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Working Paper

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The finance-dominated growth regime, distribution, and aggregate demand in the US[*]

Özlem Onaran[†], Engelbert Stockhammer[‡], Lucas Grafl[§]

Abstract — The finance-dominated growth regime has affected key macroeconomic variables in several contradictory ways. This paper investigates some of these effects: an increase of rentiers income, housing wealth and net financial wealth on private consumption expenditures and the effects of changes in payments to the rentier by the business on private investment expenditures. A Post-Kaleckian macro model is used as a starting point for this investigation. The paper thus contributes to two debates. First, it aims at clarifying some important macroeconomic effects of financialization. Second, it extends the analysis of distribution-led demand regimes by controlling for financialization variables.

Keywords: distribution, demand, investment, consumption, foreign trade, financialization, finance-dominated growth regime, wage-led, profit-led, macroeconomics, Keynesian economics

JEL-Classification: E12, E20, E22, E25, E61

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1. Introduction

This paper analyses the effect of the finance-dominated growth regime on aggregate demand for the case of the US economy with a particular focus on the changes in primary functional income distribution between wage and profit income as well as the secondary income distribution between the rentier income and the non-rentier profits. For this investigation we use a Post-Kaleckian macro model as a starting point. A second aim is to show that the incorporation of the effects of a finance-dominated regime to the Post-Kaleckian macro models improves our understanding of the effects of distribution on growth.

The notion of a finance-dominated growth regime covers a wide range of phenomena, which are usually referred to as "financialization".[1] In this paper we investigate three dimensions of the various effects of the finance dominated regime on the macroeconomy: i) the effects of increased payments to the rentier on investment, i.e. interest and dividend payments out of profits, the latter of which also reflects the shareholder value orientation, ii) the effects of the increased rentier income on consumption, iii) the effects of the housing and financial market bubbles on consumption.

We use the notion of a 'finance-dominated' accumulation regime to highlight that financial developments crucially shape the pattern and pace of investment and growth. This term is broader than the term *finance-led*, which is used by Boyer (2000) to define a regime where an increase in the financial norm, that is, the hurdle rate set by financial markets for investment projects, leads to an increase in growth. Contrarily Stockhammer (2008) defines a *finance-dominated* accumulation regime in such a way that financialization can positively or negatively affect growth. In particular, it is possible that the macro economy is not finance-led, but it is still shaped by changes in the financial sector.[2]

The USA is an interesting case to analyze these effects. Financialization is in many respects most developed in the USA and it has experienced a consumption led-boom since the mid-1990s, as can be seen in the rise of Consumption/GDP in Figure 1. This boom has also

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[1] E.g. the deregulation of the financial sector and the proliferation of new financial instruments, the liberalization of international capital flows and increasing instability in exchange rate markets; overall increase in uncertainty, market-based financial systems, the emergence of institutional investors as major players, the boom and bust in asset markets, shareholder value orientation and changes in corporate governance, increased access to credit and thereby debt by households, or changes in the level of (real) interest rates. Financialization has also been used to highlight psychological changes and ideological structures.

[2] Other authors have put forward arguments in a similar spirit for the case of US (Crotty 2003; Duménil & Lévy 2001; Krippner2005). Aglietta and Rebérioux (2005) use the term 'finance-led', an analysis centring on shareholder value without implying that the finance-led regime would automatically give rise to high growth. Brenner (2003) highlights how a boom turned into a bubble without invoking the notions financialization or finance-led growth.

corresponded to an increase in the change in income distribution in favour of the profit share (gross operating surplus/GDP) as can be seen in Figure 2. Given the basic assumption that the marginal propensity to consume out of profits is lower than that out of wages, this is a puzzling case. The wealth effects, thus consumption led by financial and housing wealth was thought to be significant to explain this development. The second puzzle arises when one observes the trend in investment, in particular how much of the profits has been invested. As can be seen in Figure 3, since the 1980s, there is a sharp decline in the gross private investment/gross operating surplus ratio; the recovery during the stock market boom of the late 1990s was once again reversed after the bust of 2001, and the recovery after 2002 did not bring about a corresponding increase in the investment/gross operating surplus ratio. This puzzle however can be understood, by looking more carefully at how the profit income is distributed. 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 (gross operating surplus), as can be seen in Figure 4. The increase in rentier income was first due to the increase in interest rates in the 1980s, and after the decline of the interest rates in the 1990s, the increase in dividend payments helped to hold the rentier share at high levels. As a consequence the non-rentier profit income (gross operating surplus-net interest and dividend payments) as a ratio to GDP follows a completely different pattern than the profit share in the 1980s as can be seen in Figure 5; the fall throughout the 1960s and 70s is not followed by a major recovery during the 1980s; the slight recovery since the 1990s is again reversed since 2006. Indeed the ratio of investment to non-rentier profits has fallen much less than investment/gross operating surplus ratio (Figure 6). Still it is interesting to note that this investment ratio has also not achieved the peak points of 1979, not even during the second peak in 2000.

Figure 1-6

This paper aims at explaining both of these puzzles of the increase in consumption and the stagnation in investment during a period of pro-capital redistribution of income in the USA. The basic model is inspired by the work of Keynes and Kalecki, and is a version of the model presented by Bhaduri and Marglin (1990). It is a Post-Kaleckian macro model that allows for wage-led as well as for profit-led demand regimes according to the relative size of the consumption differential, the sensitivity of investment to profits and the sensitivity of net exports to unit labor costs. We extend this basic model by incorporating the effects of the finance-dominated regime on aggregate demand. The primary redistribution of income in favor of the rentier income as well as the non-rentier profits at the expense of wages is expected to suppress consumption; however the secondary redistribution from profits to

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rentier income is expected to increase consumption due to a higher marginal propensity to consume out of rentier income. The wealth effects of housing and financial market bubbles on consumption are also expected to lead to an increase in consumption even if the debt mechanism is not sustainable in the long run. Regarding investment, a higher rentier income is expected to suppress investment through both lower investable funds available to the firm and shareholder value orientation.

Several papers have theoretically modeled the effects of financialization on the components of aggregate demand (Boyer, 2000; Lavoie, 1995, 2006, 2008; Lavoie and Godley, 2001-2; Godley and Lavoie 2007; Palley, 2006; Hein, 2006, 2007, 2008a, b; van Treeck, 2007; Skott and Ryoo, 2008). Hein and van Treeck (2008) present a useful review of this existing literature. The theoretical contribution of this paper is to combine the effects of primay and secondary income distribution and wealth effects. Furthermore the paper contributes to empirical literature on these types of models, which is limited to Hein and Ochsen (2003) as of now; van Treeck (2008), Orhangazi (2008), and Stockhammer (2005-6) present estimations for investment only. Our contribution regarding the existing empirical work is i) the incorporation of wealth effects on consumption, ii) an accurate accounting of the effects of rentier income vs. non-rentier profits on investment as well as consumption, iii) the analysis of the overall effects in the open economy context, in order to make our results comparable to the former estimations of the basic open economy Bhaduri-Marglin model, iv) using modern time series techniques, which deal with several econometric problems of the existing literature,.

The paper is structured as follows. Section 2 presents the theoretical background. Section 3 summarizes the empirical literature. Section 4 presents the estimation results. Section 5 summarizes the key findings and draws policy conclusions.

2. Wage-led vs. profit-led demand in a finance-dominated regime

This section presents the theoretical model that incorporates the effects of the finance-dominated regime into a basic Post-Keynesian model based on Bhaduri and Marglin (1990). The basic model is used to analyze the effects of changes in functional income distribution on aggregate demand. While in the classical Kaleckian model (for a closed economy) an increase in the wage share will always lead to an increase in demand (Kalecki 1954, Blecker 1999), this is not necessarily the case in the Bhaduri-Marglin model. Here profit-led as well as wage-led demand regimes are possible since a positive effect of a pro-capital redistribution on investment is allowed for. The question whether the positive effect of wages on consumption

or the negative effect of profits on investment is larger, becomes an empirical one. In an open economy additional negative effects will operate through net exports. Net exports are a negative function of domestic demand, a positive function of foreign demand (Y_f), and depend negatively on unit labour costs (ULC), which are an indicator of international competitiveness. ULC are by definition closely related to the wage share, and oppositely related to the profit share. Aggregate demand (Y) is the sum of consumption (C), investment (I), net exports (NX) and government expenditure (G). Leaving out the government sector, we focus on a basic private open economy model.

The finance-dominated regime affects macroeconomic activity through its effects on households' consumption behavior as well as investment. Foreign trade is not affected by financialization in our model, therefore financialization will only make a difference in terms of the demand regime in the closed economy, but the magnitude of the effect of distribution on the foreign demand will also eventually determine whether demand is wage-led or profit-led. Financialization also affects distribution either through its effect on the profit share at the expense of the wages (depending on the mark-up power of firms and the degree of conflict inflation), or its effect on higher managerial wages, as argued by Hein and van Treeck (2008), Lavoie (2006, 2008), Godley and Lavoie (2007), Palley (2006), and Epstein and Jayadev (2005). This is certainly an important aspect, but in this paper we take distribution to be exogenously determined for simplicity; however to account for possible problems econometric that might arise due to the endogeneity of distribution, we use the lag of distribution as explanatory variable. In the following we discuss the effects of finance dominated regime on consumption and investment.

