e_{XP_x}}{e_{MP_x}}$	The effect of real unit labor cost on X & M.	1/RULC	$\frac{X/Y}{M/Y}$	$\frac{\partial X/Y}{\partial \pi}$
	A	B	C	D(A*B*C)	E	F	H(-A*B*C*E*F)
Exports	1.27	0.19	−0.16	−0.04	1.47	0.08	0.005
Imports	1.27	0.19	0.56	0.13	1.47	0.10	−0.020
Sum							0.024

Notes: Values in columns A, B and C are based on coefficient estimates in Tables 4, 5, 6 and 7.

Table 9. *The marginal effect of a 1%-point change in the profit share on private demand for different time periods*

Period	Marginal effect of π on consumption	Weighted marginal effect of π_r and π_{nr} on consumption	Weighted marginal effect of π on investment		Private domestic demand		Net exports effect	Open economy	
	A	B	C	D	E (B+D)	F (B+C)	G	H (E+G)	I (F+G)
1962:q2–2007:q4	−0.165	−0.144	0.032	0.115	−0.029	−0.112	0.024	−0.004	−0.088
1962:q2–1970:q4	−0.158	−0.136	0.035	0.118	−0.018	−0.101	0.012	−0.006	−0.089
1971:q1–1974:q4	−0.170	−0.146	0.040	0.135	−0.011	−0.106	0.016	0.005	−0.090
1975:q1–1982:q4	−0.165	−0.143	0.038	0.132	−0.011	−0.105	0.023	0.012	−0.082
1983:q1–1991:q4	−0.163	−0.141	0.035	0.120	−0.021	−0.105	0.025	0.004	−0.080
1992:q1–2001:q4	−0.168	−0.144	0.035	0.118	−0.027	−0.110	0.031	0.004	−0.079
2002:q1–2007:q4	−0.167	−0.144	0.033	0.112	−0.032	−0.111	0.038	0.006	−0.073

Notes: The first entries in this table are as follows: column A is column A in Table 2; column B is column E in Table 2. Columns C and D are the values in the third row in columns D (specification 1) and E–F (specification 2+3) in Table 4. Column G is Column H in Table 8.
The other rows are calculated as marginal effects at the average values for different sub-periods.

effect increases again gradually in line with the declining effect of profits on investment, and the relatively stable marginal effect on consumption.[21] When the effects of foreign trade are also considered, the effect of a 1%-point increase in the profit share leads to a decline of total private excess demand by 0.004–0.088%-point of GDP at the sample mean. The lower bound of the estimate, however, is almost zero, indicating little effect of distribution on private excess demand. When the marginal effects are calculated for sub-periods, the effect of distribution on demand becomes smaller as the economy becomes more open. The effect of an increase in the profit share lies between +0.006%-points and –0.073%-points at the mean of 2002–07. So the lower bound of the estimates indicates that the positive and negative effects of a pro-capital income distribution are, by and large, cancelling each other out. This is consistent with the findings in Stockhammer and Onaran (2004) for the USA based on VAR estimations.

So far we have discussed the effects of a pro-capital redistribution on demand assuming an exogenously given share of rentier income within profits. Next we calculate the effects of a change in income distribution in favour of the rentier income as discussed in Section 2.3: first we look at the effects of a 1%-point increase in the rentier income share at the expense of the wage income, i.e. a constant share of non-rentier profit share. The effects of this scenario on consumption and investment are calculated in Table 10A for different sub-periods. The marginal effect on consumption at the sample mean is –0.10%-point of GDP and the marginal effect on investment ranges between –0.29 and –0.47%-point of GDP, depending on the specification of the investment equation. The overall effect of a pro-rentier income distribution at the expense of the wage earners on total private domestic demand ranges between –0.39 and –0.57%-points at the sample mean. The redistribution in favour of the rentier income at the expense of the wage earners without a change in the non-rentier profits is more contractionary than an increase in the profit share due to an increase in both the rentier income and the non-rentier profits, since the positive effects on investment do not exist anymore.

Second, we simulate the effects of a redistribution from the non-rentier profits to rentier income; thus, a 1%-point increase in the rentier income share and a 1%-point decline in the non-rentier profit share with a constant wage share (Table 10B). At the sample mean the effect on consumption is an increase of 0.06%-point as a ratio to GDP. The effect increases gradually, and peaks during 1983–91, and is 0.09%-points during 2002–07. The investment effect, on the contrary, is highly negative. The total effect on investments is a decline of 0.44–0.80%-points at the sample mean. This negative effect is decreasing through time. Overall the total effect on private domestic excess demand at the sample mean ranges between –0.38 and –0.74. The redistribution of profit income in favour of rentier income at the expense of non-rentier profits creates the highest contraction effects due to very strong negative investment effects.

