Financialization and the slowdown of accumulation

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Abstract

Over the past decades financial investment of non-financial businesses has been rising and accumulation of capital goods has been declining. The first part of the paper offers a novel theory to explain this phenomenon. Financialization, the shareholder revolution and the development of a market for corporate control have shifted power to shareholders and thus changed management priorities, leading to a reduction in the desired growth rate. In the second part the link between accumulation and financialization is tested econometrically by means of a time series analysis of aggregate business investment for USA, UK, France, and Germany. Extensive tests of robustness are performed. For the first three countries evidence supporting the negative effect of financialization on accumulation is found.

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Financialization and the slowdown of accumulation

The past decades have witnessed at the same time a rise in investments in financial assets and a slowdown of accumulation of physical assets. Some economists, and even more political activists, have argued that there is a structural link between the two phenomena: financial investment is replacing physical investment. However, most economists remain unconvinced. Financial investment is a transfer of assets, not a use of income. Buying stocks transfers liquidity from one economic agent to another, possibly from firms with bad investment opportunities to ones with good opportunities. Thus macroeconomically financial investment cannot substitute for physical investment (e.g. Tobin 1997).

Even if financial investment had adverse effects on the accumulation of physical capital, would it matter? Growth theories, of course, do suggest that the answer is yes. Marxian and Keynesian theories in particular have stressed the role of accumulation and investment as the driving force behind growth. But even recent debates on the new economy and the knowledge-based economy that emphasize the crucial role of knowledge and information (OECD 1996) do not necessarily imply that accumulation becomes irrelevant. On the contrary, since physical capital and skills are often complementary and technological progress has to be embodied in new machinery, capital accumulation may well be a precondition of knowledge-based growth. Moreover, accumulation still turns out to be a major determinant in comparative growth studies (e.g. De Long and Summers 1991) and the slowdown in accumulation has been identified as one the reasons for the rise in European unemployment (e.g. Rowthorn 1995).

This paper has two aims. First it presents a novel theory of how financialization, via a change in management priorities, may affect desired growth rates. Second, the link between

accumulation and rentiers income, i.e. income from financial assets and transactions, is tested econometrically.

Financialization is a recent term, yet ill defined, that summarizes a broad range of phenomena including the globalization of financial markets, the shareholder value revolution and the rise of incomes from financial investment. For the purpose of this paper financialization will be narrowly defined as the increased activity of non-financial businesses on financial markets and it will be measured by the corresponding income streams. The paper argues that the process of financialization is linked to changes in the internal power structure of the firm. We base our analysis on a post-Keynesian[1] theory of the firm, distinguishing between workers, management and rentiers (shareholders). The "managerial capitalism" of the post-war era was characterized by relatively autonomous management that had a certain preference for growth (as opposed to profits). Through the shareholder revolution, its interests got realigned with those of shareholders, who have a stronger preference for profits, as opposed to growth. If the firm faces a growth-profit trade off, than such a change will lead to lower investment on the firm level. The theoretical parts of the paper elaborate this argument and its empirical parts test the influence of financialization of aggregate business investment econometrically.

The paper is structured as follows: section 1 clarifies the notion of financialization; section 2 discusses the class structure of the firm. Section 3 summarizes the post-Keynesian theory of the firm and argues that it is bound to the specific period of managerial capitalism. Section 4 extends the theory to the context of financialization. Section 5 presents the econometric specification that the theoretical discussion leads to. Section 6 discusses data sources and econometric issues. Section 7 presents the results of the econometric study, with particular emphasis on the robustness of the results. Section 8 interprets the findings and compares them with previous findings in the mainstream as well as in the post-Keynesian

tradition. Section 9 offers calculations to assess the contribution of financialization to the slowdown of accumulation. Section 10 concludes.

1. Financialization

Financialization is a recent term to capture transformations within the financial sector as well as in the relation between the financial sector and other economic sectors. There is no agreed upon definition since it includes phenomena ranging from the globalization of financial markets, the shareholder revolution and the rise of incomes from financial investment. Moreover, there are various disciplines that have made contributions to the debate. In this section no exhaustive overview of the literature is given, or indeed possible, but three core areas of debate around financialization are identified to situate the argument developed below. Finally, some stylized facts on the countries under investigation in the empirical part will be summarized.

The first area of debate around financialization is the study of corporate governance and labor relations. Authors like Froud et al. (2000) analyze the discourse of shareholder value and its impact on corporate restructuring. They argue that restructuring in pursuit of the goals set by financial markets is unlikely to meet its objectives (increased profitability etc), but does have a negative impact on labor. Similarly Lazonick and O'Sullivan (2000) argue for the USA that there has been a shift in management strategies from 'retain and invest' to 'downsize and distribute'. In both cases the effects of financial markets on the system and the objectives of corporate governance is the object of investigation and its implication for labor, i.e. distributional issues on the firm level.

Second there have been attempts to explore the macroeconomic dynamics of the effects of financial markets and shareholder value orientation on business decisions. Boyer (2000) has offered the most complete formal macroeconomic treatment of what he called a

'finance-led accumulation regime'. He posits changes in investment behavior, a redistribution from labor to shareholders that gives rise to a stock market boom, which in turn fuels consumption expenditures and analyses under which conditions such a finance-led growth regime can be stable. Aglietta (2000) offers a similar analysis, but without a formal model, and assigns a greater role to productivity gains through the 'new economy'. Neither of the authors offers a detailed analysis of changes in investment behavior.

A third relevant debate is the one on financial systems. In this debate the term 'financialzation' is not used, rather the contrast between bank-based and market-based financial systems is at the center (as an overview see Grabel 1997). Bank-based financial systems are characterized by long run relations between banks and firms, based on trust and a long time horizon. Market-based systems, on the other hand, exhibit decentralized ownership and relations with short time horizons. The former are often supposed to be more conducive to growth. Closely connected to this debate recent research on corporate finance has analyzed and compared different sources for the finance of investment across countries (Mayer 1988). Schaberg (2000) is a sophisticated example of this literature giving a careful empirical analysis of the key countries. Building on H. Minsky's investment theory he proposes a theoretical foundation for analyzing the behavioral effects of the different financial systems. This allows him to derive hypotheses about the differences between investment behavior in bank-based and market-based regimes, however he does discuss not changes within the market-based system in the context of shareholder value orientation.

In what follows a theory of the effect of financialization on the investment behavior of non-financial businesses will be proposed. Financialization will be defined as the engagement of non-financial businesses on financial markets. These financial activities are interpreted as reflecting a shift in the firm's objectives and a rising influence of shareholder interests in the firm. Thus a narrow concept of financialization is used that has the advantage of allowing us to derive a testable hypothesis. The argument is based on the post-Keynesian theory of

investment, which for our purposes has to be developed further. To do so we draw on all three of the above discussions. We take qualitative changes highlighted in the corporate governance literature as our starting point and derive a specific quantitative hypothesis on investment behavior. Thus we complement the macroeconomic discussion that so far did not have much to say on investment. In constructing our indicator for financialization we draw on the literature on corporate finance.

To conclude the discussion on the notion of financialization some stylized findings on the extent to which the phenomenon has occurred in the USA, UK, France and Germany will be given. Due to brevity this involves gross simplification and the reader is referred to the special issue of Economy and Society (2000) and Schaberg (2000) for more extensive discussions.

The USA and the UK have a long tradition of a strong role of financial markets and also have been the first countries to experience the shareholder revolution. The development of a market for corporate control, of new financial instruments and the emergence of institutional investors in the 1970s have given shareholders the power to monitor and, if considered necessary, to punish management which in the meantime has accepted the pursuit of shareholder value as its priority.