2.1 Consumption

The relevance of income distribution in a Kaleckian consumption function is that the propensity to consume out of wages (W), c_w, is higher than that out of profits (R), c_π.

$$C = c_0 + c_w W + c_\pi R \qquad \text{(Equation 1)}$$

c_0 is autonomous consumption. R= Y-W is equal to gross operating surplus. Profit share is $\pi = \dfrac{R}{Y}$. Rewriting C by substituting R by πY, and W by (1-π)Y and reaaranging the terms, we get:

$$C = c_0 + c_w Y + (c_\pi - c_w)\pi Y \qquad \text{(Equation 2)}$$

Since $c_\pi < c_w$, consumption is expected to decrease when the profit share rises.

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The effect of the finance dominated regime on consumption works through two channels: a) the increase in the rentier income share and the higher marginal propensity to consume out of rentier income compared to the profit income, b) the financial and housing wealth effect

First, the finance-dominated regime means a redistribution of income in favor of the rentier in the form of interest payments and dividends. We define π_r as the net interest and dividend payments as a ratio to GDP, thus the rentier income share, and π_{nr} is the gross operating surplus –(net interest and dividend payments) as a ratio to GDP, thus the non-rentier profit share[3]. 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 finance-dominated regime on consumption is the wealth effect. In the 1990s there was an increased re-emphasis on the wealth effect in the consumption function. This rediscovery was motivated by the economic experience in the USA, where private consumption expenditures became the driving force in GDP growth. The falling saving rates were thus explained by the rise in the value of financial assets because of the stock market boom. It is also found that most of the fall in the savings rate occurred in the top income groups, who also benefited most from the increase in financial wealth (Brenner 2003; Maki and Palumbo, 2001). In the late 1990s a 5 per cent marginal propensity to consume out of financial wealth was often quoted (with some more qualification for European countries; e.g. Boone et al. 1998). To the surprise of many economists, the stock market crash in 2000 did not result in a slowdown in consumption growth. The unabated consumption boom in the USA was then explained by booming house prices. Residential property was thus identified as the key source of the wealth effect. 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). One of the reasons that housing wealth is supposed to drive consumption expenditures is that residential property is more frequently accepted as collateral. Booming property prices and a mortgage-fuelled consumption boom, however, only cover parts of how financialization may affect consumption behaviour. More generally speaking, financialization has given households more access to credit. Access of credit, of course, is not restricted to mortgages, but also includes other forms of consumer

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

credit, credit cards and overdraft bank accounts. The mainstream literature assumes that households are rational. They increase their debt ratios because their wealth increases. While this is probably part of the story, it is also conceivable that a substantial part of the accumulated debt is due to households irrationally maintaining consumption levels that are unsustainable. Cynamon and Fazzari (2008) and Brown (2008) discuss the role of changing social norms in explaining the unprecedented increase in consumption and household debt. As wages have stagnated in many countries, but consumption norms as represented in mass media have arguably 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 of Boyer (2000), Lavoie and Godley (2001-2), Skott and Ryoo (2008), and van Treeck (2007).

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

$$C = c_0 + c_w Y + (c_{\pi r} - c_w)\pi_r Y + (c_{\pi nr} - c_w)\pi_{nr} Y + c_{FW} FW + c_{HW} HW \qquad \text{(Equation 3)}$$

Regarding the effects of distribution, we expect $(c_{\pi nr} - c_w) < (c_{\pi r} - c_w) < 0$. The overall effect of a change in the profit share on consumption will then depend on the share of the rentier income in the profits and the magnitudes of $(c_{\pi nr} - c_w)$ and $(c_{\pi r} - c_w)$:

$$\frac{\partial C}{\partial \pi} = (c_{\pi nr} - c_w)\frac{\pi_{nr}}{\pi} + (c_{\pi r} - c_w)\frac{\pi_r}{\pi} \qquad \text{(Equation 4)}$$

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-liabilities. The liabilities include also the mortages. Bhaduri et al. (2006) argue that the wealth effect is based on notional wealth, which cannot be realised collectively but only serve as collateral for consumers to accumulate debt; and beyond a point the wealth effect may even turn negative due to increased interest payments, and increased risk of default. 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. Financialization leads to a debt-led growth by fueling consumption in the short-run, but debt has to be serviced in the future. The debt channel is a redistribution of income from indebted low-income households to rentier households. Thus

the positive effects of the debt-led growth will also be partially offset by the negative effects of redistribution on consumption. Hein and van Treeck (2008), Dutt (2006), and Palley (1996) also point at this conflicting flow and stock effects of higher debt.

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. In that respect our model is not a stock-flow consistent model.

Another important aspect of financialization has been the increase in the share of managerial wages, or the share of the top 1% or even 0.1% among the wage earners. The data about the USA is well-documented by Piketty and Saez (2003). However these data exist only at annual frequency, and for econometrical reasons we prefer to use quarterly data, and thereby we are unable to include managerial wages in our estimations.

2.2 Investment

Keynesian as well as neoclassical investment functions depend on output, which is the standard accelerator effect, and some measure of the cost of capital (Chirinko 1993). Additionally in our basic Bhaduri-Marglin model investment is expected to increase when the profit share rises because this signals higher future profitability of investments. Moreover it is often argued that retained earnings are a privileged source of finance and may thus influence investment expenditures. So investment, I, in our basic Bhaduri-Marglin model is expressed as

$$I = i_A + i_Y Y + i_\pi \pi \qquad \text{(Equation 5)}$$

where i_A is autonomous investment, i_Y is the accelerator effect, and i_π is the effect of profitability on investment, which is expected to be positive.

Financialization brought about many changes that potentially affect physical investment by firms. One of the most important changes in investment behaviour is due to the increased role of shareholders in the firm (Boyer, 2000; Stockhammer, 2004, 2005-6). 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 increase the orientation of management towards shareholders' objectives.

Regarding the effect of the finance-dominated regime on the financing behavior of the firms, a perverse effect has been observed. Firms have not used new financial instruments to

expand their investment expenditures. In the Anglo-Saxon countries, the buyback of corporate shares has led to an overall negative contribution of the stock market to the financial position of non-financial businesses (Schaberg 1999). Non-financial firms seem to increasingly rely on internal finance for investment projects. Overall, non-financial businesses seem to move from a net debtor position to a neutral or net creditor position (OECD 2007).

Consequently the relationship between profits and investment has changed. Not only in the USA, but also in the major economies (Germany, France and the UK), the investment–profit ratio shows a clear declining trend, thus higher profits do not automatically lead to higher investment. For Keynesians, who argue that expectations rather than profits are the main driving force behind investments, this is not all that surprising. Kalecki even pointed out that the causation may be inverse: investment causing profits, rather than the other way around. Empirically, profits play a modest role in determining aggregate investment (e.g. Ford and Poret 1991; Stockhammer et al. 2007).

In order to explain the puzzle of the decreasing ratio of investments to profits, we again disaggregate the profit share as π_r and π_{nr}[4], and rewrite the investment function as follows:

$$I = i_A + i_Y Y + i_{\pi nr}\pi_{nr} + i_{\pi r}\pi_r \qquad \text{(Equation 6)}$$

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 more precisely. 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. In the absence of quantitative measures reflecting the manager-shareholder relation π_r is the only variable reflecting share-holder value orientation. 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, b), Lavoie (1995, 2008), Lavoie and Godley (2001-2), van Treeck (2007), and Skott and Ryoo (2008).

The overall effect of a change in the profit share on investment will then depend on the share of the rentier in the profits and the relative magnitudes of the effects of $i_{\pi nr}$ and $i_{\pi r}$:

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

$$\frac{\partial I}{\partial \pi} = i_{\pi nr} \frac{\pi_{nr}}{\pi} + i_{\pi r} \frac{\pi_r}{\pi}$$

(Equation 7)

The models by Skott and Ryoo (2008) and van Treeck (2007) 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. The effect on investment depends on the relative magnitude of the negative leverage effect and lower availability of investable funds vs. the positive effect of a higher Tobin's q. We do not include the Tobin's q for both theoretical and empirical reasons. Empirical evidence has failed to support 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).. Furthermore the debt stock is also not included explicitly in our model; thus the effect of debt on investment is incorporated through the exogenously changing interest payments.

Furthermore as a consequence of the finance-dominated regime firms also face a higher degree of uncertainty, which may make physical investment projects less attractive (Stockhammer and Grafl, 2008). In particular volatility of exchange rates seems to have had some effects on manufacturing investment. However, uncertainty is hard to measure and estimation results from the existing literature are not conclusive enough to suggest a clear order of magnitude of the effect (Carruth et al. 2000). Thus our model will be limited in the sense that it will not reflect the effects of volatility and uncertainty on investment.

