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Conflicting claims and equilibrium adjustment processes in a stock-flow consistent macro model[*]

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Abstract

We revisit the old but still vibrant Post-Keynesian debate over "fully-adjusted positions", defined by the long-run equality of actual and standard utilisation rates. The central proposition of this paper is that in a world where different groups inside and outside firms have different objectives, the equality of actual and standard utilisation should not be treated as the (only possible) long-run equilibrium condition. The argument is illustrated in a model of target return pricing with conflict inflation, building on Lavoie (2002, 2003). A "common language" for the conflicting claims by shareholders, managers, workers is developed in terms of target profit rates, and it is shown that these contradictory claims can be partly reconciled through variations in the utilisation rate. The analysis unifies history and equilibrium in the sense that the nature of and the adjustment to the final equilibrium position depends on the objectives of the dominant social groups. We distinguish a "Fordist regime" and a "financialisation regime" and produce simulation results within a simple stock-flow consistent model that are broadly consistent with the stylised facts of these distinct historical phases of capitalism.

Keywords: fully-adjusted positions, equilibrium, conflicting claims, financialisation

JEL classifications: B22, E12, E17, E25, E44

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1. Introduction

One of the most important, and also criticised, features of the Kaleckian model of growth and distribution is the long-run endogeneity of the rate of capacity utilisation. This crucial property gives rise to the well-known macroeconomic paradoxes of thrift and of costs: a lower propensity to save and higher real wages can be consistent with higher growth in the long run, even in the absence of technical progress.[1] Conversely, when the long-run equilibrium is to be a "fully-adjusted position", in which actual capacity utilisation must be equal to its exogenously given, normal rate, the paradox of costs, and in some cases also the paradox of thrift, vanish. In this paper, we discuss how the utilisation rate can be treated as a free, accommodating variable, when conflicting claims by different social groups prevent firms from operating at standard utilisation while simultaneously realising other important objectives. The general argument is illustrated for two different configurations of capitalism, which we call "Fordism" and "financialisation", and which are determined by the power relations between shareholders, managers, workers, and banks.

The notion of an endogenous rate of capacity utilisation in the long run has been criticised from different angles. For Keynes, the persistent underutilisation of capacity was incompatible with long-run analysis, because this seemed to imply that firms leave additional sales opportunities unrealised.[2] A different implicit criticism of the Kaleckian model stems from the tradition established by Roy Harrod (Harrod, 1948), who pointed at the problem of instability by arguing that firms facing deviations from their standard utilisation rate will always react by adjusting their accumulation policies in a way that at the macroeconomic level increases the previous deviation, leading to either a booming or a crashing economy: the demand effect of investment exceeds the capacity effect. In the Cambridgian models by Joan Robinson and Nicholas Kaldor, this Harrodian instability is solved by the assumption that firms will succeed (accept) to raise (lower) their mark-up when current utilisation exceeds (falls short of) standard utilisation, thereby raising (lowering) the overall savings rate and slowing down (stimulating) the economy. Higher accumulation therefore requires a higher profit share (e.g. Robinson, 1956; Kaldor, 1957). Modern Marxian and Harrodian authors have proposed further adjustment

[1] The Kaleckian model has met a renewed interest since the seminal works of Rowthorn (1981), Dutt (1984), Taylor (1985), Amadeo (1986) or Lavoie (1992).

[2] Keynes (1983, pp. 830-1) famously objected to Kalecki that he was "still innocent enough to be bewildered by the idea that the assumption of all firms always working below capacity is consistent with 'a long-run problem'".

mechanisms, involving, amongst other things, monetary policy (Duménil and Lévy, 1999), variable rates of profit retention by firms (Shaikh, 2007), or a negative relationship between the employment rate and firms' investment propensity (Skott, 2008). As an overall conclusion, it may seem that one has to choose in the long run between Keynesian outcomes with instability, and Classical results with stability.

A number of attempts have been made to provide an exit to this dilemma (e.g. Chick and Caserta, 1997; Amadeo, 1986; Lavoie, 1995, 1996, 2002, 2003; Dutt, 1990, 1997). In this paper, we propose an alternative analysis of steady state positions where fully-adjusted equilibria, as defined in the traditional sense, may not necessarily be reached because firms have to "trade off" their utilisation target with other important objectives. More specifically, in a world where different groups inside and outside firms have conflicting objectives, the final steady state position can not be a "fully-adjusted" one for all social groups. In particular, shareholders' profitability target, managers' growth target, workers' real wage target cannot be simultaneously realised. Starting from a reinterpretation of the Post-Keynesian theory of the firm, the argument is illustrated in a model of target return pricing with conflict inflation, building on Lavoie (2002, 2003). Conflict within the firm is introduced at two different levels. The first conflict opposes managers and shareholders and derives from the postulation of a microeconomic trade-off between accumulation and profitability. The second conflict involves capitalists and workers and determines the distribution of income between profits and wages. A "common language" for these conflicts is developed in terms of target profit rates, and it is shown how the contradictory claims by the different groups can be partly reconciled through variations in the utilisation rate.