Germany (and Japan) is the standard example of a bank-based financial system, with close ties between industry and banks and relatively unimportant capital markets, expressed in low rates of capitalization, centralized shareholdings etc. Furthermore institutional investors, in particular pension funds play a minor role. The discourse of shareholder value is a phenomenon of the 1990s and arguably has had effects only in the recent past. France has been an intermediate case between bank-based and market-based system that is of particular interest because it has experienced the most pronounced changes in its financial system over the past decades, Schaberg now classifies it as market-based. Simultaneously shareholder value orientation has had a strong impact since the mid 1980s (Morrin 2000).

2. Class analysis

Classes, or preferably class positions, can be defined with respect to the type of income received, the role in the production process and the political process. We will focus on the first dimension and merely note the other two dimensions briefly. With respect to types of income, we distinguish three income classes: recipients of wages, recipients of profits and recipients of interest payments, dividends and rents. To these income categories three social categories correspond: workers, (industrial) capitalists and rentiers. In the production process capitalists wield power, as they control and organize production, whereas workers perform the work. Rentiers, as absentee owners, play no role in the production process, but provide the initial finance to start the business and receive part of the surplus as distributed profits.[2]

The distinction of income classes goes back to the classical economists and can also be found in Keynes (1971), who distinguished between the "earners", "the business class" and "investors" respectively, and has proven fruitful since. Recent examples of applications of three class models include Epstein (1994) and Dutt (1992).

Note that we have defined class with respect to a type of income received. Therefore, any individual and even groups of individuals will occupy multiple class positions if they receive different types of income (as most people in fact do) (this fact is well known and debated among Marxists, e.g. Resnick and Wolff 1986, Wright 1985). Moreover, the "industrial capitalist" is an abstract category that, at least in modern capitalism, does not exist as such. The capitalist is defined by virtue of receiving profit income, part of which will be distributed as dividends or interest payments to rentiers. Any real life capitalist will therefore have a double position: as the capitalist during the day making decisions concerning the firm, and as a rentier in the evening and on weekends living of the income distributed to the owner of the firm.

The classification becomes even more complex for modern day managers, who take the role of capitalists in terms of exerting power in the firm and making decisions e.g. concerning investment expenditures, but typically receive wage income and, more importantly now, receive rentiers income, often in the form of stock options. Managers therefore have multiple, at times even contradictory, class positions. Their interests and preferences hence depend strongly on the institutional setting of the economy, or more specifically the firm.

The classification of present day rentiers has become seemingly easier as pension funds and investment funds have become institutional representations of previously decentralized savings. However, this simplicity is deceptive. First, in the above outline of class theory the income streams corresponding to classes were emphasized. Today's rentiers however may be as much concerned about the valuation of existing assets (and consequently capital gains) as they are about income. Second, while pension and investment funds may constitute the most conspicuous form of rentiers, they are not the only form and there is no reason to presume that other actors may not pursue rentiers activities. Indeed, rentier activities and interests of non-financial businesses are at the core of the argument developed below.

3. The post-Keynesian theory of the firm

What distinguishes the post-Keynesian approach to the firm from the simple version of the neo-classical approach is that the goal of the firm is not simply taken to be profit maximization. This is a difference that may disappear in more sophisticated neo-classical models. The entire argument presented here can be reformulated in a neo-classical model, i.e. assuming utility maximizing individuals. Our presentation will proceed along these lines.

Post-Keynesians are readily willing to accept that there are more goals to a capitalist firm than the maximization of profits: the growth of the firm, the expansion of its market

share, exerting power over its workers or suppliers and so on. The specific goal, or the weight of these goals, will depend on the specific institutional setting of the firm and the economy.[3] In contemporary capitalism the pursuit of growth is regarded as the major aim of firms, which stems from the analysis of managerial capitalism.

Developed by Galbraith (1967) and Eichner (1976), and summarized neatly by Lavoie (1992), post-Keynesians have a well elaborated theory of the firm *in the age of managerial capitalism*, but have done little to adapt this theory to contemporary changes in corporate governance. We will propose a way to do so in the next section. Here we will review the theory of the managerial firm and point out its shortcomings.

The centerpiece of the theory is the separation between ownership and control. Management has objectives distinct from the absentee owners. While the latter are primarily interested in dividends and share prices, the former aspire power and prestige, that might be expressed in high market share and fast growth, luxurious offices and many subordinates. Due to various laws and an asymmetry in information about what exactly is going on in the firm and how to run it, management has the upper hand. As a consequence: "The objective of growth, rather than the consumption of profit, is predominant." (Lavoie 1992, 104).

It is important to note that such an institutional arrangement is historically specific to the post-war era. Doing some violence to actual historical complexity, we can say, that in the early 19th century many firms were owner controlled, a situation which had changed by the late 19th century when a wave of mergers lead to a consolidation of industry. In the course of this development two groups of actors emerged as important: financial capitalists and management. The financial sector gained a crucial position in financing the mergers and the time of the turn of the century has also been labeled "financial capitalism". Salaried managers now ran these giant firms, giving rise to what Chandler (1977) called "managerial capitalism". After the crises of the 1930s, governments severely restricted the influence of the financial sector, thereby fortifying the position of management. "Money managers refrained from

sitting on boards; and bankers, fearing liabilities, remained aloof from the governance affairs of companies to which they had loaned money. Investment bankers found that they could make plenty of money arranging transactions, while avoiding the liabilities and opprobrium associated with financial control of corporations" (Baker and Smith 1998, 8)

Analysts of managerial capitalism (e.g. Chandler), post-Keynesians (Galbraith, Eichner) and proponents of shareholder value (Baker and Smith) agree on the broad characteristics of managerial capitalism, though they have different attitudes towards it. While proponents of shareholder value emphasize its wasteful aspects (growth as opposed to efficiency), others are more taken by the administrative abilities of the class of managers (Chandler 1977). However all agree on the bias towards growth inherent in the arrangement.

Let us now formalize the argument. We assume that the only two variables, growth and profits, enter management's and the owners' utility functions. Further we assume that management only cares about growth and owners only care about profits. Thus we get the following utility functions U_M and U_O, for mangers and owners respectively.

$$U_M = U(g)$$

$$U_O = U(r)$$

where g is the investment or growth of the firm and r the profit rate.

Obviously this crude simplifications are made for the sake of clarity of the argument rather than for realism. What is needed for the argument developed is that management cares more about growth than owners. Two points need clarification. Firstly, it is frequently argued that financial markets, here equivalent to owners, have a shorter time horizon than society or even banks (e.g. Schaberg 1999). They are interested in short run returns and thus underinvest in long-run projects, thus harming the growth perspectives of the economy. In particular it has been argued that bank-based financial systems will exhibit higher growth rates than market-based financial systems. Such an argument about different time horizons is complementary to

our story, and indeed strengthens it. However, our model does not rely on the assumption of different time horizons, and emphasizes differences in interests rather than in time horizons.

Secondly, there may be many more things that management and owners could care about. One of them has gained prominence during the stock market boom of the 1980s and 90s: capital gains. Asset prices though not a decision variable of the firm have become a target for firms' behaviour in their quest to create shareholder value. It will be argued in section 4 that the pursuit of shareholder value is equivalent to giving a higher weight to profits in the simple objective function of the firms to be discussed.

To analyze the actual levels of growth and profits chosen, one has to take into account the constraints the firm faces. The two constraints discussed by post-Keynesians are: the finance constraint and the profit-growth trade off.

Inside finance and outside finance are different. This is one of the basic assertions of post-Keynesian economics that has been slowly and painfully rediscovered by neo-classical economists over the past decades after Miller and Modigliani (1958). Following the principle of increasing risk, firms are reluctant to accept high leverage rates since a failure will put the existence of the firm at risk. Banks on the other hand will take current profit and wealth as a proxy for a firm's reliability, and give credit only to firms that are already profitable. For simplicity assume that banks give loans as a multiple of the profit earned last year. From this it follows that we can write the amount of investment feasible for a firm as a function of profits.

finance constraint: $g^{FC} \leq g(r)$ with $g' > 0$

Finance is limited by profits minus dividends paid, i.e. retained earnings, and outside finance which is a positive function of profits. Note that this constraint need not be binding. It tells how much the firm can possibly invest, not necessarily how much it will invest.