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:

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

(Equation 8)

$\dfrac{\partial Y}{\partial \pi}$ is private excess demand, that is, the change in demand caused by a change in income distribution given a certain level of income.[5] The sign of $\dfrac{\partial Y}{\partial \pi}$ is ambigous and depends on the relative magnitude of the effect of distribution on consumption, investment, and net exports, where $(c_{\pi nr} - c_w)\dfrac{\pi_{nr}}{\pi} < (c_{\pi r} - c_w)\dfrac{\pi_r}{\pi} < 0$ and $i_{\pi r}\dfrac{\pi_r}{\pi} < 0$, but $i_{\pi nr}\dfrac{\pi_{nr}}{\pi} > 0$ and $\dfrac{\partial NX}{\partial \pi} > 0$. This is an empirical issue that has to be tested. 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} on investment, and the positive effects of π on net exports then demand will be wage-led. Thus if

$$\left| (c_{\pi nr} - c_w)\frac{\pi_{nr}}{\pi} + (c_{\pi r} - c_w)\frac{\pi_r}{\pi} + i_{\pi r}\frac{\pi_r}{\pi} \right| > i_{\pi nr}\frac{\pi_{nr}}{\pi} + \frac{\partial NX}{\partial \pi}, \text{ then the economy is wage-led.}$$

Next we discuss the effect of a redistribution in favor of the rentier income and at the expense of non-rentier profits with a constant π, thus the case where $\Delta \pi_r = -\Delta \pi_{nr} = 1\%$-point. The effect on private excess demand will be:

$$\frac{\partial Y}{\partial \pi} = -(c_{\pi nr} - c_w)\frac{\pi_{nr}}{\pi} + (c_{\pi r} - c_w)\frac{\pi_r}{\pi} - i_{\pi nr}\frac{\pi_{nr}}{\pi} + i_{\pi r}\frac{\pi_r}{\pi} + 0 \qquad \text{(Equation 9)}$$

$$\left. \frac{\partial Y}{\partial\left(\dfrac{\pi_r}{\pi}\right)} \right|_{\overline{\pi}} = -(c_{\pi nr} - c_w)\frac{\pi_{nr}}{\pi} + (c_{\pi r} - c_w)\frac{\pi_r}{\pi} - i_{\pi nr}\frac{\pi_{nr}}{\pi} + i_{\pi r}\frac{\pi_r}{\pi} + 0$$

The first term, $-(c_{\pi nr} - c_w)\dfrac{\pi_{nr}}{\pi}$, is positive, but $(c_{\pi r} - c_w)\dfrac{\pi_r}{\pi}, -i_{\pi nr}\dfrac{\pi_{nr}}{\pi}, i_{\pi r}\dfrac{\pi_r}{\pi}$ are all negative. If $-(c_{\pi nr} - c_w)\dfrac{\pi_{nr}}{\pi} < \left| (c_{\pi r} - c_w)\dfrac{\pi_r}{\pi} - i_{\pi nr}\dfrac{\pi_{nr}}{\pi} + i_{\pi r}\dfrac{\pi_r}{\pi} \right|$, then a pro-rentier redistribution

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[5] 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. $\dfrac{1}{1 - \left(\dfrac{\partial C}{\partial Y} + \dfrac{\partial I}{\partial Y} + \dfrac{\partial NX}{\partial Y} + \dfrac{\partial G}{\partial Y}\right)}$.

of income at the expense of the non-rentier profits is decreasing private demand. Thus pro-rentier redistribution is contractionary. If $-(c_{\pi nr}-c_w)\dfrac{\pi_{nr}}{\pi}>\left|(c_{\pi r}-c_w)\dfrac{\pi_r}{\pi}-i_{\pi nr}\dfrac{\pi_{nr}}{\pi}+i_{\pi r}\dfrac{\pi_r}{\pi}\right|$, then a pro-rentier redistribution of income at the expense of the non-rentier profits is expansionary. The effect of such a redistribution on I is however unambiguously negative. The effect on consumption is positive, if $-(c_{\pi nr}-c_w)\dfrac{\pi_{nr}}{\pi}>\left|(c_{\pi r}-c_w)\dfrac{\pi_r}{\pi}\right|$. Thus a pro-rentier redistribution of income at the expense of the non-rentier profits can be expansionary despite the negative effect on investment, if there is a positive effect on consumption, which is high enough to more than offset the negative effect on investment. This is different from the finance-led regime of Boyer (2000), where the positive effects on consumption further spills over the investment, and financialization also has a positive effect on accumulation . Our expansionary case is rather similar to the "intermediate" case in Hein (2008b) and van Treeck (2007), where the effect of financialization on the accumulation rate is negative although the effect on the rates of capacity utilisation and consumption is positive.[6]

Finally we discuss the effects of a pro-rentier redistribution of income at the expense of wage income with a constant π_{nr}. Thus $\Delta\pi_r=-\Delta(1-\pi)=1\%$-point. The effect on private excess domestic demand is $(c_{\pi r}-c_w)\dfrac{\pi_r}{\pi}+i_{\pi r}\dfrac{\pi_r}{\pi}$, and is unambiguously negative.

To get the overall effect of the finance-dominated regime on private excess demand, we have to consider the effects of increased rentiers income as well as the wealth effects on consumption:

$$\left((c_{\pi nr}-c_w)\frac{\pi_{nr}}{\pi}+(c_{\pi r}-c_w)\frac{\pi_r}{\pi}+i_{\pi nr}\frac{\pi_{nr}}{\pi}+i_{\pi r}\frac{\pi_r}{\pi}+\frac{\partial NX}{\partial\pi}\right)+c_{FW}+c_{HW}$$

The positive wealth effects can enhance the possibility of an expansionary finance-dominated regime with a rising profit share. Boyer's (2000) notion of a finance-led accumulation regime implies that the overall expression is positive. Stockhammer's (2008) notion of a finance dominated accumulation regime does not imply an a priori sign for the total expression, but claims that the partial effects are economically relevant (and thus the pattern of growth changes). Additionally the finance-dominated growth regime will be

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[6] Hein (2008c) and van Treeck (2007) 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.

characterized by frequent financial crises. This aspect is only indirectly captured here, as we treat financial variables as exogenous.

3. Empirical literature

Research in the Kaleckian tradition has recently produced a number of contributions on the identification of the demand regime based on the basic Bhaduri and Marglin (1990) model. However, empirical work on the effects of financialization on the demand regime is rather limited, despite the increasing amount of theoretical work in the Post-Keynesian literature on financialization.

The tests of the basic Bharduri-Marglin 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 VAR model consisting of the variables capital accumulation, capacity utilization, profit share, unemployment rate and labor productivity growth for the USA, UK and France. From the empirical investigation it is concluded that unemployment is determined by the goods market, and that the impact of income distribution on demand and employment is very weak and statistically insignificant. Onaran and Stockhammer (2005-6) employ a similar model for Turkey and Korea and find some indication for wage-led demand regimes in these countries. Barbosa-Filho and Taylor (2006) estimate a two equation VAR with a demand equation and a distribution equation for the USA economy using quarterly data and the cyclical component of the HP filter. 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 the results by Barbosa-Filho and Taylor (2006) suffer from several econometric problems due to autocorrelation problems, lag structure, and the specification, therefore they cannot be regarded as robust (Stockhammer and Stehrer, 2008).

The advantage of the systems approach is that the interaction between the variables can be incorporated. The disadvantage of the VAR is that it is difficult to identify the effects of individual variables.

The second, larger group of papers analyses the goods market in isolation. Typically behavioral functions are estimated for consumption, investment and net exports. The first paper along these lines was Bowles and Boyer (1995), who find that France, Germany, and Japan are profit-led, and the UK and the USA are wage-led. However the results are problematic, since they do not pay attention to time series problems. 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 completely ignored. Hein and Vogel (2008) find wage-led regimes in the USA, France, Germany, and the UK, and profit-led regime in Austria and Netherlands. However 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. The estimations of net exports simply as a function of the profit share also leads to insignificant effects. Stockhammer et al. (2009) for the Euro area offer a more sophisticated treatment of international trade by estimating separate price equations and import and export equations. This allows us to trace the effects of changes in distribution through prices to exports and imports. They find a wage-led regime in the Euro area. Stockhammer et al. (2007) find a wage-led regime for Germany. Ederer and Stockhammer (2007) and Stockhammer and Ederer (2008) find profit-led demand regimes in France and Austria.

The literature discussed above does not include control variables for financialization effects. If financialization has affected consumption and investment behaviour, then the results summarized above will be biased. As financialization is most developed in the USA, this is where one would expect to find the difference.