Finally we evaluate the overall effects of financialisation. The increase in housing wealth, which alone contributes to a 1%-point increase in consumption/GDP, has a strong expansionary effect. The decline in the non-rentier profit share also led to a slight increase in consumption, and this and the positive wealth effects more than offset the negative effect of the increase in the rentier income share at the expense of the wage share, leading to an increase in consumption/GDP. Both the decline in the non-rentier profits and the increase

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[21] Through time the difference between the marginal propensity to consume out of wages versus non-rentier profits is increasing, whereas the difference between the marginal propensity to consume out of wages versus rentier income is decreasing gradually. So the opposite trends are offsetting each other.

Table 10.

Period	Marginal effect of π_{nr} on consumption	Marginal effect of π_r on consumption	Total marginal effect of π on consumption	Marginal effect of π_r on investment	Marginal effect of π_{nr} on investment	Total effect of π on investment		Private domestic demand	
							Spec. 2 + 3 = D		
	A	B	C(A + B)	D (spec. 3)	E (spec. 2)	F (spec. 1)	+ E	C + F	C + G
A. The effect of a 1%-point increase in the rentier share and a 1%-point decrease in the wage share									
1962:q2–2007:q4	0.00	−0.101	−0.10	−0.47	0.00	−0.29	−0.47	−0.39	−0.57
1962:q2–1970:q4	0.00	−0.143	−0.14	−0.67	0.00	−0.41	−0.67	−0.56	−0.81
1971:q1–1974:q4	0.00	−0.124	−0.12	−0.61	0.00	−0.38	−0.61	−0.50	−0.74
1975:q1–1982:q4	0.00	−0.100	−0.10	−0.51	0.00	−0.31	−0.51	−0.41	−0.61
1983:q1–1991:q4	0.00	−0.077	−0.08	−0.35	0.00	−0.22	−0.35	−0.29	−0.43
1992:q1–2001:q4	0.00	−0.088	−0.09	−0.38	0.00	−0.24	−0.38	−0.32	−0.47
2002:q1–2007:q4	0.00	−0.085	−0.09	−0.36	0.00	−0.22	−0.36	−0.31	−0.44
B. The effect of a 1%-point increase in the rentier share and 1%-point decrease in the non-rentier share									
1962:q2–2007:q4	0.16	−0.10	0.06	−0.47	−0.33	−0.44	−0.80	−0.38	−0.74
1962:q2–1970:q4	0.13	−0.14	−0.01	−0.67	−0.28	−0.54	−0.95	−0.55	−0.96
1971:q1–1974:q4	0.15	−0.12	0.03	−0.61	−0.34	−0.53	−0.95	−0.51	−0.93
1975:q1–1982:q4	0.16	−0.10	0.06	−0.51	−0.36	−0.48	−0.87	−0.42	−0.81
1983:q1–1991:q4	0.17	−0.08	0.10	−0.35	−0.35	−0.38	−0.71	−0.28	−0.61
1992:q1–2001:q4	0.17	−0.09	0.08	−0.38	−0.33	−0.39	−0.71	−0.31	−0.63
2002:q1–2007:q4	0.17	−0.09	0.09	−0.36	−0.32	−0.37	−0.68	−0.28	−0.59

Notes: For the first rows in each section, columns A and B are calculated based on the marginal effects in Table 2 and columns D, E and F are calculated based on the marginal effects in Table 3.
The other rows are calculated as marginal effects at the average values for different sub-periods.

in the rentier income share led to a decline in investment/GDP. The effect of pro-capital redistribution on net exports remained modest. Thus, it is fair to say that the positive and negative effects of financialisation offset each other, and the regime is not finance-led or expansionary, but also not strongly contractionary.

5. Conclusion

This paper analyses the effect of financialisation on aggregate demand for the case of the USA based on an extended post-Kaleckian macro model. We find that the primary redistribution of income in favour of the rentier income as well as the non-rentier profits at the expense of wages suppresses consumption; however, the secondary redistribution of profits in favour of rentier income has a positive effect on consumption. The wealth effects of rising housing and financial asset prices on consumption also lead to an increase in consumption. A higher rentier income suppresses investment through both lower investable funds available to the firm and shareholder value orientation, and an increase in non-rentier profits has a positive effect on investment. However, the overall effect of a pro-capital redistribution on investment is modest. As a result the US economy is moderately wage led, however the lower bound of the estimate is almost zero, indicating little effect of distribution on private excess demand; thus, the positive and negative effects of a pro-capital income distribution almost cancel each other out.