The second fundamental constraint is the growth-profit trade-off. It is assumed that there is some relevant region where an increase in investment does harm future profits (the fact that current distributed profits and current investment expenditures are inversely related is trivial). This can be argued by start up costs of investment or by increasing managerial costs of fast growth (known as Penrose effect). Though it may not be obvious that growth harms profits, post-Keynesians and recent literature on shareholder value agree. E.g. a recent OECD publication reads: "Among the manifestations of this lack of control over management were *the pursuit of market share and growth at the expense of profitability* (…)." (OECD 1998, 17; emphasis added). To be fair, this is not the only manifestation given, but the existence such a trade off is obviously implied. More formally, with standard cost functions profitability will be concave in investment. Thus, above the profit-maximizing level of investment, a trade off will exist. The assertion here is that management will choose a point in this region, thus the trade off exists.

Accepting the trade off, we get profits as a function of investment:

profit-growth trade off: $r^{RG} = r(g)$ with $r' < 0$

Again this is a constraint that needs not be binding, but if the only variables that matter to management are growth and profits, as we assume below, then the firm will choose a point inside the constraint only by mistake.

In figure 1 management's indifference curve is horizontal (U_M), whereas that of owners' is vertical (U_O). Taking the finance constraint and the growth profit-trade off, the growth rate desired by management will in general not be feasible. Thus the finance constraint is binding. The actual growth and profit combination chosen will thus be what we designated as r^{MF} and g^{MF}.

INSERT FIGURE 1 ABOUT HERE

The post-Keynesian model has been taken as an ahistoric model of the firm by some authors. While Eichner and Galbraith emphasize the separation of ownership and control, Lavoie argues that "that there is no need to emphasize that divorce. Whether the owners are still in control or not is irrelevant: those individuals taking decisions within the firm are in search of power; and their behavior and motivations will reflect that fundamental fact." (Lavoie 1992, 101f). This pursuit of power can only be successful if the firm is big, thus the unambiguous goal of growth.

We disagree with this position, emphasizing the need to regard this model of the firm as the result of specific historic circumstances. The class perspective outlined above indicates that managers occupy a complex position with potentially contradictory interests. Therefore it is impossible to define their interests without reference to institutions. Furthermore, rentiers are underestimated in the managerial model. Rentiers are easily satisfied in this model: "Managers mitigate the fluctuations of dividends in the attempt to keep the shareholders happy and the stock market quiet. Managers usually keep constant the level of dividends or have them slowly increasing, assuming that shareholders do not object to the existing level of dividend payment or dividend ratio (…)" (Lavoie 1992, 108). Overall, "In the Galbraithian and post-Keynesian firm, shareholders play a purely passive role" (Lavoie 1992, 107). Again, we insist that rentiers are unlikely to content themselves to such a passive role voluntarily. Rather it is specific historic circumstances of the Golden Age regime where an interventionist state purposefully restricted the role of finance.

4. Financialization and management priorities

In the course of the 1970s two institutional changes occurred that helped to align management's interests with shareholders' interests: the development of new financial instruments that allowed hostile take-overs and changes in the pay structure of managers. Among the former were tender offers and junk bonds (Baker and Smith 1998), among the latter were performance related pay schemes and stock options (Lazonick and O'Sullivan 2000). The former play the role of the stick, the latter is the carrot. Both have proven fairly effective in making management adopting shareholders' priorities and "profoundly altered patterns of managerial power and behavior." (Baker and Smith 1998, 3)

The effects of this development are viewed differently—unsurprisingly, since it represents a shift in the power structure within the firm. Baker and Smith emphatically welcome that after the deregulation and changes of the 1970s and 80s "the pendulum could swing back toward financial capitalism, which would limit managerial discretion in favor of more rigorous exploitation of corporate resources" (Baker and Smith 1998, 22). Marxists would probably agree but be more specific in saying "… rigorous exploitation of workers". Lazonick and O'Sullivan on the other hand write: "In the name of creating 'shareholder value', the past two decades have witnessed a marked shift in the strategic orientation of top corporate managers in the allocation of corporate resources and returns away from 'retain and reinvest' and towards 'downsize and distribute'." (Lazonick and O'Sullivan 2000, 18)

While there may be little disagreement that changes in corporate governance have occurred, it may be less clear what modern owners want. In their present institutional incarnation as pension or investment funds rentiers may well care more about capital gains, i.e. asset prices, than about profits. Though obviously not a choice variable of the firm, asset prices have indeed become a target of firms, which engage in activities ranging from installing departments of investor relations to share buy backs in order to influence stock

prices. However it has become painfully clear over the past two years that asset prices are notoriously hard to predict let alone influence. Overall, it is clear that in the simple model proposed asset prices as a target side with profits. First, if valued by fundamentals an asset price equals the discounted expected profit (or dividend) stream. Second, there is a clear correlation between asset prices and profits as witnessed be the shivers profit warnings send thorough stock markets. Third, the bias against growth is testified by the positive correlation of asset prices and reduction in force, i.e. firing, announcements (Fraber and Hallock 1999).

In the model proposed an increase in the shareholder power translates into the following: Management has an ambiguous class position and its interests are therefore sensitive to institutional changes. Changes in the pay structure as well as the threat of hostile take-overs will make it adopt shareholders' preferences. In the figure above management's utility function will rotate (U' instead of U, see figure 2)

INSERT FIGURE 2 HERE

The new growth-profit combination chosen by the shareholder dominated firm will exhibit higher profits and lower growth (r^{SDF} and g^{SDF} in figure 2). In the extreme case of perfect assimilation of managers by shareholders, they will adopt a vertical indifference curve and chose the profit maximizing point. In the new optimal point the finance constraint is not binding. Firms could grow faster, given their access to finance, but they choose not to because that would reduce profitability.

If our story were true, one would expect that managers and consequently non-financial businesses identify increasingly as rentiers and hence will also behave as such. We would expect higher dividend payout, lower growth and more financial investment of non-financial businesses. Note that our story avoids assigning the active role exclusively to rentiers and financial markets. Given the ambiguous class positions of management they may, after initial

changes actively promote and further the shareholder value orientation, as noticed by Lazonick and O'Sullivan (2000) and Jürgens, Naumann and Rupp (2000).

It is of course difficult to operationalize the concept of financialization for quantitative research. The interest and dividend income, for short: rentiers' income, of non-financial businesses will be used as a proxy for financialization. This measure does correspond to the income related definition of class. It measures to what extent non-financial businesses have acquired rentier status, and, as has been argued, the hypothesis is that this corresponds to a change in management priorities. This measure obviously also has shortcomings. First, it is an indirect measure, a proxy, because we cannot measure the changes in management priorities directly, instead we look at a measure that, in our hypothesis, is itself a result of the change in attitudes. Second, rentiers' income may rise because interest rates or dividend payout ratios have risen or because more financial investment has been undertaken. Thus we cannot distinguish between additional income due to changes in management priorities or due to changes in rates of return. In the econometric analysis this problem is countered by including interest rates in the regression, thus controlling for one important measure of financial rates of return.

5. The regression specification

The hypothesis of this paper is that financialization contributed to the slowdown in accumulation since the Golden Age. As we have argued above, management adopted the preferences of rentiers in the process of institutional changes of financialization. The consequence of this is that management and thus non-financial business should become more rentiers-like, which among other things, means that they have less growth oriented priorities and invest in financial markets.