Empirical literature in terms of integrating the effects of financialization in the estimations of demand regimes is until now limited to four papers to the best of our knowledge. In an earlier work Hein and Ochsen (2003) estimate the effect of the interest rate within a post-Kaleckian growth model for several OECD countries for the period of 1960-1995. 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 the 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. They do not include dividend payments in their model. Van Treeck (2008), Orhangazi (2008), and Stockhammer (2004) estimate only the effect of financialization on accumulation. Stockhammer (2004) uses rentiers *income* of non-financial business as a proxy for shareholder value orientation and finds that financialization 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 profit share and interest and dividend payments on private non-financial private investment in the USA for the period of 1965-2004 in ECM form, and finds that both variables of

financialization have a negative effect. However, the profit share itself is insignificant for the total estimation period of 1965-2004, and is only significant during the sub-period of 1982-2004. However, as van Treeck is using annual data this sub-sample is too small to be reliable. Only in the estimation with the profit rate instead of the profit share is the profit effect significant. Orhangazi (2008) estimates the effect of financial payout ratios (interest payments, dividend payments, stock buybacks), financial profits, and debt on non-financial firms' investment in the US for the period of 1973-2003 using firm level data and a dynamic specification in difference form; however he does not incorporate the long-run relations through an error-correction mechanism. He finds that all three measures of financialization have a negative effect on investments, although there are significant differences with regards to sector or firm size.

In the following empirical part we address several caveats of the existing literature on the effect of finance-dominated regime on demand: we incorporate the financial and housing wealth effects on consumption. We disaggregate the effects of the profit share on investment into the effects of the rentier share and the non-rentier profit share. We discuss the overall effects on private demand in the open economy context, in order to make our results comparable to the former estimations of the basic open economy Bhaduri-Marglin model. Finally we address several econometric problems of the existing literature, using modern time series techniques.

4. Empirical results

The model will be estimated by means of separate single equations for consumption, investment, exports, and imports. 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.

The single equation approach fails to make use of the fact that consumption, investment and net exports (and state expenditures) add up to GDP. For both limitations a systems approach, like the VAR approach used by Stockhammer and Onaran (2004) and Onaran and Stockhammer (2005-6), may be a solution, which, however, becomes problematic when too many variables are integrated, and the results are more difficult to interpret.

We are using quarterly data for the period of 1960:1-2007:4. Variable definitions can be found in the Appendix (Table A.1). 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). Thus ECM or difference specifications are applicable. Simple autoregressive distributed lag (ADL) modelling with OLS was chosen as the main estimation strategy. We start from a general model including all the 8 lags of the variables, except for the contemporaneous values to avoid endogeneity problems, and gradually reduce the number of the lags by dropping the most insignificant lag and repeating the estimation until only significant variables remain. In all equations reported below Breusch—Godfrey test for autocorrelation cannot reject the null-hypothesis of no serial autocorrelation.

4.1 Consumption

We start with the general form of a standard Keynesian consumption function as in Equation 2. For the convenience of estimation and calculation we divide both sides by GDP, Y[7], and reformulate the consumption function as

$$\frac{C}{Y} = c_w + \frac{c_0}{Y} + (c_\pi - c_w)\pi \qquad \text{(Equation 11)}$$

The ECM specification did not give statistically significant results as can be seen in the Appendix Table A.3. Table 1 reports the regression results for the ADL specification in difference form.[8] In the basic difference specification (specification 1 in Table 1), the consumption elasticity for the profit share is -0.08.[9] The hypothesis that consumption propensities vary between profit and wage income is confirmed. Since the estimation is in logarithmic differences, we have to convert the elasticity into marginal effect. At the sample mean the difference in the marginal propensity to consume out of wages and profits is 0.17.[10] A redistribution of 1%-point of GDP from wages to profits would thus induce 0.17 %-points less consumption expenditures as a ratio to GDP at the sample mean.

TABLE 1

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[7] Both C and Y are nominal values.

[8] Since the function is estimated in difference form, the c_w in the theoretical model is dropping. The constant, which has a small but positive and significant value, is controlling for a trend that is not captured by the other variables. Thus we can only estimate the differentials in the marginal propensity to consume, and not their levels.

[9] 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.

[10] 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: $\dfrac{\partial C/Y}{\partial \pi} = e_{C\pi} \dfrac{C}{R}$. Table A.2 in the Appendix presents the averages of the relevant ratios for various sub-periods.

Indeed the former estimations suffer from omitted variables due to the absence of the effects of the finance-dominated regime. Next we estimate the extended consumption function as in Equation 3. Again dividing both sides by Y, the equation to be estimated becomes

$$\frac{C}{Y} = c_w + \frac{c_0}{Y} + (c_{\pi r} - c_w)\pi_r + (c_{\pi nr} - c_w)\pi_{nr} + c_{FW}\frac{FW}{Y} + c_{HW}\frac{HW}{Y} \qquad \text{(Equation 12)}$$

Table summarizes the basic specification (corresponding to eq. 2) and the extended one including financialization variables (based on eq. 12). After cointegration tests failed to indicate cointegration,[11] distributed lag model in difference form was adopted. In the second specification we find a consumption elasticity of -0.06 for the non-rentier profit share and a much lower elasticity, -0.01, for the rentier share. Calculating the marginal effects, we find a differential in marginal propensity to consume between the wage and non-rentier profit income of 0.16[12] and a differential in consumption propensity between the wage and the rentier income of 0.10 at the sample mean. Thus there is indeed a high consumption out of the rentier income. To make the results comparable with the basic specification, we take a weighted average of the two consumption differentials (as suggested in Equation 4), and find that the average difference in the 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, which ignores the relatively higher marginal propensity to consume out of rentier income. The calculation of marginal effects at the sample mean is in Table 2. We assume that the

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[11] The ECM specification again did not give statistically significant results as can be seen in the second specification in Appendix Table A.3. The t-ratio of the coefficient of adjustment, thus the coefficient of $\Delta\frac{C}{Y}$ is -2.28, which is way below the critical ratio of 3.67 at the 10% level (see Banerjee et al., 1998). The Johansen test also unambiguously rejected cointegration. In the case of our specification, where consumption is modeled as a ratio to GDP, this is not surprising. Despite the increasing trend in the consumption/GDP ratio in the USA since the mid 1980s, which supports the statistical finding of a unit root in the consumption share, the ECM specifications are very sensitive to the combination of variables. For e.g. Girouard (2001) tries to estimate 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-value 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.

[12] The conversion from the elasticity of consumption with respect to π_{nr}, thus $e_{C\pi_{nr}}$, to the marginal effect on C for a given Y is as follows: $\frac{\partial C/Y}{\partial \pi_{nr}} = e_{C\pi_{nr}}\frac{C}{R_{nr}}$, where R_{nr} is the gross operating surplus –(net interest payments and dividends). Table 2 in the Appendix presents the averages of the relevant ratios for various sub-periods.

elasticities for the whole period are constant.[13] Converting elasticities into marginal effects will give different results according to where the partial effect is evaluated (see Table 2).

The net financial and gross housing wealth have positive coefficients. Marginal propensity to consume out of net financial wealth is 0.007 and that out of gross housing wealth is 0.02.[14] 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] This is the first study to our knowledge that tests the effect of distribution on consumption and controls for the wealth effects. Multiplying the marginal effects with the actual changes in $\dfrac{FW}{Y}$ and $\dfrac{HW}{Y}$, we can find the actual effect of wealth on consumption. Taking the ratio of the actual effect to the actual change in $\dfrac{C}{Y}$ during the era of finance-dominated regime, 1980-2007, we can explain 12.4% of the change in consumption by changes in housing wealth, and 5.5% by changes in financial wealth.

Finally we compare our results for the effects on consumption with the literature, although the results are not readily comparable because of the differences in specification. Naastepad and Storm (2007) estimate a difference of 0.22 in the savings propensities between wages and aggregate profits; Hein and Vogel (2008) estimate a differential (in the consumption propensities) of 0.14; however both papers estimate only the basic Bhaduri-Marglin model.

4.2 Investment

The investment function is first estimated in the basic form in Equation 5 in an ECM form. However this estimation is biased, since it does not take into consideration the effects of payments to the rentier. The most important result of this estimation is that investment is cointegrated with Y but not with the profit share. The results are in the Appendix in Table

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[13] The trials for various subperiods of post-1980s with few observations are not very reliable with 7 explanatory variables and 8 lags of each.

[14] The conversion from the elasticity of consumption with respect to $\dfrac{HW}{Y}$, thus $e_{C_{HW}}$, to the marginal effect on C for a given Y is as follows: $\dfrac{\partial C / Y}{\partial HW / Y} = e_{C_{HW}} \dfrac{C}{HW}$. Table 2 in the Appendix presents the averages of the relevant ratios for various sub-periods.

[15] E.g. OECD (2001) estimates 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 1970:1-1999:2 in the US.

A.4.[16] 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. That supports the puzzle that the ratio of investments to profits has been decreasing since the 1980s. Does financialization offer an explanation to that? To be more specific, once we disaggregate the profit share again as π_r, the rentier income share, and π_{nr}, the non-rentier profit share, as suggested in Equation 6 are investments indeed cointegrated with the non-rentier profit share? The estimation results are in specification in Table 3.