Simulations with a stock-flow consistent (SFC) model produce stylised facts that are broadly consistent with two distinct eras of economic development in the advanced capitalist economies, namely "Fordism" and "financialisation". Our analysis unifies history and equilibrium in the sense that the nature of and the adjustment to the final equilibrium position depends on the objectives of the dominant social groups. Under Fordism, managers and workers are the dominant groups, and firms' profitability targets adjust to actual profitability. Such an adjustment mechanism has been suggested, but not really justified, by Lavoie (2002, 2003). Under financialisation, shareholders impose their objectives on managers and workers, and profitability targets are highly inflexible. We discuss how managers may have to react to this exogenous target and succeed in "adjusting reality to objectives" by adjusting their financial policies. We also consider

potential limits to this adjustment process, linked to external restrictions imposed by banks. Generally speaking, our simulations illustrate the possibility of "equilibrium without equilibrium"[3] in the sense that the economy as a whole may be in "equilibrium" (steady state) without all the actors being in "equilibrium" (unsatisfied objectives).

The paper is structured as follows. Section 2 reviews the debate over fully-adjusted positions in the existing literature and gives our own view on the matter. In the third section, we discuss the two fundamental conflicts within firms and develop the behavioural equations on which our SFC model is built. Section 4 presents the simulation results. The last section concludes.

2. Is the long-run equilibrium a fully-adjusted position? A critical review of the literature

2.1 Kaleckian answers and their critiques

The concept of a fully-adjusted position typically refers to the notion that, in the final equilibrium, actual and standard rates of utilisation must be equal (see the survey in Lavoie, 1995). However, Kaleckian and other authors have put considerable effort in defending the long-run endogeneity of the rate of capacity utilisation, thereby trying to preserve a degree of relevance for Keynesian analysis in the long run. Generally speaking, three types of answers to the "Classical challenge" have been given in the literature, and we will briefly examine some of them here. Below, we quote rather extensively from the respective articles, allowing us to contrast the different positions with our own one in the next subsection.

Chick and Caserta (1997) are amongst those authors who place themselves in the field of methodological criticism, denying the relevance of long-run equilibrium analysis for real world problems. This, they claim, leaves no room for history and change: "there is nowhere to go, nothing to learn, no scope for innovation or further evolution" (p. 224). Against the notion of final equilibrium they propose the new category of "provisional equilibrium" which they see as relevant for the "medium run". Faced with the question of whether an equilibrium rate of growth can be compatible with unadjusted capacity, they admit that "if what is referred to is final equilibrium, implying that all conflicts have been resolved and that what was there to be learned has been learned, the answer must be in the negative" (p. 233). By contrast, if provisional equilibrium is con-

[3] We thank Laurent Cordonnier for helping us to phrase this point.

sidered the relevant level of (historical) macroeconomic analysis, there may be "(local) equilibrium within (global) disequilibrium" (p. 225). Yet, Chick and Caserta conclude that "there can be nothing permanent in an equilibrium established on these foundations, for there must come a time when that process of learning is formalised and tested against reality" (p. 234). Even though we appreciate the general proposition by Chick and Caserta (1997) that equilibrium is not necessarily "a state of perfect harmony" (p. 233), their concept of "medium run" analysis seems to avoid the debate. In our view, heterodox economists should not abandon long-run analysis to orthodox economists, who quickly find refuge in the long run to deny any relevance to Keynesian ideas (see also Commendatore, 2006, p. 289). Besides, it seems conceptually difficult to make a meaningful distinction between the medium and the long run while refusing to analyse the endogenous forces of change linking the two together (see also Skott, 2008, p. 7, footnote 5).

A second answer proposed by Kaleckian authors can be found in e.g. Amadeo (1986), Lavoie (1995, 1996), Lavoie et al. (2004), Park (1997), or Dutt (1997). It consists in keeping the long run as the referential framework, while treating the standard rate of utilisation as an endogenous variable, such that a fully-adjusted position is obtained as a result of standard utilisation adjusting to actual utilisation. Nevertheless, these analyses have been subjected to heavy criticism. Here we quote only from some recent contributions. For instance, Shaikh (2007, p. 10) concludes:

- "From a CH (presumably meaning "Classical-Harrodian", TD, TvT) point of view, the claim that firms come to 'desire' whatever they get does nothing to address the problem that actual capacity utilization will be arbitrarily different from the lowest cost point (which includes economically necessary reserves)."