In the following sections empirical tests of this hypothesis by means of macroeconomic data will be presented. This requires some clarification, since the theory presented in the previous sections was essentially microeconomic. However, the phenomenon that we wish to explain, i.e. the slowdown of accumulation, is a macroeconomic one.

To get from the microeconomic theory proposed to a macroeconomic test the implicit assumption of a representative firms is made. Since this assumption is debatable, two comments are in place. First, while the assumption of a representative firm is used, the model fundamentally differs from representative agent models because the assumption of homogenous firms is essentially used to highlight the role of different actors and their contradicting interests. Second, empirically the question is how good an approximation this assumption is with respect to the problem at hand. Since the argument presented is centered around the adoption of shareholder value and the corresponding changes in corporate governance, it refers to listed companies, i.e. large corporations. A huge number of firms are, or course, small and medium enterprises that are not listed and to which our argument has little relevance. Thus in the empirical test we really test a dual hypothesis: first that the behavioral changes took place as suggested in the corporate sector; second that the corporate sector is big enough to make a difference in the macroeconomic data.

Thus we estimate an investment function controlling for standard variables and include a proxy for financialization. The theory part provides the analytical basis for adding the financialization variable. As an indicator for financialization we will use the interest and dividend income of the non-financial business sector divided by its value added, or, as we will henceforth say, the "rentiers share of non-financial businesses" (RSNF). The numerator of this expression captures the rentiers income. Note that the "rentiers share of the non-financial business sectors" measures the receipts from financial investment rather than financial investment itself. It is derived from the National Accounts and thus a flow magnitude that does not include revaluation of assets.

To isolate the effect of financialization on investment we control for other variables that effect investment decisions. Thus we include an accelerator term, a profit term and a term for the relative cost of capital as the standard variables in the literature (see Meyer and Kuh 1957; Jorgenson 1971; and Chirinko 1993 as surveys).[4] Our investment equation thus is:

$$ACCU = f(CAPUT, PS, CC; RSNF) \qquad (1)$$

with the expected signs being: $f_{CAPUT} > 0,\ f_{PS} > 0,\ f_{CC} < 0,\ f_{RSNF} < 0$

where ACCU, CAPUT, PS, CC and RSNF denote accumulation, capacity utilization, the profit share, the relative cost of capital and the rentiers' share of non-financial businesses respectively.

This specification is inspired by the reformulation of post-Keynesian investment function by Marglin and Bhaduri (1990), but contains the neo-classical approach (pioneered by Jorgensen 1963) as a special case. Keynesians argue for the importance demand effects and the role of profits –as source of internal finance and as proxy for profit expectations- , whereas neo-classical economists emphasize the role of the relative cost of capital and accept the role of output.

On the issue of internal finance a certain convergence of Keynesians and neo-classical economists has occurred in the 1980s, with market imperfections playing an important role in economic theory and the pioneering empirical work by Fazzari and Hubbard, who showed its empirical relevance in a series of firm level studies (e.g. Fazzari and Mott 1986; Hubbard, Kashyap and Whited 1995; see Hubbard 1998 as a survey). Since our empirical tests will refer to comparative aggregate business investment, the closest comparable works are Ford and Poret (1990) from a neo-classical perspective, and Bhaskar and Glyn (1995) and Bowles and Boyer (1995) from a Post-Keynesian perspective. A detailed comparison with these works will be given after the presentation of the empirical results.

We expect higher rentiers income of non-financial businesses to have a negative effect on their accumulation. Note that this is in contrast to the argument of firms being finance constrained as well as to the argument that financial investment by firms will overall increase efficiency. According to the first argument the effect should be positive, rentiers income is still income, after all. According to the second argument we expect a positive effect (if firms that previously had no finance now have access to finance) or no effect (if only the allocation of investment is effected). However, we argue that this type of income is an expression of the financialization and thus has a negative effect on the desired rate of growth.

6. Data sources and econometric issues

The rate of growth of the capital stock (ACCU) is the growth rate of gross business capital stock. The profit share (PS) is gross profit share in the business sector and capacity utilization (CAPUT) is the detrended capital productivity in the business sector. The data are from the OECD Economic Outlook data set. The cost of capital measure is the (short term) interest rate times the price index of investment goods divided by the wage costs per worker (all from the OECD Economic Outlook data set). The "rentiers share of the non-financial business sector" (RSNF) is the interest and dividend income received by non-financial businesses divided by their value added. The data were extracted from the Detailed Tables of the OECD National Accounts. Unfortunately the calculation of these series is possible only for a few countries. Furthermore the time periods for which we were able to compile the data, differ across countries. Plots of ACCU and RSNF can be found in Figure 3.

INSERT FIGURE 3 HERE

Equation 1 above abstracts from the question of units and the lag structure imposed. Since virtually all variables employed do exhibit high degrees of autocorrelation—in may cases unit root tests fail to reject the unit root hypothesis—time series issues have to be taken seriously. Unit root tests, however, are notorious for their weak power: Any time series with a unit root can be approximated arbitrarily close by a trend stationary process and vice versa (this has become known as the "near observational equivalence of trend- and difference-stationary processes" (Christiano and Eichenbaum 1990); summarized as rules 7 and 9 in Campbell and Perron 1991). Note, that our variables are already defined in growth rates (in the case of ACCU) or ratios (CAPUT, RSNF, PS). Intuitively, it is implausible that these variables exhibit a unit root. A difference stationary variable has no fixed mean and is thus free to wander around. The interval - 5 to +10 probably captures the entire range of values that growth rates of capital stock have ever taken on, which is highly improbable for a unit root variable. Thus we interpret the results as a high degree of autocorrelation rather than as unit roots.

Following the literature (Bhaskar and Glyn 1995; Bowles and Boyer 1995),we will mostly use partial adjustment models (PAM) in the estimations. To ensure that the results are not spurious, i.e. caused by spurious correlations between unit root variables, an autoregressive distributed lag model (ADL) is also estimated. ADL models have been shown to have desirable properties even in the face of unit roots (Sims, Stock, Watson 1990), they "solve many of the problems associated with spurious regressions, although tests of some hypotheses will still involve non-standard distributions." (Hamilton 1994, 562). All explanatory variables are lagged. In the case of accumulation this is also sensible because of the time lag between investment decision and investment expenditure. Furthermore it prevents problems of simultaneity and inverse causation. For example since we use last year's capacity utilization, it cannot be influenced by this year's investment.

7. Regression results

We aim at testing one specification for all countries without attempt to optimize the fit for each country. Thus we abstain from including dummies or other country specific variables. Rather we examine the sensitivity of the results to changes in the time series specification and their robustness to changes in the variables. We first present a PAM model and second an ADL model, which is a more general model. Third we test whether the measure of CAPUT effects the results and fourth rentiers income and rentiers payments are included separately. A second lag of the dependent variable was included in all specifications, because diagnostic tests indicated the possibility of second order autocorrelation.

$$ACCU_t = b_o + b_1 ACCU_{t-1} + b_{11} ACCU_{t-2} + b_2 CAPUT_{t-1} + b_4 PS_{t-1} + b_6 CC_{t-1} + b_8 RSNF_{t-1} + e_t \quad (2)$$

Table 1 present the results of this regression of the PAM specification. Most variables have the expected signs, with two out of the three being significant for each country. Only for the USA is only one variable, RSNF, significant.