Table 3

The first specification in Table 3 shows the results when we include both the rentier and non-rentier income in the cointegrating relation, and leave both variables in the cointegration vector of the ECM specification although that they both have insignificant coefficients. Although the coefficients are statistically insignificant, economically they are indicative: This estimates an elasticity of 0.22 with respect to π_{nr} and -0.14 with respect to π_r.[17] The corresponding marginal effects are 0.15 and -0.29 for π_{nr} and π_r respectively.[18] The overall (weighted) maginal effect of a 1%-point increase in the profit share is then 0.03%-point increase in I/Y calculated as in Equation 7.

Next we estimated 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. The results, which are reported in specification 2 of Table 3, show that there is 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

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[16] When the equation is estimated in difference form, π has a significant and positive effectwith 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.

[17] The elasticity is calculated as the coefficient of the level of the explanatory variable divided by the negation of the coefficient of the level of investment.

[18] The conversion from elasticities to partial effects on I/ Y is as follows: $\dfrac{\partial I / Y}{\partial \pi_{nr}} = e_{I\pi_r} \dfrac{I}{R_{nr}}$, where R_{nr} is

gross operating surplus-(net interest payments + dividends). Table 2 in the Appendix presents the averages of the relevant ratios for various sub-periods. This is calculated by abstracting from the changes in the price deflators through time, thus $\dfrac{I}{R_{nr}}$ is the ratio of the nominal values. The marginal effect of π_r is calculated in the same

fashion.

in private real investment as a ratio to GDP at the sample mean.[19] 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 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 is also misspecified since it restricts the long run effect of π_r to zero.

However, the restricted specification 2 in Table 3 is ignoring the long run negative effect of π_r on I. 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 3). 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 (calculated as in Equation 7). The safe approach would be to say that the effect of a 1%-point increase on the profit share on I/Y lies between 0.03%-points and 0.12%-points. Multiplying the marginal effects with the actual change in the rentier and non-rentier profit shares, we can explain 29-49% of the actual decline in investment/GDP.

Table 4 summarizes the calculation of the marginal effects for π_r and π_{nr} and corresponding weigthed marginal effect of the profit share on investment for the three different specifications.

Table 4

Demand is playing a key role in determining investment expenditures, again in accordance with the literature (Chirinko 1993, Ford and Poret 1992) The accelerator effects are well above one, i.e. the marginal effect of a 1% increase in GDP increases investment/GDP ratio by 1.3-1.4%-point in the long run.

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[19] Again the conversion from elasticities to partial effects on I/ Y is as follows: $\dfrac{\partial I / Y}{\partial \pi_{nr}} = e_{I\pi_{nr}} \dfrac{I}{R_{nr}}$, where R_{nr} is the gross operating surplus –(net interest payments and dividends).

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 and rentier profits. Another important function of the interest rate in mainstream investment functions is however to capture the effect of cost of capital relative to labor; our estimations does 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 significant but positive long-run effect on investment, which is counterintuitive. The marginal effects with a constant elasticity calculated at different period averages are discussed below in Section 4.3. We also checked whether the elasticities are changing for different sub-periods, but the results were insignifincant or implausible.[20]

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 to firm-level investment functions, which usually find a larger effect of cash flow on investment (Fazzari and Mott 1986). Compared to the recent empirical work on the USA in the tradition of the Bhaduri-Marglin model, our specification that addresses financialization is an improvement. Hein and Vogel (2008) claim that the profit share has no effect on investments, but this is because they do not test the positive effect of the non-rentier profit share, but just aggregate profit. Interestingly Naastepad and Storm (2007) find a very strong elasticity of investment to profits (0.48) in the basic Bhaduri-Marglin model, without disaggregating the rentier share; however their specification seems to be problematic by estimating the investment/GDP as a function of the profit share and real GDP in levels (in logs) without paying attention to the time series properties. The lower bound of our estimates on the weighted effect of the profit share on investment are consistent with the insignificant effect of the profit share on accumulation in the USA found by Stockhammer and Onaran (2004) based on systems equations; however our upper bound suggests the presence of significant effects, although they are not very high. In a recent paper van Treeck (2008) estimates net non-financial private investment (normalized by the capital

[20] Based on the estimations for different sub-periods of 1980-2007, 1981-2007, 1982-2007, 1983-2007, 1984-2007, 1985-2007, and 1992-2007, we obtain a long-run elasticity for the non-rentier profit, which is ranging between 2.8 and 8.9 respectively. Moreover except for two periods (1981-2007, 1982-2007) GDP is not significant in the cointegrating relation, and therefore dropped. 1982-2007 is the only period where rentier-income, non-rentier profits, and GDP are all significant, but then the t-value of the ECM coefficient lies below the critical value, indicating the absence of a cointegration relation. Due to the implausible values for the profit coefficient, the non-robustness of the cointegration relations, and most of all due to the insignificance of GDP in many sub-periods, we do not pursue different period estimations in our analysis. The addition of a trend or a dummy for post-1980s also did not improve the results. The dummy was insignificant and with the trend GDP was dropped out of the cointegration relation, which is also not plausible.

stock) in ECM form by using annual data for the USA as a function of the net profit share and capital productivity as in the traditional Bhaduri-Marglin model, but controlls for interest and dividend payments (both normalized by the capital stock). Since he also does not disaggregate the profit share as non-rentier profits, he also does not find a significant effect of the profit share for the total period of 1965-2004; he finds a positive effect only for the sub-period of 1982-2004, which is however problematic due to the low degrees of freedom with annual data. Even with our quarterly data the estimations for sub-periods deliver quite implausible results for the magnitude of the effects as discussed above, and the existence of a cointegrating relation is extremely sensitive to minor changes in the period. He finds a positive effect of the profit rate, but this is overestimating the profit effect due to the existence of capital productivity in the same equation. In both periods the effect of the rentier income is however negative, which is consistent with our findings. Orhangazi (2008), who uses firm level data verifies the existence of positive effects of the profit rate on the rate of accumulation. He further supports the findings in the literature about the negative effects of financialization; however his specification does not test for the long-run relation between investment and profits or financialization.

4.3 Net exports

To estimate the effects of distribution on net exports we follow a stepwise approach as in Stockhammer et al. (2008) for the case of European economies, and estimate the import and export functions as currently used in most macroeconometric models, i.e. as functions of export and import prices. In a former step domestic prices and export prices are estimated as a function of nominal unit labor costs and import prices. The estimated effect of nominal unit labor costs on domestic prices also allows to calculate by how much an increase in real unit labor costs (of say one percent) will (on the average) raise domestic prices.[21] This approach is novel in the USA context.

Table 5 summarizes the estimation for the domestic price deflator as a function of the nominal ULC and import prices. Table 6 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 labor costs by 1% increases domestic inflation by 0.21 and export prices by 0.31.

TABLE 5, 6, 7, 8

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

Table 7 summarizes the results of the export function. The explanatory variables are export prices relative to import prices, and the the trading partners' GDP, which is the real GDP of the OECD minus the GDP of US. 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, however it is 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 single case, we choose to estimate the import equation in difference form in order to be consistent with the other equations. Table 8 reports the difference specification. The elasticity of imports with respect to relative prices is 0.56.

Table 9 shows the calculation of the effects of an increase in the profit share on exports and imports at the sample average. The total effect (elasticity) of a change in profit share on exports includes the effect of real unit labor costs on nominal unit labor costs[22], the effect of nominal unit labor costs 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.[23] 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.

TABLE 9

Again comparing our results with the previous work of Hein and Vogel (2008) on the effects of distribution on net exports in the USA, 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 important, although the effects are rather low. Indeed Naastepad and Storm (2007), who only estimate the effects on imports, also find an export elasticity of 0.16 with respect to the profit share.

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

[23] $\dfrac{\partial X / Y}{\partial \pi} = -\dfrac{1}{1 - \beta_{ulc}} e_{P_x ULC} e_{XP_x} \dfrac{X}{Y} \dfrac{1}{1 - \pi}$ where $e_{P_x ULC}$ is the effect of ULC on export prices, and e_{XP_x} ist he 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 labor costs).

4.4 Total effects

Table 10 combines the partial effects presented above on consumption, investment, and the net exports as a consequence of a pro-capital redistribution. Here we also calculate different marginal effects for the mean values for each business cycle, i.e. for the subperiods 1962-70, 1971-74, 1975-82, 1983-91, 1992-01, and 2002-2007.

The results with the basic specification without disaggregating the profit share would indicate a clearly wage-led economy due to the negative consumption effect (which can be seen in the first column of Table 10) and the lack of positive effects on investment. This latter is also the case e.g. in Hein and Vogel (2008). However as we show in this paper the strong wage-led finding is mostly because of the insignificant effect of the profit share on investment. The consumption differential is also estimated to be slightly higher in this specification compared to the specification with the effects of the finance-dominated regime. Overall our 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.