In a similar vein, Skott (2008, p. 12) questions the endogeneity of standard utilisation by means of the following analogy:

- "I may not know exactly how long it will take me to get to work in the morning since weather, traffic and many other variables may influence the commuting time. […] Still, uncertainty of this kind and the fact that I may not have a rigorously derived optimal departure time do not imply that my planned departure time adjusts adaptively toward the actual departure time. If I am late for class every day because the phone rings just as I am about to leave home, I do not respond by shortening my planned commuting time."

Applying this argument to the determination of the standard rate of utilisation by firms, Skott (2008, p. 11) maintains that

- "adjustments in the target would only be justified if the experience of low actual utilization make firms think that low utilization has now become optimal, and neither Amadeo nor Lavoie presents an argument for this causal link".

Kaleckian authors have been criticised for not being very clear about whether they see standard utilisation as a convention or as a target for firms. According to the critics, if it is merely conventional and determined by past values of actual utilisation, it is difficult to see the precise behavioural importance behind the standard rate of utilisation. Therefore, many authors have interpreted it as a target, which is linked to firms' profit maximising behaviour: the ideal, cost minimising point of production lies below maximum productive capacity (e.g. Kurz, 1986; Shaikh, 2007, p. 16; Skott, 2008, p. 7). On top of this, in a world of uncertainty, *additional* reserve capacity can help firms to react to unforeseeable variations in demand and to deter the entry of new competitors into their markets.[4] Now, some authors have argued that the endogeneity of the standard rate of capacity utilisation may stem precisely from firms' reaction to the time-varying risk of new entry by competitors into their markets. Dutt (1997), for instance, states that "firms may *reduce* their normal (or desired) capacity utilization if they expect a higher rate of entry than at present" (emphasis added). This assumption seems to be qualitatively similar to that by Lavoie (1995, 1996), according to which firms *reduce* the standard rate, when the actual rate of utilisation is low (Lavoie, 1996, p. 139, footnote 25). However, as argued by Skott (1989, p. 54; 2008, p. 13), the precise relationship between (the rate of change of) desired utilisation on the one hand and actual accumulation or utilisation on the other is not quite clear. For instance, one may as well argue that there is a *negative* relationship between current utilisation (or accumulation) and the desired rate of utilisation: the risk of new entry increases when demand is high and firms react to this by desiring more excess capacity, i.e. lowering the standard utilisation rate. This, however, would exacerbate, rather than reduce, the divergence between standard and actual rates. The debate continues (e.g. Lavoie, 2008; Shaikh, 2007; Skott, 2008).

The last response to the Classical challenge that we will briefly review is the one pursued by Lavoie (2002, 2003). Standard utilisation is now treated as an exogenous variable, but "the long-run equilibrium is not, in general, a fully-adjusted position"

[4] As noted by Shaikh (2007, p. 16), "the output corresponding to normal capacity utilization is perfectly compatible with […] a level of utilization somewhat below the exact 'ideal' point".

(Lavoie, 2002, p. 181), as actual utilisation may persistently deviate from its standard rate.[5] Lavoie's model combines target return pricing with conflict inflation. In the long run, firms' target rate of return is assumed to adjust to the actual profit rate, and this implies that the latter differs from the target rate of return actually incorporated into prices (due to workers' real wage resistance), and hence that actual utilisation differs from standard utilisation. As we will argue below, this path chosen by Lavoie appears very promising to us, because it acknowledges the fact that it may be impossible for firms to realise all their different objectives, including utilisation and profit targets, as a result of social conflict, although Lavoie does not explicitly put the argument this way.

2.2 Conflicting objectives and equilibrium adjustment: the case for endogenous utilisation

The central claim of this paper is that in a world where different groups have (a multitude of) different objectives, there is no reason to consider the equality of actual and standard utilisation as the (only possible) *conditio sine qua non* of an acceptable long-run equilibrium. More specifically, we will provide arguments for why firms may accept to violate their utilisation target in order to realise their growth target (Fordism) or profitability target (financialisation), respectively.