INSERT TABLE 1 HERE

Since the regression is in levels and autoregressive terms are included, the R2 are very high with only the USA below 90%. Autocorrelation is a problem in France and the USA even though we included two lagged variables. This may reflect missing variables. However, it is not obvious what these variables would be. Since we are dealing with regression equations where lagged dependent variables enter on the right hand side, the critical values of the Durbin Watson statistics are invalid. Instead, the more general Godfrey Breusch test for serial correlation is used. This test is not restricted to first order autocorrelation.[5]

The time period under investigation, ranging from the 1960s to the 90s covers the Golden Age as well as the neo-liberal revolution starting in the late 1970s with M. Thatcher, R. Reagan and P. Volcker. These fundamental changes in economic policy may of course affect investment behavior. Thus Chow tests were performed to test for a structural break in 1980. These tests fail to reject the null of no structural break, i.e. they suggest the absence of a structural break.

Correlation among explanatory variables, unsurprisingly given the number of variables we employ, is a problem. Defining high correlation somewhat arbitrarily as a correlation coefficient higher than .8 (Kennedy 1992, 180), PS is correlated with RSNF and CC in France. CAPUT and RSNF are correlated in Germany. CAPUT is highly correlated with past ACCU in both Germany and France. This may inflate the estimated standard errors.

The autoregressive term is statistically significant in three of the four countries. RSNF, our proxy for financialization, has the expected sign and is statistically significant at the 5% level in two countries (UK, USA) and in France at the 11% level. It has a negative sign and is statistically insignificant in Germany. The control variables perform modestly well, which is not unusual for comparative investment regressions (Ford and Poret 1991). CAPUT has the expected sign three times and is statically significant at the 5% level twice. PS also has the expected sign three times, but is statistically significant only once. Only CC exhibits the "wrong" sign three times and is not significant at all.

We also tested whether the results were due to our somewhat unconventional measure of capacity utilization. This is clearly not the case. We used the output gap and the rate of growth of business sector output, both of which confirmed the results that we got with capital productivity.

Table 2 summarizes the regression results of a reparameterized ADL model. It contains all variables in levels as well as in differences and is intended to check whether the PAM is a plausible special case of the general ADL.

$$ACCU_t = b_o + b_1 ACCU_{t-1} + b_{11} ACCU_{t-2} + b_2 CAPUT_{t-1} + b_3 \Delta CAPUT_{t-1} + b_4 PS_{t-1} + b_5 \Delta PS_{t-1} + b_6 CC_{t-1} + b_7 \Delta CC_{t-1} + b_8 RSNF_{t-1} + b_9 \Delta RSNF_{t-1} + e_t \quad (2)$$

INSERT TABLE 2 HERE

We regard the ADL model as a starting point to narrow down the number of parameters. The t-values reported are free of spurious correlation problems arising from unit roots. However, they do suffer from mulitcollinearity since we have ten variables included. The information we wish to extract from the ADL model is whether the variables should be included in levels or in differences. With respect to this question, the results are somewhat ambiguous, but strongly suggestive, if we take the higher t-value as the indicator: T-values are higher for levels rather than differences for all countries for RSNF, and three times for CAPUT and PS. Only for CC do we have an indication that differences may be the more appropriate specification, t-values for differences are higher than for levels three times.

Compared to the PAM specification the coefficient estimates of RSNF experience, like the other estimates, a drop in their t-values, but do not vary greatly. They keep their and signs stay within the same order of magnitude. Thus, the parameter estimates of the PAM specification are not due to spurious regression results.

It is conceivable that RSNF is dominated by nominal interest rates and thus by monetary policy. In consequence RSNF may be a proxy for central bank engineered recessions. however, since the regression already controlled for CC and CAPUT, this is not likely. To ensure the robustness of the results further tests were performed.

INSERT TABLE 3 HERE

Table 3 reports the results of this regression with output growth of the business sector (GROWTH) instead of CAPUT and including CC in difference form. Few changes compared to the earlier regression can be reported. Autocorrelation problems decrease, but are still present in the USA. There is no indication of a structural break. Note that output growth performs worse than capacity utilization. Its significance is very sensitive to the lags in accumulation. It is significant only in the UK. Other parameter estimates are hardly affected. CC ceases to be significant in Germany but turns significant in the UK. RSNF remains highly significant in France and the USA. Therefore the significance of financialization does not rest on the specification of capacity utilization.

While we reject second order autocorrelation in this specification for both France and the USA, we do so by a very thin margin. Since autocorrelation was a persistent problem for these countries in earlier specifications, we tested whether our findings are related to second order autocorrelation (First order autocorrelation does not seem to be a problem). A first suspicion is of course that this indicates missing variables. We therefore experimented with adding more lagged variables, but this did not cure autocorrelation. Finally we resorted to the rather crude method of including the second lag of the error of the OLS estimate. This does not effect significance of the coefficient on RSNF.

The parameter estimates and statistical significance of RSNF does not depend on how the cost of capital is measured. Using nominal (long-term) interests instead of CC in fact improves the results of the coefficient for RSNF, which is statistically significant at least at the 5% level in UK and USA and at the 10% level in France.

From a internal finance point of view it may be surprising that rentiers *income* should affect accumulation in a negative way. If firms were finance constrained, it should rather increase accumulation. This concerns the core of our argument that implies that firms (on average) are not constrained by finance (profits are high), but their priorities make them choose not to invest. However, it might be that our measure of financialization, RSNF, is

picking up increased rentiers *payments* which in fact rose in parallel with rentiers *income*. To control for this, we included rentiers payments as well as rentiers income. If the significance of RSNF were due to its correlation with payments, we would expect payments to have a negative sign and RSNF to switch to a positive sign.

INSERT TABLE 4 HERE

The results are interesting. RPNF, the rentiers payments (divided by the value added) of the business sector are not significant, but close to the 10% level in France and the UK, both with a negative sign, as expected. RSNF does lose significance but keeps its sign in France and the USA, in both countries being close to the 10% level. It is not overly surprising that none of the two variables are significant because they are highly correlated (the correlation coefficient is .75 for Germany and above .9 for all other countries). Note that for both, France and the USA, the t-value is greater for RSNF than for RPNF. From this we conclude that RSNF does play an independent role. As in previous specifications autocorrelation problems exist in France and the USA.

8. Interpretation and comparisons with other investment studies

Leaving aside the question of financialization for a moment, how do these results overall compare to the existing literature on investment functions? In short, they mostly confirm it. First, and unfortunately, we confirm that standard variables have problems in explaining investment and that lagged investment itself may, in fact, explain most of current investment. Second, and more encouraging, the standard variables do play a role, roughly half of the time they are significant with the expected sign. Third, and most surprising, the accelerator term does not perform better than other variables. This, at first sight, contradicts

previous findings. It is due to the fact that two lags of investment were included. This is consistent with findings by Ford and Poret (1991). Nonetheless, changes in capacity utilization still by far explain most of the short run changes in accumulation. Multiplying the standard deviation of each variable with the corresponding parameter estimate gives by far the highest value for CAPUT. Fourth, the importance of past profits is confirmed. Even though the second lag in accumulation also decreases their significance, internal finance is statistically significant in many specifications. Fifth, the cost of capital has only a limited influence. Only in one country, Germany, is it consistently significant, in all others it is not.

We note the following pattern regarding countries: Germany conforms to the standard model of investment: capacity, profits and the cost of capital are statistically significant, our variable of financialization is not. In France the profit share and the rentiers share of non-financial businesses are consistently significant. In the UK capacity utilization is significant, and depending on the specification, the RSNF is too. In particular, including CC in differences rather than levels has an adverse effect on the significance of RSNF. In the USA, RSNF is the only consistently significant variable, the profit share is sometimes. Are these findings consistent with our story on financialization? The lack of significance for Germany certainly is, since the literature regards Germany as a late comer in the development of shareholder value and our time series for Germany ends in 1990 (to avoid the statistical problems of unification).