Table 10

According to the results of the extended specification, the economy is still wage-led at the sample mean, but the magnitude of the effect is more moderate now. Depending on the different estimation of the effects on investment, 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 to 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 share effect, the investment effect remains still modest compared to the negative consumption effect. The result is not very different for subperiods, but the domestic economy becomes slightly less wage-led during 1975-82, and the effect increases again gradually in line with the declining effect of profits on investment[24], and the relatively stable marginal effect on consumption[25]. 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%-

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[24] The marginal effect of non-rentier profits on investment peaks during 1975-82 to 0.36, and drops gradually afterwards down to 0.32 during 2002-2007. This pattern is parallel to the pattern of investment/non-rentier profit as well as the non-rentier profit/gross profits. The overall effect of an increase in profit share peaks during 1971-75.

[25] Through time the difference between the marginal propensity to consume out of wages vs. non-rentier profits is increasing, whereas the difference etween the marginal propensity to consume out of wages vs. rentier income is decreasing gradually. So the opposite trends in the decreasing consumption differential due to a higher rentier income, and an increasing consumption differential due to a higher non-profit income are offsetting each other.

point of GDP at the sample mean. The lower bound of the estimate is however 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 less relevant as the economy becomes more open. The effect of an increase in the profit share lies between +0.01%-point and -0.08%-point at the mean of 1975-82, and between +0.006%-point and -0.073%-point at the mean of 2002-07. So the lower bounds of the estimates indicate 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) 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 on consumption, investment, and thereby on domestic private demand 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, and a 1%-point decrease in the wage share. The effects of this scenario on consumption and investment are in Table 11a calculated for different sub-periods. The marginal effect on consumption at the sample mean is -0.10%-point as a ratio to 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 total effect decreases subsequently though each period, and ranges between -0.31 and -0.44%-points during 2002-07. The redistribution in favour of the rentier 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 led by 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. The results are in Table 11b. In this case the consumption effect is positive (apart from the sub-period 1962-1970), since the decline in non-rentier income stimulates consumption much more than the negative effect of a higher rentier income, due to the higher propensity to consume out of rentier income. 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 decreases to 0.09%-points during

2002-07. The investment effect is on the contrary highly negative, since both the decline in the non-rentier income and the increase in the rentier income depress investments. 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 and ranging between -0.37 and -0.68 during 2002-07. Overall the total effect on private domestic excess demand at the sample mean ranges between -0.38 and -0.74. As of 2002-07 this total effect is lower within a range of -0.28 and -0.59. The effects of a redistribution of profit income in favour of the rentier for a constant profit share creates the highest contraction effects due to very strong negative investment effects.

Table 11

Finally we multiply the marginal effects of the wealth as well as distribution effects with the actual change in the explanatory variables. The effect of housing wealth, which alone contributes to a 1%-point increase in consumption/GDP is particularly important in terms of the positive effects. 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 in the rentier share led to a decline in investment/GDP. The effect of pro-capital redistribution on net exports remained modest. We find that the changes in distribution and wealth effects during the finance-dominated era of 1980-2007 has led to a slight contraction in private excess demand by 0.6%-points of GDP or a minor expansion of 0.2%-points, depending on the specification of the investment effects. Thus it is fair to say that the positive and negative effects of the finance-dominated regime offset eachother, and the regime is not finance-led or expansionary, but also not strongly contractionary.

5. Conclusion

This paper analyses the effect of the finance-dominated growth regime on aggregate demand for the case of the USA economy based on an extended Post-Kaleckian macro model. We show that the incorporation of the effects of a finance-dominated regime to the Post-Kaleckian macro models improves our understanding of the effects of distribution on growth. We discuss the effects of the changes in primary functional income distribution between wage and profit income as well as the secondary income distribution between the rentier income and the non-rentier profits on investment and consumption. We also incorporate the effects of the housing and financial market bubbles on consumption. The primary redistribution of

income in favor 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 the rentier income has a positive effect on consumption. The wealth effects of housing and financial market bubbles on consumption also lead to an increase in consumption as long as the bubble goes on and the debt mechanism is sustainable. A higher rentier income suppresses investment through both lower investable funds available to the firm and shareholder value orientation. But the increase in non-rentier profits has a positive effect on investment. However since the positive effects of the non-rentier profits are partly offset by the negative rentier share effect, the investment effect remains modest compared to the negative consumption effect. An accurate accounting of the effects of rentier income vs. non-rentier profits on investment is particularly an improvement compared with the estimations of the basic Bhaduri-Marglin model, which in our case indicates a clearly wage-led economy. However the strong wage-led finding is because of the insignificant effect of the profit share on investment. According to the results of the extended specifications, the USA economy is still wage-led at the sample mean, but the magnitude of the effect is more moderate now. The lower bound of the estimate is however almost zero, indicating little effect of distribution on private excess demand, and that the positive and negative effects of a pro-capital income distribution are cancelling each other out.

We also made thought experiements on the effects of two possible mechanisms of redistribution in favour of the rentier: the redistribution in favour of the rentier 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 led by both the rentier income and the non-rentier profits, since the positive effects on investment do not exist anymore. The effects of a redistribution of profit income in favour of the rentier with a constant profit share creates the highest contraction effects due to very strong negative investment effects despite the positive consumption effects.

The effect of housing and financial market bubbles on consumption is rather strong, in particular through the housing wealth 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 in the rentier share led to a decline in investment/GDP. This is analogous to the intermediate case in Hein (2008b) and van Treeck (2007). The effect of pro-capital redistribution on net exports remained modest. The positive effects on consumption and net

exports almost offset the negative effects on investment; thus the changes in functional income distribution and wealth effects during the finance-dominated era of 1980-2007 has had an overall a neutral effect on aggregate demand. However, without the wealth effects, the overall effect on consumption, investment, as well as the aggregate economy would have been negative.

As a consequence the macro economy is not finance-led while still being shaped by changes in the financial sector. The effects of financialization regarding income distribution at the expense of wage earners, the consequent reliance on debt fuelled by housing bubble to maintain consumption, and growth based on low physical investments has led to a risky and fragile economy. This is exactly the mechanism, which proved to be unsustainable after 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.

Pro-capital as well as pro-rentier redistribution has created stagnant demand, and the effects of the asset market bubbles have offset these negative effects only through risky debt-mechanism. The policy lesson for sustainable growth is to correct this imbalance in distribution, and avoid reliance on debt for consumption. Given that private demand is rather neutral with respect to distribution, or even slightly wage-led, there is room for correcting income distribution without affecting the growth potential of the economy.

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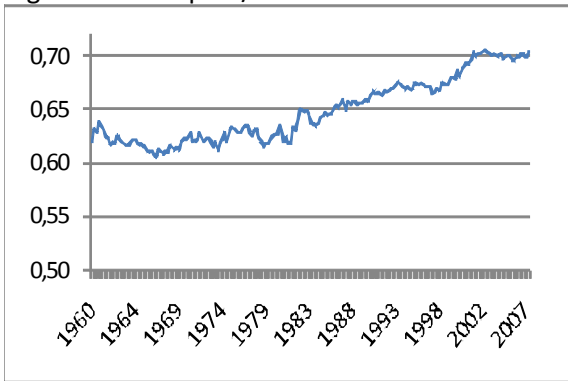
Figure 1: Consumption/GDP

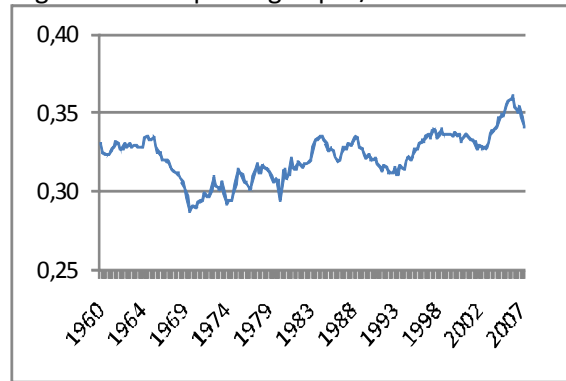**Figure 2: Gross Operating Surplus/GDP**