To some extent, our argument rejoins the methodological critique of equilibrium analysis by Chick and Caserta (1997). However, rather than considering situations of "(local) equilibrium within (global) disequilibrium", we are more interested in the possibility of what one may call "global equilibrium despite local disequilibrium": the system as a whole adjusts to a long-run position, although important objectives formulated by the agents composing the system (e.g. desired utilisation) may not be realised. Also, whereas for Chick and Caserta (1997), it is learning effects that prevent equilibria from being permanent, we emphasise the role of conflict in preventing equilibria from being fully-adjusted, while allowing them to be permanent. Of course, "permanent" here does not necessarily imply "politically sustainable" and the long-run positions we are interested in reconcile equilibrium and history in the sense that the power relations and social institutions within which conflict takes place evolve through history. Rather, it means that the adjustment to the final equilibrium position is "fully completed", without

[5] Dutt (1990, pp. 58 et seq.) and Lavoie (1992, pp. 327 et seq.) argue that firms may accept a deviation of actual from standard utilisation, as long as it remains within a limited range. While this certainly is a valid argument, it nevertheless seems to avoid the analytical debate and has been interpreted as a step away from the steady-state framework (see Palumbo and Trezzini, 2003, p. 128, footnote 13).

internal economic forces for change. One may therefore argue that, in this temporal sense, the equilibria we have in mind are no less "fully-adjusted" than those in which actual and standard rates of utilisation are equal. The conventional use of the term "fully-adjusted positions" appears somewhat unfortunate to us because it suggests that all of firms' objectives are "fully" realised, as soon as they operate at a particular rate of capacity utilisation.

It seems to us that, in view of our general methodological argument, the debate between Kaleckian and Classical authors over fully-adjusted positions should appear in a somewhat new light. For instance, Skott (2008, p. 7) argues that as soon as one abstracts from problems of aggregation and assumes that "firms have a well-defined objective (to maximise profits) […], these assumptions make it hard to conceive a steady-growth scenario in which firms are content to accumulate at a constant rate despite having significantly more (or less) excess capacity than they desire. The only real question concerns the determination of the desired rate of utilisation." (p. 7) Yet, as implied (but not explicitly argued) by Lavoie (2002, 2003), in situations of conflict within the firm it may simply be impossible for firms to realise both their utilisation target and their profitability target. To take up the analogy proposed by Skott (2008, p. 12), it may well be the case that I am not able to leave the house at the planned departure time, because the telephone rings every day just as I am about to leave home, because some other individual (who could be a friend, a colleague, a competitor or an enemy) demands my attention and I am not able (or willing) to disappoint her. In this case, I do not respond by shortening my planned commuting time, but I trade off the objective of being at work on time against the (apparently equally or even more important) objective (or constraint) to talk to my friend (or enemy). As we discuss below, the utilisation rate may act as an accommodating variable, allowing firms to react to inconsistent claims among social groups. This resort may even be particularly attractive for firms, because, given that they hold reserve capacity for various reasons, operating away from the desired utilisation rate does not necessarily imply cost-inefficient production. In other words, we find a microeconomic equivalent of the paradox of costs: both within the firm and at the macroeconomic level a variable utilisation rate reconciles conflicting objectives.

Although we believe our argument to be quite general and potentially relevant even in the absence of social conflict within the firm,[6] in the remainder of the paper, we ap-

[6] Even if firms have a clearly defined final objective (to maximise profits), under conditions of uncertainty they may have to compromise on different intermediary objectives allowing them to achieve their

ply it only to the specific framework of conflict inflation with target return pricing, developed by Lavoie (2002, 2003). We attempt to provide some behavioural justification of the adjustment mechanism proposed by Lavoie, and argue that it may be empirically relevant for what one may want to call a "Fordist regime". Besides, we will consider a different adjustment mechanism which seems more appropriate to us when it comes to an analysis of the current, finance-dominated period of capitalism. In both configurations of the model, a "fully-adjusted position" (in the traditional sense) cannot be reached as a result of conflicting claims by workers, managers, shareholders, and creditors.

3. Conflicting claims and the realisation of firms' objectives: micro- and macroeconomic perspectives

In this section, we develop some core behavioural equations on which we will then build our SFC model. We reassess two types of conflict reflecting the two dimensions of all macroeconomic Post-Keynesian models of growth and distribution. In the first conflict, managers and shareholders confront their respective claims regarding the orientation of firms' investment policies, and in the second conflict, workers express their distributional aspirations and confront them to firms' mark-up targets. Building on Lavoie (2002, 2003), we establish a "common language" for managers, workers and shareholders and address the question of the realisation of firms' objectives at the macroeconomic level as well as the implications for the debate over fully-adjusted positions.