The results suggest that the changes in functional income distribution and wealth effects in the era of financialisation have had an overall neutral effect on aggregate demand. But without the wealth effects, the overall effect on consumption and investment would have been negative. Thus, the macro economy is not finance led (in the sense of Boyer, 2000) while still being shaped by changes in the financial sector. The effects of financialisation regarding income distribution at the expense of wage earners, the consequent reliance on debt fuelled by the housing bubble to maintain consumption and growth based on low physical investment has led to a risky and fragile economy. This is exactly the mechanism that underlies the financial crisis of 2007–09. The coming years will show the negative consequences of debt repayments and the bust of the housing bubble on consumption. Indeed, over the longer term, if the negative wealth effects of the bust phase are also incorporated, the overall consequences of financialisation for growth may prove to be significantly negative. An alternative scenario with an improving wage share and declining rentier income share would provide a sounder and more sustainable basis for growth.

Bibliography

Aglietta, M. and Reberioux, A. 2005. *Corporate Governance Adrift. A Critique of Shareholder Value*, Cheltenham, UK, Edward Elgar

Banerjee, A., Dolado, J. and Mestre, R. 1998. Error correction mechanism test for cointegration in a single equation framework, *Journal of Time Series Analysis*, vol. 19, no. 3, 267–83

Barbosa-Filho, N. and Taylor, L. 2006. Distributive and demand cycles in the US economy – a structuralist Goodwin model, *Metroeconomica*, vol. 57, no. 3, 389–411

Bhaduri, A. and Marglin, S. 1990. Unemployment and the real wage: the economic basis for contesting political ideologies, *Cambridge Journal of Economics*, vol. 14, 375–93

Bhaduri, A., Laski, K. and Riese, M. 2006. A model of interaction between the virtual and the real economy, *Metroeconomica*, vol. 57, 412–27

Blecker, R. 1989. International competition, income distribution and economic growth, *Cambridge Journal of Economics*, vol. 13, 395–412

Boone, L., Giorno, C. and Richardson, P. 1998. *'Stock Market Fluctuations and Consumption Behaviour: Some Recent Evidence'*, OECD Economics Department Working Paper No. 208

Bowles, S. and Boyer, R. 1995. Wages, aggregate demand, and employment in an open economy: an empirical investigation, in Epstein, G. and Gintis, H. (eds), *Macroeconomic Policy After the Conservative Era. Studies in Investment, Saving and Finance*, Cambridge, Cambridge University Press

Boyer, R. 2000. Is a finance-led growth regime a viable alternative to Fordism? A preliminary analysis, *Economy and Society*, vol. 29, no. 1, 111–45

Brown, C. 2008. *Inequality, Consumer Credit and the Saving Puzzle*, Cheltenham, UK, Edward Elgar

Carruth, A., Dicerson, A. and Henley, A. 2000. What do we know about investment under uncertainty? *Journal of Economic Surveys*, vol. 24, no. 2, 119–53

Case, K., Shiller, R. and Quigley, J. 2001. 'Comparing Wealth Effects: the Stock Market Versus the Housing Market', NBER Working Paper No. w8606

Catte, P., Girouard, N., Price, R. and André, C. 2004. 'Housing Markets, Wealth and the Business Cycle', OECD Economics Working Paper No. 394

Chirinko, R. 1993. Business fixed investment spending: modeling strategies, empirical results and policy implications, *Journal of Economic Literature*, vol. 31, 1875–911

Cynamon, B. and Fazzari, F. 2008. Household debt in the consumer age: source of growth—risk of collapse, *Capitalism and Society*, vol. 3, no. 2, Article 3

Dutt, A. 1984. Stagnation, income distribution and monopoly power, *Cambridge Journal of Economics*, vol. 8, 25–40

Dutt, A. 1992. Rentiers in post-Keynesian models, pp. 95–122, in Arestis, P. and Chick, V. (eds), *Recent Developments in Post-Keynesian Economics*, Aldershot, UK, Edward Elgar

Dutt, A. 1995. Internal finance and monopoly power in capitalist economies: a reformulation of Steindl's growth model, *Metroeconomica*, vol. 46, no. 1, 16–34

Dutt, A. K. 2006. Maturity, stagnation and consumer debt: a Steindlian approach, *Metroeconomica*, vol. 57, 339–64

Epstein, G. (ed.), 2005. *Financialization and the World Economy*, Cheltenham, UK, Edward Elgar