**Figure 3: Gross Private Domestic Investment/
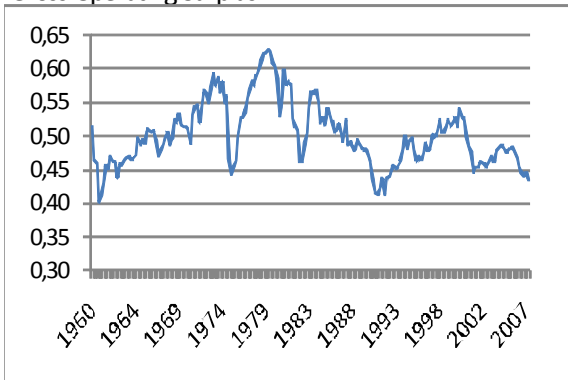Gross Operating Surplus**

**Figure 4: Net dividend & interest payments/
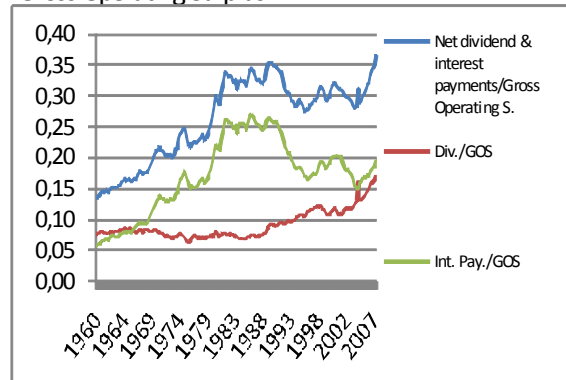Gross Operating Surplus**

**Figure 5: Gross Operating Surplus-div.-
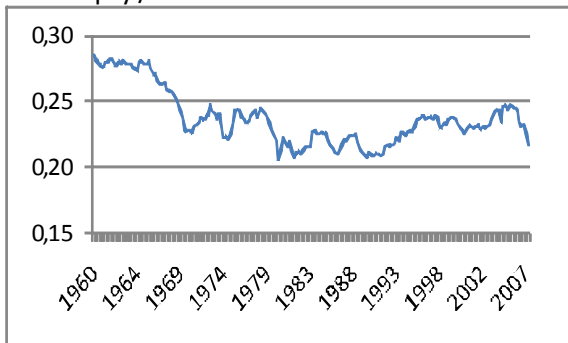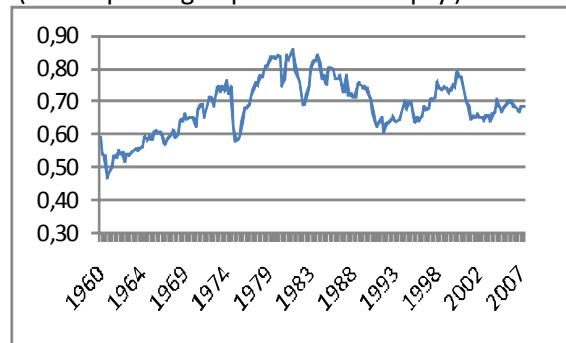interest pay./GDP**

**Figure 6: Gross Private Domestic Investment/
(Gross Operating Surplus-div.-interest pay.)**

Quaterly data from 1960:1 to 2007:4.

Table 1: Regression results for consumption

Equation:	1			2		
Dependent Variable:	Δ C/Y			Δ C/Y		
Estimation period:	1962:2 - 2007:4			1962:2 - 2007:4		
Variable	**coefficient**		*t-stat.*	**coefficient**		*t-stat.*
const	0.00	**	*2.11*	0.00	**	*2.34*
Δ C/Y_{t-1}	-0.41	**	*-4.74*	-0.41	**	*-4.96*
Δ C/Y_{t-2}	-0.21	**	*-2.30*	-0.17	**	*-2.45*
Δ C/Y_{t-8}	0.14	*	*1.66*			
Δ π_{t-1}	-0.12	**	*-3.02*			
Δ π_{t-4}	-0.09	**	*-2.31*			
Δ π_{t-5}	0.09	**	*2.38*			
Δ FW/Y_{t-7}				0.03	**	*2.97*
Δ HW/Y_{t-2}				0.06	*	*1.81*
Δ $\pi_{nr\,t-1}$				-0.09	**	*-3.36*
Δ $\pi_{r\,t-1}$				-0.08	**	*-3.41*
Δ $\pi_{r\,t-2}$				0.06	**	*2.74*
Δ Y_{t-1}	-0.22	**	*-3.15*	-0.24	**	*-3.94*
Δ Y_{t-2}	-0.16	**	*-2.19*			
Δ Y_{t-3}	0.09	*	*1.78*			
Δ Y_{t-8}	0.17	**	*2.73*	0.12	**	*2.68*
Adj. R^2	0.24			0.26		
DW	2.03			2.02		

* & ** stand for 10% and 5% significance levels respectively.

Table 2: The marginal effect of a 1%-point change in the profit share on consumption/GDP, 1962:1-2007:4

Marginal Effect of π on Consumption $(c_\pi-c_w)$	Marginal Effect of π_{nr} on Consumption $(c_{\pi nr}-c_w)$	Marginal Effect of π_r on Consumption $(c_{\pi r}-c_w)$	Weighted marginal effect of π on Consumption
A	B	C	E
-0.165	-0.160	-0.101	-0.144

Notes: Calculations in columns (A) is based on estimates from Table 1 Specification 1,

(B) and (C) are based on coefficient-estimatesestimates from Table 1 Equation 2.

The relevant period averages in Appendix Table A.2 to convert elasticities to marginal effects.

Column E is calculated based on column C & D as in Equation 4: $B\pi_{nr}/\pi+C\pi_r/\pi$

Table 3: Regression Results for Investment

Equation:	1			2			3		
Dependent Variable:	Δ I			Δ I			Δ I		
Estimation period:	1962:2 - 2007:4			1962:2 - 2007:4			1962:2 - 2007:4		
Variable	**coefficient**		*t-stat.*	**coefficient**		*t-stat.*	**coefficient**		*t-stat.*
const	-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*
Adj. R^2	0.32			0.32			0.33		
DW	2.07			2.06			2.07		

* & ** stand for 10% and 5% significance levels respectively.

Table 4: The marginal effect of a 1%-point change in the profit share on investment, 1962:1-2007:4

	Marginal Effect ($i_{\pi nr}$ & $i_{\pi r}$)			Weighted Marginal Effect		
	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
$i_{\pi nr}(\pi_{nr}/\pi)+i_{\pi r}(\pi_r/\pi)$				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.

The relevant period averages in Appendix Table A.2 to convert elasticities to marginal effects.
Column (D), (E) and (F) calculated based on column (A), (B) and (C).

The last line of Column D and E-F are calculated as in Equation 7: $i_{\pi nr}(\pi_{nr}/\pi)+i_{\pi r}(\pi_r/\pi)$

Table 5: Regression results for Price

Dependent Variable:	ΔP	
Estimation period:	1962:2 - 2007:4	
Variable	**coefficient**	***t-stat.***
const	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*
Adj. R^2	0.86	
DW	2.04	

Table 6: Regression results for Export Prices

Dependent Variable:	ΔPX	
Estimation period:	1962:2 - 2007:4	
Variable	**coefficient**	***t-stat.***
const	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
Adj. R^2	0.57	
DW	2.05	

Table 7: Regression results for Exports

Dependent Variable:	ΔX	
Estimation period:	1962:2 - 2007:4	
Variable	**coefficient**	***t-stat.***
const	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
Adj. R^2	0.22	
DW	2.00	

Table 8: Regression results for Imports

Dependent Variable:	ΔM	
Estimation period:	1962:2 - 2007:4	
Variable	**coefficient**	***t-stat.***
const	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*
Adj. R^2	0.33	
DW	1.99	

* & ** stand for 10% and 5% significance levels respectively

Table 9: Calculation of marginal effects on net export for different time periods, 1962:1-2007:4

	$\dfrac{1}{1-\beta_{ulc}}$	$e_{P_x\,ULC}$	$\dfrac{e_{XP_x}}{e_{MP_x}}$	The effect of real unit labor cost on X	1/RULC	X/Y	$\dfrac{\partial X/Y}{\partial \pi}$
				The effect of real unit labor cost on M		M/Y	
	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 5, 6, 7 and 8.

Table 10: 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)
1962:2 - 2007:4	-0.165	-0.144	0.032	0.115	-0.029	-0.112	0.024	-0.004	-0.088
1962:2 - 1970:4	-0.158	-0.136	0.035	0.118	-0.018	-0.101	0.012	-0.006	-0.089
1971:1 - 1974:4	-0.170	-0.146	0.040	0.135	-0.011	-0.106	0.016	0.005	-0.090
1975:1 - 1982:4	-0.165	-0.143	0.038	0.132	-0.011	-0.105	0.023	0.012	-0.082
1983:1 - 1991:4	-0.163	-0.141	0.035	0.120	-0.021	-0.105	0.025	0.004	-0.080
1992:1 - 2001:4	-0.168	-0.144	0.035	0.118	-0.027	-0.110	0.031	0.004	-0.079
2002:1 - 2007:4	-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.

Column (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 9.

The other rows are calculated as marginal effects at the average values for different sub-periods. The relevant period averages in Appendix Table A.2 to convert elasticities to marginal effects.