3.1 Accumulation policy and the manager-shareholder conflict

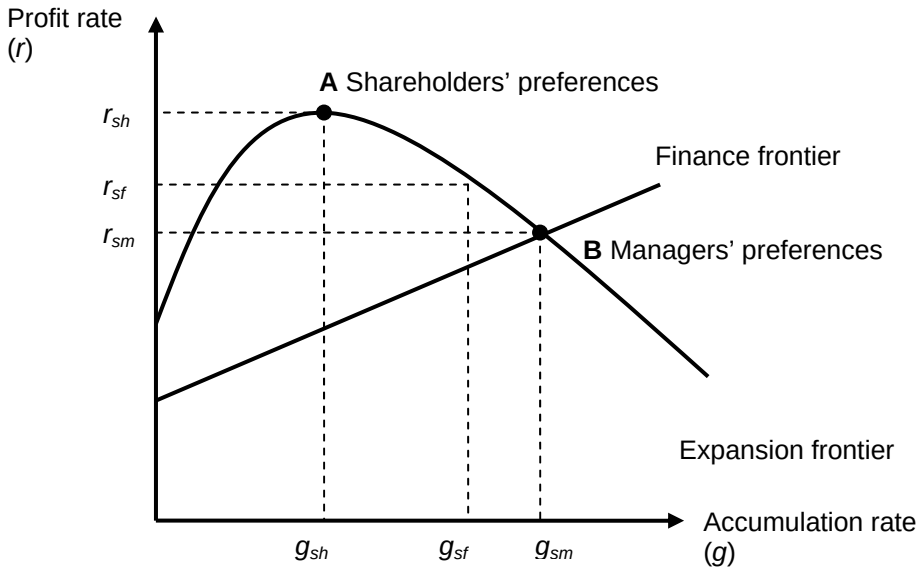
We analyse the shareholder-manager conflict in terms of the traditional Post-Keynesian theory of the firm, extended for financialisation considerations.[7] The individual firm faces two distinct constraints, represented in figure 1 by the expansion frontier and the finance frontier. The expansion frontier shows the expected profitability of the firm's investment possibilities. It is assumed to be upward sloping for low levels of accumula-

final objective. For instance, both reserve capacity and a low leverage ratio are means for firms to deal with the imponderabilities of the future (for a discussion of fundamental uncertainty, see Davidson, 1972). It may, for instance, be the case that current utilisation exceeds desired utilisation but that the firm is nevertheless reluctant to increase accumulation because this may require it to increase leverage to an irresponsibly high level. In other words, real fragility (risk of new entry or inability to respond to sudden increases in demand) may have to be traded off with financial fragility (risk of default due to high leverage). See also the discussion of our simulation results below.

[7] See Lavoie (1992) for an exposition of the traditional Post-Keynesian theory of the firm, and Crotty (1990), Stockhammer (2005-6) and Dallery (2008) for an extension to financialised firms.

tion (due to economies of scale and scope, etc.), and downward sloping for higher levels (due to technical and logistical inefficiencies, etc.) (see Lavoie, 1992, pp. 114 et seq.). The finance frontier indicates the maximum rate of accumulation that the firm can finance with a given profit rate. In accordance with Kalecki's (1937) "principle of increasing risk", the slope of the finance frontier is positively related to the firm's leverage ratio.

Figure 1: The Post-Keynesian firm and the shareholder-manager conflict



Points A and B in figure 1 indicate the respective preferences of shareholders and managers in terms of accumulation and profitability. As is traditionally assumed in Post-Keynesian analysis (Galbraith, 1967; Wood, 1975), managers mainly seek growth, as a means to ensure the firm's survival by increasing its power, limiting uncertainty, etc. At the opposite side, shareholders seek profitability for intuitive reasons: because they hold diversified portfolios, they are not really committed to the long-term perspectives and the survival of individual firms (e.g. Crotty, 1990). The shareholder-manager conflict arises from the growth-profit trade-off, as materialised in the downward sloping segment of the firm's expansion frontier in figure 1. For shareholders, the accumulation decision is subordinated to the profitability target, whereas managers are interested in profitability mainly as an intermediate objective and as a means to finance a desired rate of growth.[8] In figure 1, when shareholders fully impose their preferences on managers,

[8] Lavoie (1992, p. 106) tells us with respect to the objectives of the firm as a whole: "Put briefly, growth is the objective, and profits are the means to realize this objective". This assertion was certainly valid for

firms will target a high profit rate, r_{sh}, which requires a low accumulation rate, g_{sh}. In the example, it is therefore shareholders' preferences, and not the finance constraint, which determine firms' accumulation policies. Conversely, when managers are fully dominant, the finance constraint is the limiting factor for the firm's accumulation decision, g_{sm}, as was traditionally assumed by the Post-Keynesian theory of the firm. Managers' profitability target, r_{sm}, therefore incorporates the finance constraint and adjusts passively to the point of intersection between the expansion frontier and the finance frontier. Despite this very different appreciation of the growth-profit trade-off by shareholders and managers, it is possible to express firms' objectives in terms of a target profit rate, r_{sf}, which is a weighted average of the profit rate desired by shareholders, r_{sh}, and the profit rate, r_{sm}, which managers would require in order to be able to finance accumulation rate g_{sm}:

$$(1) \qquad r_{sf} = \delta_1 r_{sh} + (1-\delta_1) r_{sm}, \qquad \text{with } 0 \leq \delta_1 \leq 1.$$