Fazzari, S. and Mott, T. 1986. The investment theories of Kalecki and Keynes: an empirical study of firm data, 1970–1982, *Journal of Post Keynesian Economics*, vol. 9, no. 2, 171–87

Ford, R. and Poret, P. 1991. Business investment: recent performance and some implications for policy, *OECD Economic Studies*, vol. 16, 79–131

Froud, J., Johal, S., Leaver, A. and Williams, K. 2006. *Financialization and Strategy: Narrative and Numbers*, London, Routledge

Girouard, N. and Blöndal, S. 2001. 'House Prices and Economic Activity', OECD Economics Department, Working Papers, No. 279, OECD Publishing

Girouard, N., Kennedy, M. and André, C. 2006. 'Has the Rise in Debt made Households more Vulnerable?', OECD Economics Working Paper No. 535 (ECO/WKP(2006)63)

Godley, W. and Lavoie, M. 2007. *Monetary Economics. An Integrated Approach to Credit, Money, Income, Production and Wealth*, Basingstoke, Palgrave Macmillan

Hein, E. 2006. Interest, debt and capital accumulation – a Kaleckian approach, *International Review of Applied Economics*, vol. 20, 337–52

Hein, E. 2007. Interest rate, debt, distribution and capital accumulation in a post-Kaleckian model, *Metroeconomica*, vol. 57, 310–39

Hein, E. 2008A. Rising shareholder power – effects on distribution, capacity utilisation and capital accumulation in Kaleckian/Post-Kaleckian models, pp. 89–120, in Hein, E., Niechoj, T., Spahn, P., and Truger, A. (eds), *Finance-led Capitalism? Macroeconomic Effects of Changes in the Financial Sector*, Marburg, Metropolis

Hein, E. 2008B. '"Financialisation" in a Comparative Static, Stock-Flow Consistent Post-Kaleckian Distribution and Growth Model', IMK Working Paper, no. 21

Hein, E. and Ochsen, C. 2003. Regimes of interest rates, income shares, savings, and investment: a Kaleckian model and empirical estimations for some advanced OECD-economies, *Metroeconomica*, vol. 54, 404–33

Hein, E. and van Treeck, T. 2008. '"Financialisation" in post-Keynesian Models of Distribution and Growth – a Systematic Review', IMK Working Paper, no. 10

Hein, E. and Vogel, L. 2008. Distribution and growth reconsidered – empirical results for six OECD countries, *Cambridge Journal of Economics*, vol. 32, 479–511

Krippner, G. 2005. The financialization of the American economy, *Socio- Economic Review*, vol. 3, 173–208

Lavoie, M. 1995. Interest rates in post-Keynesian models of growth and distribution, *Metroeconomica*, vol. 46, 146–77

Lavoie, M. 2008. Financialisation issues in a post-Keynesian stock-flow consistent model, *Intervention. European Journal of Economics and Economic Policies*, vol. 5, no. 2, 331–356

Lavoie, M. and Godley, W. 2001–2. Kaleckian models of growth in a coherent stock-flow monetary framework: a Kaldorian view, *Journal of Post Keynesian Economics*, vol. 22, 277–311

Lazonick, W. and O'Sullivan, M. 2000. Maximizing shareholder value: a new ideology for corporate governance, *Economy and Society*, vol. 29, 13–35

Medlen, C. 2003. The trouble with Q, *Journal of Post Keynesian Economics*, vol. 25, 693–8

Naastepad, R. and Storm, S. 2007. OECD demand regimes (1960–2000), *Journal of Post-Keynesian Economics*, vol. 29, no. 2, 211–46

Onaran, Ö and Stockhammer, E. 2005. Two different export-oriented growth strategies: accumulation and distribution a la Turca and a la South Korea, *Emerging Markets Finance and Trade*, vol. 41, no. 1, 65–89

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*, no. 32, 863–86

Palley, T. 1996. *Post Keynesian Economics. Debt, Distribution and the Macro Economy*, Basingstoke, UK, Macmillan

Palley, T. 2006. Class conflict and the Cambridge theory of income distribution, pp. 223–46, in Hein, E., Heise, A. and Truger, A. (eds), *Wages, Employment, Distribution and Growth. International Perspectives*, Basingstoke, UK, Palgrave Macmillan

Palley, T. 2008. Financialisation: what it is and why it matters, pp. 29–60, in Hein, E., Niechoj, T. Spahn, P., and Truger, A. (eds), *Finance-led Capitalism? Macroeconomic Effects of Changes in the Financial Sector*, Marburg: Metropolis

Piketty, T. and Saez, E. 2003. Income Inequality in the United Sates, 1913–1998, *Quarterly Journal of Economics*, vol 118, no. 1, 1–39