Table 11a: The effect of a 1%-point increase in the rentier share and a 1%-point decrease in the wage share

	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 Dome
							Specification 2+3	
period	A	B	C (A+B)	D (Specification 3)	E (Specification 2)	F (Specification 1)	=D+E	C+F
1962:2 - 2007:4	0.00	-0.101	-0.10	-0.47	0.00	-0.29	-0.47	-0.39
1962:2 - 1970:4	0.00	-0.143	-0.14	-0.67	0.00	-0.41	-0.67	-0.56
1971:1 - 1974:4	0.00	-0.124	-0.12	-0.61	0.00	-0.38	-0.61	-0.50
1975:1 - 1982:4	0.00	-0.100	-0.10	-0.51	0.00	-0.31	-0.51	-0.41
1983:1 - 1991:4	0.00	-0.077	-0.08	-0.35	0.00	-0.22	-0.35	-0.29
1992:1 - 2001:4	0.00	-0.088	-0.09	-0.38	0.00	-0.24	-0.38	-0.32
2002:1 - 2007:4	0.00	-0.085	-0.09	-0.36	0.00	-0.22	-0.36	-0.31

Table 11b: The effect of a 1%-point increase in the rentier share and a 1%-point decrease in the non-rentiers share

	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 Dome
							Specification 2+3	
period	A	B	C (A+B)	D (Specification 3)	E (Specification 2)	F (Specification 1)	=D+E	C+F
1962:2 - 2007:4	0.16	-0.10	0.06	-0.47	-0.33	-0.44	-0.80	-0.38
1962:2 - 1970:4	0.13	-0.14	-0.01	-0.67	-0.28	-0.54	-0.95	-0.55
1971:1 - 1974:4	0.15	-0.12	0.03	-0.61	-0.34	-0.53	-0.95	-0.51
1975:1 - 1982:4	0.16	-0.10	0.06	-0.51	-0.36	-0.48	-0.87	-0.42
1983:1 - 1991:4	0.17	-0.08	0.10	-0.35	-0.35	-0.38	-0.71	-0.28
1992:1 - 2001:4	0.17	-0.09	0.08	-0.38	-0.33	-0.39	-0.71	-0.31
2002:1 - 2007:4	0.17	-0.09	0.09	-0.36	-0.32	-0.37	-0.68	-0.28

Notes: The first rows in these tables are as follows: Columns (A) and (B) are calculated based on the marginal effects in Table 2. Columns (D), (E), and (F) are calculated based on the marginal effects in Table 4.

The other rows are calculated as marginal effects at the average values for different sub-periods. The relevant period averages in Appendix Table A.2 to convert elasticities to marginal effects.

Table A.1: Variable definitions

Notation	Description	source	Computation
C	Personal Consumption Expenditure, nominal	USA National Income and Product Accounts (NIPA) Tables*	
C/Y	Consumption Share	USA NIPA Tables*	Personal Consumption Expenditure, nominal/ GDP, nominal
I	Gross Private Domestic Investment, real deflated by Investment Price Deflator	USA NIPA Tables	
Y	GDP, real, deflated by Gross Domestic Product Deflator	USA NIPA Tables	
FW/Y	Net Financial Wealth/GDP	USA Federal Reserve - Flow of Funds Accounts**	(Financial Wealth - Financial Liabilities), nominal/ GDP, nominal
HW/Y	Housing Wealth/GDP	USA Federal Reserve - Flow of Funds Accounts	Gross Housing Wealth, nominal/ GDP, nominal
π	Gross Operating Surplus /GDP	USA NIPA Tables	
π_{nr}	Non-Rentiers Income Share	USA NIPA Tables	(Gross Operating Surplus - Net Dividends - Net interest and miscellaneous payments, domestic industry)/ GDP, domestic industry, nominal
π_r	Rentiers Income Share	USA NIPA Tables	(Net Dividends + Net interest and miscellaneous payments, domestic industry)/ GDP, nominal
P	Price Index for Gross Domestic Product	USA NIPA Tables	
ULC	Unit Labor Costs	USA NIPA Tables	Compensation of Employees, received, nominal/ GDP, real
P_M	Price Index Imports	USA NIPA Tables	
P_X	Price Inde Exports	USA NIPA Tables	
P_X/P_M	Terms of Trade	USA NIPA Tables	Export Prices/Import Prices
M	Imports of Goods and Services, real deflated by Import Price Deflator	USA NIPA Tables	
X	Exports of Goods and Services, real deflated by Export Price Deflator	USA NIPA Tables	
Y_F	GDP of OECD Countries (real) minus GDP of USA, real	OECD National Accounts***	

Note: All Variables are in logarithmic form. All variables are seasonally adjusted quarterly observations from 1960:1 to 2007:4.

* Source: http://www.bea.gov/National/nipaweb/SelectTable.asp
** Source: http://www.federalreserve.gov/releases/z1/Current/data.htm
*** Source: http://puck.sourceoecd.org/vl=7385629/cl=23/nw=1/rpsv/home.htm

Table A.2.: Period averages

period	Consumption expenditure/ Gross Operating Surplus	Consumption expenditure/ Non-Rentier Profits	Consumption expenditure/ Rentier Profits	Non-Rentier profit/ Gross Operating Surplus	Rentier income/ Gross Operating Surplus
	C/R	C/Rnr	C/Rr	Rnr/R	Rr/R
1962:2 - 2007:4	2.02	2.78	7.97	0.73	0.27
1962:2 - 1970:4	1.94	2.35	11.28	0.83	0.17
1971:1 - 1974:4	2.08	2.65	9.73	0.79	0.21
1975:1 - 1982:4	2.02	2.75	7.90	0.74	0.26
1983:1 - 1991:4	2.01	3.01	6.03	0.67	0.33
1992:1 - 2001:4	2.06	2.94	6.92	0.70	0.30
2002:1 - 2007:4	2.05	2.96	6.70	0.69	0.31

period	Investment expenditure/ Rentier Profits	Compensation of Employees/GDP	Exports of Goods and Services/ GDP	Imports of Goods and Services/ Gross Domestic Product	Consumption expenditure/ HW
	I/Rr	1-π	X/Y	M/Y	C/HW
1962:2 - 2007:4	2.00	0.68	0.08	0.10	0.57
1962:2 - 1970:4	2.85	0.68	0.05	0.05	0.64
1971:1 - 1974:4	2.62	0.70	0.07	0.07	0.63
1975:1 - 1982:4	2.16	0.69	0.09	0.09	0.58
1983:1 - 1991:4	1.50	0.67	0.08	0.10	0.53
1992:1 - 2001:4	1.63	0.67	0.11	0.13	0.57
2002:1 - 2007:4	1.52	0.66	0.10	0.16	0.46

Table A.3.: Regression Results for Consumption, ECM

Dependent Variable:	Δ C/Y			Δ C/Y		
Estimation period:	1962:2 - 2007:4			1962:2 - 2007:4		
Variable	**coefficient**		*t-stat.*	**coefficient**		*t-stat.*
const	-0.02		*-1.52*	-0.07	**	*-2.15*
C/Y_{t-1}	-0.01		*-0.44*	-0.07	**	*-2.28*
FW/Y_{t-1}				0.01	*	*1.71*
HW/Y_{t-1}				0.01		*0.87*
π_{t-1}	-0.02		*-1.51*			
$\pi_{nr\,t-1}$				-0.03	**	*-2.24*
$\pi_{r\,t-1}$				0.00		*-0.36*
Δ C/Y_{t-1}	-0.43	**	*-4.94*	-0.43	**	*-5.01*
Δ C/Y_{t-2}	-0.23	**	*-2.50*	-0.19	**	*-2.61*
Δ Y_{t-1}	-0.22	**	*-3.06*	-0.39	**	*-4.94*
Δ Y_{t-2}	-0.16	**	*-2.17*			
Δ Y_{t-3}				0.16	**	*2.06*
Δ Y_{t-4}				-0.13	**	*-2.08*
Δ Y_{t-8}	0.10	**	*2.13*	0.11	**	*2.13*
Δ FW/Y_{t-2}				-0.02	**	*-2.01*
Δ FW/Y_{t-7}				0.03	**	*2.34*
Δ HW/Y_{t-1}				-0.09	*	*-1.82*
Δ HW/Y_{t-2}				0.09	**	*2.36*
Δ HW/Y_{t-3}				0.07	*	*1.72*
Δ π_{t-1}	-0.13	**	*-3.32*			
Δ π_{t-5}	0.10	**	*2.56*			
Δ $\pi_{nr\,t-5}$				0.05	**	*2.05*
Δ $\pi_{r\,t-1}$				-0.05	**	*-2.45*
Δ $\pi_{r\,t-2}$				0.05	**	*2.21*
Adj. R^2	0.22			0.30		
DW	2.02			2.05		

* & ** stand for 10% and 5% significance levels respectively.

Table A.4.: Regression Results for Investment, ECM with $\underline{\pi}$[1]

Dependent Variable:		Δ I	
Estimation period:		1962:2 - 2007:4	
Variable	**coefficient**		*t-stat.*
const	-0.72	**	*-3.14*
I_{t-1}	-0.18	**	*-4.51*
GDP_{t-1}	0.23	**	*4.36*
π_{t-1}	0.05		*0.69*
ΔI_{t-6}	0.11	*	*1.77*
ΔI_{t-8}	0.23	**	*2.28*
ΔY_{t-1}	1.25	**	*3.38*
ΔY_{t-2}	1.04	**	*2.88*
ΔY_{t-4}	0.69	*	*1.84*
ΔY_{t-8}	-1.49	**	*-2.72*
$\Delta \pi_{t-1}$	0.65	**	*2.64*
$\Delta \pi_{t-4}$	0.52	**	*2.04*
$\Delta \pi_{t-5}$	-0.93	**	*-3.81*
Adj. R^2	0.31		
DW	2.05		

1. Since π is insignificant, it is dropped through
the general ADLestimation process.
* & ** stand for 10% and 5% significance levels respectively

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