Based on these *microeconomic* considerations, a general *macroeconomic* investment function can be formulated as:

$$(2) \qquad g^i = I/K = \gamma_0 - \gamma_1 r_{sf,-1} - \gamma_2 LEV_{-1} + \gamma_3 u_{-1}.$$

Equation (2) reflects the three components of firms' accumulation decision: the "preference side" (given by the manager-owner conflict), the "constraint side" (given by the finance frontier), and the "opportunities side" (given by the expansion frontier). Firms' investment decisions are constrained by the preference for profitability, r_{sf}, or by an external financing constraint, indicated by the leverage ratio, *LEV*, which proxies the slope of the finance frontier in figure 1. Investment is also assumed to be positively related to the utilisation rate, u, as an increase in aggregate demand can be represented as an outward shift of the expansion frontier of the individual firm. In short, we argue that the investment function proposed above can be seen as directly grounded in the Post-Keynesian theory of the firm. Furthermore, it can be argued that during the Fordist period, accumulation has been constrained mainly by the availability of finance, while in the financialisation period, shareholders' preferences have been the main limiting fac-

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managerial firms, but in the new institutional configuration of finance-dominated firms, it is often held that profits are no longer a mean to an end, but they become an end in itself.

tor. For simplicity, in what follows we shall assume $\gamma_1 = 0$ and $\gamma_2 > 0$ in equation (2) for the Fordist regime, and $\gamma_1 > 0$ and $\gamma_2 = 0$ for the financialisation regime.

3.2 Distribution and the manager-worker conflict

We have just seen that the owner-manager conflict can be expressed in terms of target profit rates, although the true objectives of shareholders and managers are different ones. For workers, the third group within the firm, the true objective is a real wage rate or a wage share in value added. However, following the target return framework with conflict inflation proposed by Lavoie (2002, 2003), we are able to translate the wage share target into a "profit rate target", r_{sw}, as well. The conflict over distribution is then a conflict between workers' aspirations, r_{sw}, and the result of the manager-shareholder conflict, r_{sf}. In our model, shareholders' claims strongly affect income distribution, since they are integrated *a priori* in the process of wage bargaining.

Formally, the conflict inflation framework with target return pricing can be summarised as follows. Firms set a margin, θ, on unit labour costs, wl, which allows them to obtain a target rate of profit, r_s, provided the rate of capacity utilisation is at its normal level, u_s, which is treated here as exogenously given. As shown by Lavoie (2003, pp. 57-8), firms' mark-up pricing procedure can be expressed as the general cost-plus pricing formula given by equation (3), with the profit margin being determined by equation (4), where $\sigma = K / Y^{pot}$ is the capital-full capacity output-ratio. From national accounting it then follows that the profit rate seen from the cost side, r^{pc}, can be written as in equation (5).

$$(3) \qquad p = (1+\theta) wl \,,$$

$$(4) \qquad (1+\theta) = u_s / (u_s - r_s \sigma) \,,$$

$$(5) \qquad r^{pc} = r_s u / u_s \,.$$

Effective price changes decided by firms depend on the divergence between their target profit rate, r_{sf}, and the target profit rate actually incorporated into prices, r_s, as well as on their ability to pass through expected wage increases on prices:

$$(6) \qquad \hat{p} = \Psi_1 (r_{sf} - r_s)_{-1} + \Psi_2 \hat{w}^e \,,$$

where $\widehat{p}$ is the rate of price inflation, $\widehat{w}^e$ is the expected nominal wage inflation, and Ψ_1 and Ψ_2 are indicators of firms' bargaining power. Analogously, workers obtain nominal wage increases according to the formula:

$$(7) \qquad \widehat{w} = \Omega_1 \left(r_s - r_{sw} \right)_{-1} + \Omega_2 \widehat{p}^e \, .$$

In equilibrium, where wage and price inflation are equal and the real wage constant, we have:

$$(8) \qquad r_s = \Psi r_{sf} + \Omega r_{sw} \, , \qquad \text{with } \Psi + \Omega = 1 \, .$$

We have to bear in mind that the profit rate actually incorporated into prices, r_s, is not an effective profit rate experienced by firms, but determines the actual distribution of income based on the balance of power between firms and workers, with the profit share being defined as $h = \theta / (1 + \theta)$. As shown by equation (5), the actual profit rate depends on aggregate demand (u).