Our tests can hardly be conclusive of our hypothesis that financialization has caused a reduction in accumulation rates, but they certainly provide strong initial support. The variable for financialization, RSNF, fares as good as any standard variable in investment regressions. It is robust to changes in the specification, especially with respect to how we measure capacity utilization. However, some caveats apply. There are technical problems like multicollinearity and some degree of autocorrelation for some countries. However, RSNF remains significant once autocorrelation is controlled for. But probably more important, the

general results of our investment function are not overwhelming, though certainly not worse than many other studies. While we may have made some contribution to explaining the recent slowdown in accumulation, investment remains the bane of empirical macroeconomics.

Finally we want to point out some technical differences to Bhaskar and Glyn (1995) and Bowles and Boyer (1995), who provide empirical tests of the Marglin-Bhaduri investment function. All of them adopt a partial adjustment model. Thus there is no difference in the time series specification,[6] except for the second lag of the dependent variable. Unlike the previous literature, we derive the specification from a more general ADL model and test robustness. Bhaskar and Glyn (1995) also test for cointegration, but this is inappropriate in the context of a partial adjustment model.[7] There are some differences in the variables used. Bahskar and Glyn (1995) use a somewhat different measure of the cost of capital (they adjust for technical progress via a Solow residual), and Bowles and Boyer (1995) use the employment rate as the measure of capacity utilization.[8] Thus the only substantial difference is that we include a variable for the rentiers income.[9]

9. The economic significance of financialization

So far we have been concerned with the statistical significance of our measure of financialization. Next we wish to investigate its economic significance (McCloskey and Ziliak 1996), or in other words: To what extent can we explain the slowdown in accumulation from the late 1960s to the early 1990s as the result of financialization? To answer this question table 5 below summarizes the coefficient estimates for the autoregression of ACCU and the coefficient estimates for RSNF.

INSERT TABLE 5 HERE

Taking the mean from the values above, we can calculate the long run effect of the change in the rentiers share of non-financial businesses on capital accumulation. The long run effect of a change in the rentiers share is the regression coefficient divided by one minus the autoregressive coefficients. Multiplying this by the change in the rentiers share (column "ΔRSNF"), we get the explained change in accumulation (column "explained ΔACCU"), which we contrast with the actual change in accumulation (column "actual ΔACCU"). The changes refer to the differences between the average of the period 1964-74 and of the period 1985-94 (or the closest value we had).

INSERT TABLE 6 HERE

Unsurprisingly, this value varies greatly between countries. For Germany, where most coefficient estimates for RSNF were positive, we calculate a positive contribution to accumulation. For France we explain almost the entire slowdown in accumulation. The UK is the only country where there was no slowdown in accumulation. Note that our "explained ΔACCU" for the UK is about as high as for France. Thus even though the coefficient estimates for UK were not *statistically* significant, they are *economically* significant, i.e. if the point estimates were correct, RSNF would have a strong impact on accumulation. In the USA we roughly explain a third of the reduction in accumulation. Taking the mean of the various coefficients for individual countries, we explain the entire slowdown of accumulation from the late 1960s to the late 1980s (as can be seen by comparing the columns explained and actual ΔACCU).

Thus while on the average, the story that increased financial investment caused the slowdown in accumulation can be substantiated, our calculations for individual countries vary in plausibility. The calculations certainly do confirm that financialization potentially played an important role in reducing investment.

10. Conclusion

The paper developed and tested a theory arguing that financialization leads to a slowdown in accumulation. By means of an elaboration on earlier post-Keynesian theories of the firms, we showed how the "shareholder revolution", i.e. the development of a market for corporate control and the reorientation of management priorities along the lines of creating shareholder value, leads to a reduction in the growth rate desired by firms. Managers have various goals in running a firm, in particular growth is an intrinsic goal and maximizing profits is not the exclusive goal, whereas shareholders will exclusively be interested in profits. Bodies of literature as diverse as business history (Chandler), post-Keynesians (Galbraith, Eichner) and recent management literature (Baker and Smith) agree on these stylized facts, implying that the firm faces a trade off between growth and profits. The shareholder revolution included a market for corporate control, i.e. the possibility of firing managers, and performance related pay schemes. These institutional changes will lead managers to adopt management policy closer to shareholders' preferences, i.e. profitability will gain in weight relative to growth. If the firm in fact faces a trade off between profits and growth, this translates into lower investment activity.

The empirical tests were performed with annual data for the business sector for Germany, France, UK, and the USA. The findings show some support for the hypothesis that financialization caused a slowdown in accumulation. We found strong support for our hypothesis in the USA and France, some support in the UK, but none in Germany. Financialization occurred in the UK, but there was no general slowdown in accumulation because the UK already had rather low accumulation rates in the Golden Age. The insignificant findings for Germany are consistent with our story, since the literature indicates that shareholder value orientation is a very new phenomenon in Germany. We did perform

tests for robustness and experimented with the lag structure, which showed that the results are robust.

We conclude that financialization is likely to have the effects implied by our theory, but further research is needed to confirm the findings. On a macroeconomic level, a systems approach would be desirable to endogenize capacity utilization and on a microeconomic level it would be fruitful to test our underlying model, e.g. one could control for factors like the pay scheme of managers. Nonetheless, if our parameter estimates come close the actual effects this has strong implications. For France financialization explains the entire slowdown in accumulation, for the USA about on third of the slowdown. Financialization therefore can potentially explain an economically significant part of the slowdown in accumulation.

Our analysis does not lend itself to straightforward policy conclusions, rather it suggests that changes on financial markets and organizational structures in the firm have to be discussed simultaneously. Regulation of financial markets and the empowerment of growth interested groups within the firm should go hand in hand. But organizational changes will take time. Therefore, if investment is to be increased in the short run, public investment may be a more effective way to do so.

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Data Appendix

Variable	Definition	Source
ACCU	growth rate of gross business sector capital stock	OECD Economic Outlook database
CAPUT	capital productivity in the business sector: GDP of the business sector / gross capital stock of the business sector	OECD Economic Outlook database
growth	growth real business sector GDP	OECD Economic Outlook database
PS	profit share in the business sector	OECD Economic Outlook database
CC	relative cost of capital: deflator of capitalgoods plus short rund interest rate / real wage costs	OECD Economic Outlook database
RSNF	interest and dividend income of non-financial businesses/value added of non-financial businesses	OECD National Accounts, Vol. II database
RPNF	interest and dividend payments of non-financial businesses/value added of non-financial businesses	OECD National Accounts, Vol. II database

Figure 1 Preferences and constraints in a managerial firm (MF)

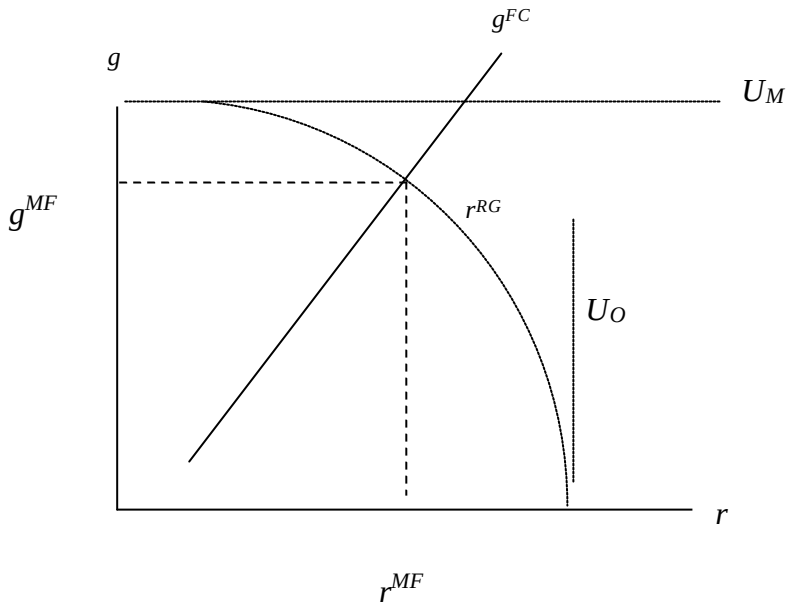


Figure.2 Preferences and constraints in the shareholder dominated firm (SDF)