Rowthorn, R. 1981. Demand, real wages and economic growth, *Thames Papers in Political Economy*, Autumn 1–39, reprinted in *Studi Economici, 1982*, vol. 18, 3–54

Steindl, J. 1952. *Maturity and Stagnation in American Capitalism*, New York and London, Monthly Review Press

Skott, P. and Ryoo, S. 2008. Macroeconomic implications of financialisation, *Cambridge Journal of Economics*, vol. 32, 827–62

Stockhammer, E. 2004. Financialisation and the slowdown of accumulation, *Cambridge Journal of Economics*, vol. 28, no. 5, 719–41

Stockhammer, E. 2005–6. Shareholder value orientation and the investment-profit puzzle, *Journal of Post Keynesian Economics*, vol. 28, no. 2, 193–215

Stockhammer, E. 2008. Some stylized facts on the finance-dominated accumulation regime, *Competition and Change*, vol. 12, no. 2, 184–202

Stockhammer, E. and Grafl, L. 2010. Financial uncertainty and business investment, *Review of Political Economy*, vol. 22, no. 4, 551–568

Stockhammer, E. and Onaran, O. 2004. Accumulation, distribution and employment: a structural VAR approach to a Kaleckian macro-model, *Structural Change and Economic Dynamics*, vol. 15, 421–47

Stockhammer, E. and Stehrer, R. 2011. Goodwin or Kalecki? Functional income distribution and aggregate demand in the short run, *Review of Radical Political Economy*, forthcoming

Stockhammer, E., Hein, E. and Grafl, L. 2011. Globalization and the effects of changes in functional income distribution on aggregate demand in Germany, *International Review of Applied Economics*, vol. 25, no. 1, 1–23

Stockhammer, E., Onaran, Ö and Ederer, S. 2009. Functional income distribution and aggregate demand in the Euro area, *Cambridge Journal of Economics*, vol. 33, 139–59

Taylor, L. 1985. A stagnationist model of economic growth, *Cambridge Journal of Economics*, vol. 9, 383–403

van Treeck, T. 2008. Reconsidering the investment-profit nexus in finance-led economies: an ARDL-based approach, *Metroeconomica*, vol. 59, no. 3, 371–404

van Treeck, T. 2009. A synthetic, stock-flow consistent macroeconomic model of financialisation, *Cambridge Journal of Economics*, vol. 33, no. 3, 467–93

Table A1. *Variable definitions*

Notation	Description	Source	Computation
C	Personal consumption expenditure, nominal	US NIPA Tables[a]	
C/Y	Consumption share	US NIPA Tables	Personal consumption expenditure, nominal/GDP, nominal
I	Gross private domestic investment, real deflated by investment price deflator	US NIPA Tables	
Y	GDP, real, deflated by gross domestic product deflator	US NIPA Tables	
FW/Y	Net financial wealth/GDP	US Federal Reserve: Flow of Funds accounts[b]	(financial wealth – financial liabilities), nominal/GDP, nominal
HW/Y	Housing wealth/GDP	US Federal Reserve: Flow of Funds accounts	Gross housing wealth, nominal/GDP, nominal
π	Gross operating surplus/GDP	US NIPA Tables	
π_{nr}	Non-rentiers income share	US NIPA Tables	(gross operating surplus – net dividends – net interest and miscellaneous payments, domestic industry)/GDP, domestic industry, nominal
π_r	Rentiers income share	US NIPA Tables	(net dividends + net interest and miscellaneous payments, domestic industry)/GDP, nominal
P	Price index for GDP	US NIPA Tables	
ULC	Unit labour costs	US NIPA Tables	Compensation of employees, received, nominal/GDP, real
P_M	Price index imports	US NIPA Tables	
P_X	Price index exports	US NIPA Tables	
P_X/P_M	Terms of trade	US NIPA Tables	Export prices/import prices
M	Imports of goods and services, real deflated by import price deflator	US NIPA Tables	
X	Exports of goods and services, real deflated by export price deflator	US NIPA Tables	
YF	GDP of OECD countries (real) minus GDP of USA, real	OECD National Accounts[c]	

Notes: All variables are in logarithmic form and are seasonally adjusted quarterly observations from 1960:q1 to 2007:q4.
NIPA, National Income and Product Accounts
   Sources:
[a]http://www.bea.gov/National/nipaweb/SelectTable.asp
[b]http://www.federalreserve.gov/releases/z1/Current/data.htm
[c]http://puck.sourceoecd.org/vl=7385629/cl=23/nw=1/rpsv/home.htm