3.3 The macroeconomic closure and the realisation of firms' objectives

Until here, we have seen how conflicting claims are formulated. Next, we have to study how these objectives can be met (or not) at the macroeconomic level. Conveniently for our purposes, the standard Kaleckian model allows one to formulate the macroeconomic closure in terms of profit rates, considered from the cost side and from the demand side. The rate of profit seen from the cost side, r^{pc}, is given by equation (5), while the effective demand constraint, r^{ed}, is obtained by confronting the accumulation function from equation (2) with a macroeconomic saving function, which in our model takes the following standard form:

$$(9) \qquad g^s = S / K = r - \beta_1 [(1 - s_f)(r - i_l LEV)_{-1} + i_l LEV_{-1}] - \beta_2 q_{-1} \, .$$

It is assumed that workers do not save, such that total saving relative to capital stock depends on the profit rate, firms retention ratio, s_f, and interest obligations given by the interest rate, i_l, set by banks, and the leverage ratio, and rentiers propensity to consume out of capital income, β_1, and out of wealth, β_2 (Tobin's q being defined here as households' net worth relative to capital stock).

If we wish to set up system dynamics, we have to ask what firms' objectives really are. The debate over fully-adjusted positions in the existing literature always refers to standard utilisation. For us, given the centrality of the profit rate in the two conflicts opposing shareholders, managers and workers, it appears more appropriate to structure the debate around target profit rates. However, from the preceding discussion, it can be immediately seen that fully-adjusted positions in the traditional sense may be systematically prevented by the presence of conflicting claims. As can be seen from equations (5) and (8), operating at standard utilisation ($u^* = u_s$) allows the realisation of firms' profitability objectives ($r^* = r_{sf}$), if and only if there is no conflict over income distribution ($r_s = r_{sf} = r_{sw}$). As soon as workers have some power to oppose firms' "distribution objective" ($r_{sf} > r_s > r_{sw}$), firms have to operate above standard utilisation ($u^* > u_s$) in order to reach their profitability objectives ($r^* = r_{sf}$). We may arrive at a "fully-adjusted position" regarding profitability, but this does not coincide with a fully-adjusted position in the usual sense. The rate of utilisation is still seen as a free variable, and this ensures that firms' and workers' objectives are not *fully* contradictory, as variations in utilisation allow them to partly reconcile their respective profitability and distribution targets.

If we make $r^* = r_{sf}$ a condition for long-run equilibrium, implying that firms achieve their profitability, or growth, target, two different types of adjustment are possible. In Lavoie (2002, 2003), firms' profit target rate adjusts to the actual profit rate, as long as objectives are not met. For us, this reveals a managerial, or "Fordist", way of thinking the firm by which profitability objectives are subject to growth objectives, and where, according to Lavoie (1992, p. 107), "shareholders play a purely passive role". In the framework of our model, this translates into $\delta_1 = 0$ in equation (1), and the adjustment process proposed by Lavoie (2002, 2003) becomes:

$$(10) \qquad \Delta r_{sf} = \Delta r_{sm} = \rho_1 (r^*_{-1} - r_{sm,-1}) .$$

Equation (10) implies that, in equilibrium, firms prefer to operate at standard profitability rather than at standard utilisation. While Lavoie (2002, 2003) does not provide much of an economic rationale for this adjustment mechanism, we may derive a "Fordist interpretation" from our discussion of the Post-Keynesian theory of the firm above. In the Fordist case, firms (managers) derive their profitability target from their growth target. As noted elsewhere by Lavoie (2004, p. 52), "for those firms that attempt to maximise their growth rate, the target rate of return which *should be* incorporated into

prices is the one that is determined by the intersection of the expansion frontier and the finance frontier" (our translation). However, in the present model, where firms face the conflict with workers, they *cannot* incorporate their target rate of return into prices. Therefore, as formalised in equation (10), firms adjust their target rate of return to the actual profit rate allowed for by demand conditions. Suppose there is a permanent increase in demand, reflected in an increase in actual utilisation and profit rates, and, graphically, in an upward shift of the expansion frontier for the individual firm. Managers realise that a higher accumulation rate becomes possible, but that, seen from the financing side, this requires a permanently higher profit rate. Then, by adjusting their target rate of return upwards, they claim a larger profit share, but their preference for higher growth also requires an increase in utilisation.[9] After all, capitalism remains a conflictive system even under Fordism, and firms' quest for growth (market shares) as well as the distributional struggle with workers prevails over concerns about the optimal utilisation rate. Of course, there may be some maximum utilisation rate that managers are willing to accept.