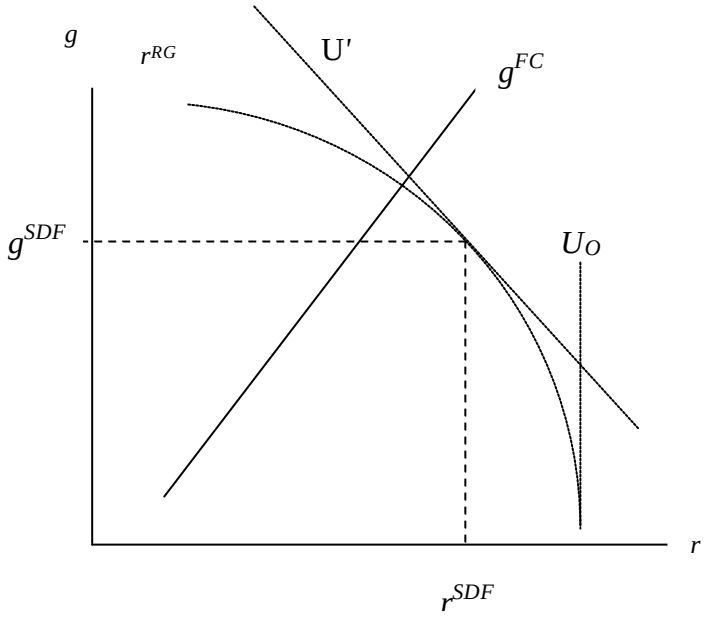
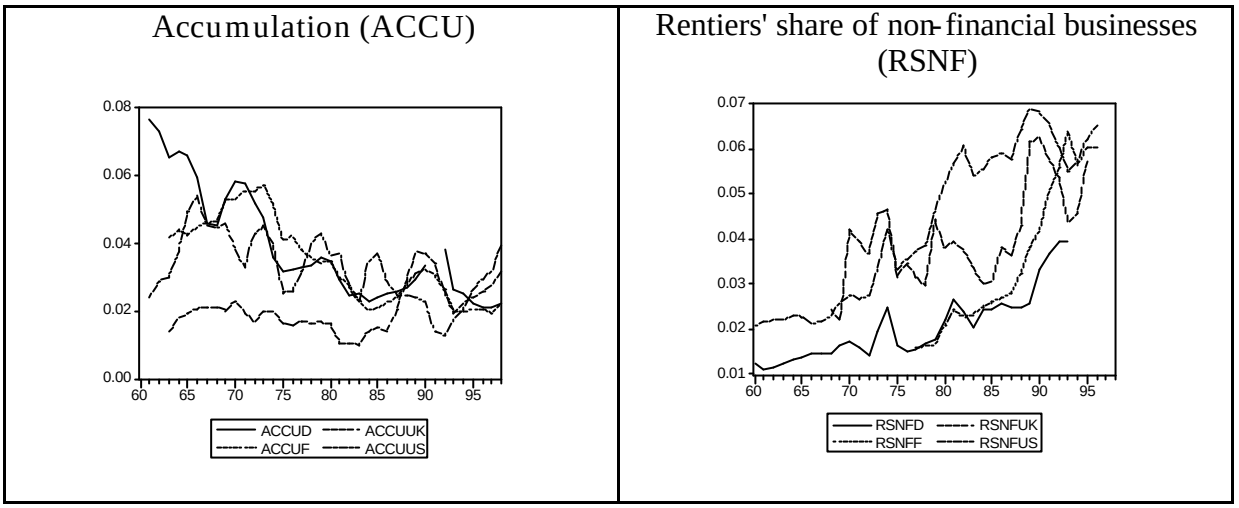


Figure 3



Note: Suffixes D, F, UK and US denote Germany, France, UK and USA respectively.

Table 1 Regression results: partial adjustment model

	Germany	France	UK	USA
period	63-90	78-97	70-96	63-97
C	-0.09 **	-0.03	-0.03	0.01
	-2.44	*-0.40*	*-1.96*	*0.14*
$CAPUT_{-1}$	0.19 **	0.09	0.16 ***	-0.04
	1.98	*0.37*	*3.43*	*-0.67*
PS_{-1}	0.001 **	0.001	0.000	0.002
	2.00	*1.13*	*-0.08*	*1.63*
$RSNF_{-1}$	0.13	-0.21	-0.22 **	-0.37 ***
	0.40	*-1.71*	*-2.38*	*-3.67*
CC_{-1}	-0.001	-0.001	0.000	0.000
	-1.43	-1.25	-0.70	0.04
$ACCU_{-1}$	0.72 ***	0.68	0.93 ***	0.84 ***
	3.07	*1.52*	*5.19*	*3.48*
$ACCU_{-2}$	-0.25 *	-0.05	-0.17	-0.40 **
	-1.69	*-0.19*	*-0.90*	*-2.69*
R-squared	0.96	0.94	0.90	0.82
Adjusted R-squared	0.95	0.91	0.88	0.79
GB Obs. R2	1.08	6.02 *	.89	6.55 **
Chow Breakpoint Test 1980				
F-Stat	1.22		1.00	0.67
Prob.	*0.35*		*0.48*	*0.69*

Calculations performed with Eviews. Italic numbers are t-values, unless noted otherwise.
*, ** and *** denote significance at 10, 5 and 1% respectively.
GB is the Godfrey-Breusch test for autocorrelation.

Table 2 Regression results: ADL model

	Germany	France	UK	USA
period	63-90	79-97	71-96	63-97
Const	-0.13	0.01	-0.03	-0.04
	-2.79	*0.04*	*-1.33*	*-0.61*
$ACCU_{-1}$	0.85 ***	0.33	0.96 ***	0.71 ***
	2.50	*0.49*	*4.30*	*2.65*
$ACCU_{-2}$	-0.60 *	0.31	-0.09	-0.37
	-1.89	*0.64*	*-0.38*	*-1.42*
$CAPUT_{-1}$	0.31 **	-0.01	0.14 **	0.07
	2.36	*-0.02*	*2.32*	*0.72*
$\Delta CAPUT_{-1}$	-0.153	0.195	0.182	0.039
	-0.82	*0.56*	*1.36*	*0.39*
PS_{-1}	0.001 *	0.001	0.000	0.001
	1.84	*0.91*	*-0.37*	*0.48*
ΔPS_{-1}	0.00	0.00	0.00	0.00
	0.33	*-0.44*	*0.26*	*0.99*
$RSNF_{-1}$	0.36	-0.31	-0.16	-0.30 *
	0.77	*-1.57*	*-1.09*	*-1.91*
$\Delta RSNF_{-1}$	-0.13	0.19	0.03	0.39
	-0.27	*0.83*	*0.23*	*1.06*
CC_{-1}	0.000	-0.001	0.000	0.001
	-0.62	*-1.20*	*0.79*	*0.89*
ΔCC_{-1}	0.000	0.000	0.000	-0.001 *
	-0.78	*0.41*	*-1.25*	*-1.72*
R-squared	0.97	0.94	0.93	0.86
Adjusted R-squared	0.95	0.86	0.88	0.79
GB Obs. R2	2.45	6.63 **	.61	6.72 **

Calculations performed with Eviews. Italic numbers are t-values, unless noted otherwise.
*, ** and *** denote significance at 10, 5 and 1% respectively.
GB is the Godfrey-Breusch test for autocorrelation.

Table 3. Regression specification with output growth

	Germany	France	UK	USA
period	63-90	78-97	70-96	63-97
const	-0.03 *	-0.02	0.00	0.01
	-1.85	*-1.67*	*-0.03*	*0.40*
$GROWTH_{-1}$	-0.01	0.02	0.08 **	0.08
	-0.11	*0.31*	*2.52*	*1.24*
PS_{-1}	0.0012 **	0.0011 **	7.E-05	0.000
	2.42	*2.38*	*0.10*	*0.24*
$RSNF_{-1}$	-0.22	-0.32 ***	-0.04	-0.22 ***
	-0.83	*-2.66*	*-0.34*	*-2.45*
ΔCC_{-1}	-0.0004	0.0004	-0.0003 **	-0.001
	-1.12	*0.61*	*-1.71*	*-1.47*
$ACCU_{-1}$	1.13 ***	0.49	1.18 ***	0.75
	4.26	*1.13*	*6.63*	*3.09*
$ACCU_{-2}$	-0.36	0.18	-0.28	-0.22
	-1.60	*0.52*	*-1.45*	*-0.99*
R2	0.96	0.93	0.89	0.84
adj R2	0.94	0.90	0.85	0.80
BG Obs. R2	2.16	4.11	1.1	4.45
Chow Breakpoint Test 1980				
F-Stat	1.01		1.43	1.25
Prob.	*0.46*		*0.28*	*0.32*

Calculations performed with Eviews. Italic numbers are t-values.
*, ** and *** denote significance at 10, 5 and 1% respectively.
GB is the Godfrey-Breusch test for autocorrelation.

Table 4. Regression specification including rentiers payments

	Germany	France	UK	USA
period	63-90	78-97	70-96	63-97
const	-0.11 ***	-0.02	-0.06 ***	0.00
	-2.71	*-0.31*	*-3.66*	*-0.05*
$CAPUT_{-1}$	0.25 **	0.03	0.20 ***	-0.01
	2.26	*0.14*	*4.01*	*-0.23*
PS_{-1}	0.0013	0.0012 **	0.0003	0.0012
	1.21	*2.88*	*0.60*	*1.04*
$RPNF_{-1}$	-0.03	-0.11	-0.14	0.08
	-0.22	*-1.47*	*-1.44*	*0.35*
$RSNF_{-1}$	0.20	-0.23	0.04	-0.41
	0.65	*-1.62*	*0.21*	*-1.40*
ΔCC_{-1}	-0.0007 **	0.0007	-0.0003	-0.0006
	-2.22	*0.94*	*-1.67*	*-1.20*
$ACCU_{-1}$	0.82 ***	0.32	0.85 ***	0.95 ***
	3.55	*0.59*	*4.64*	*4.60*
$ACCU_{-2}$	-0.47 ***	0.26	-0.06	-0.46 ***
	-2.81	*0.82*	*-0.29*	*-2.95*
R2	0.97	0.94	0.92	0.83
Adj R2	0.95	0.91	0.89	0.79
GB Obs R2	1.32	8.25 **	2.57	6.69 **

Calculations performed with Eviews. Italic numbers are t-values.
*, ** and *** denote significance at 10, 5 and 1% respectively.
GB is the Godfrey-Breusch test for autocorrelation.

Table 5. Summary of the coefficients on the lagged dependent variable and RSNF from various specifications

	France	Germany	UK	USA
autoregressive terms of ACCU				
ADL	.64	.25	.85	.34
PAM	.7	.35	.73	.41
with growth	.67	.77	.9	.53
mean	*0.67*	*0.46*	*0.83*	*0.44*
coefficient on RSNF				
ADL	-.31	.36	-.16	-.3
PAM	-.21	.13	-.22	-.37
with growth	-.32	-.22	-.04	-.22
mean	*-0.32*	*0.09*	*-0.12*	*-0.27*

Note. ADL and PAM denote autoregressive distributive lag model (table 1) and partial adjustment model (table 2) respectively. 'with growth refers to the PAM specification with GDP growth instead of CAPUT (table 3).

Table.3 Explaining the slowdown in accumulation

	reg coeff b_{RSNF}	autoreg coeff b_{ACCU}	Δ RSNF	long run effect $\bar{b}_{RSNF}$	explained ΔACCU	actual ΔACCU
Germany	0.09	0.5	0.015	0.18	0.003	-0.021
France	-0.28	0.65	0.026	-0.8	-0.021	-0.027
UK	-0.14	0.84	0.034	-0.88	-0.030	0.005
USA	-0.3	0.44	0.015	-0.54	-0.008	-0.023
mean	-0.24	0.64	0.025	-0.67	-0.017	-0.015

Note. Δ RSNF and ΔACCU are the difference between average rates 65-74 and 85-94.

1 We use post-Keynesian theory in an inclusive sense, implying that it can potentially integrate various streams of heterodox economics. In this sense we are closer to Lavoie (1992) than to Davidson (1994). Davidson bases his post-Keynesian approach on fundamental uncertainty and non-ergodicity, whereas Lavoie integrates a rich variety of heterodox economics. Such an attempt of integration raises the issue of consistency and Lavoie attempts to provide a consistent framework. While we applaud his seminal presentation that is successful in combining post-Keynesian micro- and macroeconomics, we are not fully satisfied with the degree of theoretical consistency he offers. In particular, there is a strong asymmetry in that Lavoie borrows heavily from institutional economics in his theory of the firm and from Marxists in the theory of accumulation. If we are serious about the integration of different approaches, classes have to matter in the firm and institutions for accumulation.

2 Dividends and interest payment, of course, are paid out of profits. Therefore capitalists and rentiers may be considered part of the same class. However, they occupy different positions within the production process and, as we will argue in section 3, they have different interests. Hence we regard the distinction between (industrial) capitalists and rentiers as important—even if it is an intra-class distinction.

3 However, the urge to grow and the quest for survival are often equated and take a somewhat more fundamental place in the literature (e.g. Robinson 1962).

4 It has been pointed out to me in discussion that there are other factors explaining the slowdown of accumulation such as structural changes and the shift from manufacturing to services that have largely been ignored in the literature on investment. This paper shares this shortcoming of the literature, since a complete discussion is well beyond its scope.

5 The test belongs to the class of asymptotic (large sample) tests known as Lagrange multiplier (LM) tests. Its null hypothesis is 'no serial correlation'. We will use it to test for first and second order autocorrelation.

6 Bowles and Boyer (1995) do add a time trend, which we do not. Their approach may be appropriate if one is interested in short run effects. in a more long run analysis, it is hard to interpret the time trend. Unsurprisingly, Bowles and Boyer do encounter high autocorrelation problems. In most of our specifications a time trend is not statistically significant and does not effect the significance of RSNF.

7 First we have argued that there are theoretical reasons to assume that accumulation is I(0) rather than I(1). Second, even if accumulation were I(1) testing for cointegration in a partial adjustment model is meaningless: since an I(1) variable by definition is, technically speaking, cointegrated with its lagged value, i.e. there exists a linear combination that is I(0), and the partial adjustment model includes a lagged value of the dependent variable, the resulting error term has to be I(0). Finally they use incorrect critical values (ADF critical values differ for a unit root test and cointegration tests)

8 This is motivated by their purpose to estimate the effects of redistribution. Unemployment thus captures the disciplinary effect of capacity utilization on wages. For our purpose and context, i.e. European unemployment, this is unacceptable. However, since the slowdown in accumulation changes the link between unemployment and capacity utilization. Unemployment is therefore a bad measure of capacity.

9 In terms of the Marglin-Bhaduri model this represents a shift variable for autonomous investment expenditures. Thus, our results regarding financialization suggest an interpretation

of the end of the Golden Age that differs from the one given by Marglin and Bhaduri (1990) themselves. Rather than adverse changes in the profit and capacity sensitivity of investment demand, the financialization story suggest a decease in autonomous investment.