In the era of financialisation, shareholders seem to expect their profitability claims to prevail over all other objectives. Shareholders impose their interests on managers (for simplicity, assume $\delta_1 = 1$ in equation (1)), who then attempt to transfer these claims on workers in the wage bargaining process. In contrast to Fordism, the "financial nexus" now dominates the "wage nexus", as French Regulationist authors may put it. In a finance-dominated economy, shareholders express very inflexible claims, and they expect these claims to be met. Equation (10) no longer holds. Rather, whenever the effective profit rate is below shareholders' claims, managers are placed in a situation of failure, and they cannot afford to remain passive in an environment where unsuccessful managements can be easily overthrown by shareholders. We therefore propose a simple adjustment mechanism that reflects shareholders' pressure on management, given by equations (11) and (12):

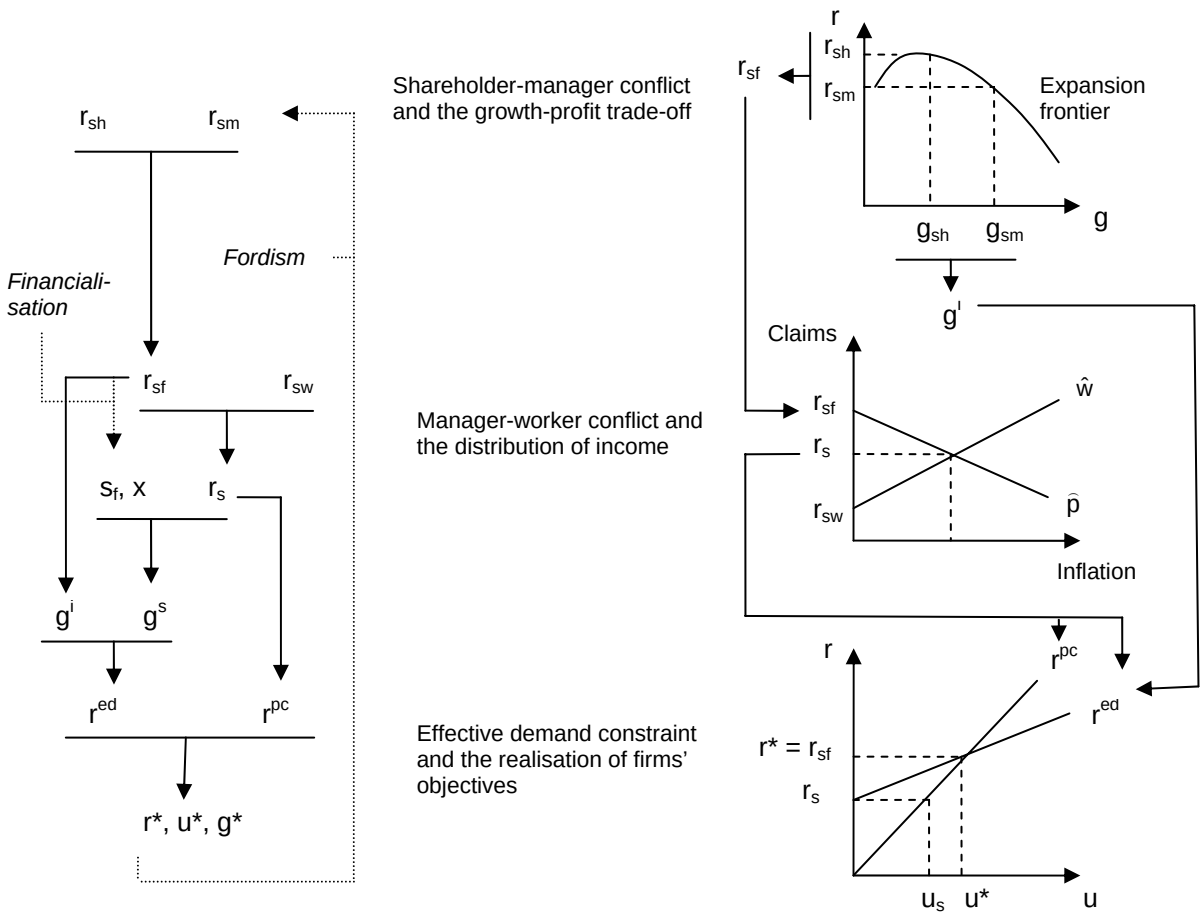
$$(11) \qquad \Delta s_f = -\delta_2 (r_{sf,-1} - r^*_{-1}),$$

$$(12) \qquad \Delta x = -\delta_3 (r_{sf,-1} - r^*_{-1}),$$

[9] As noted by Lavoie (2002, 2003) and Missaglia (2007, p. 79), the adjustment process described by equation (10) is stable due to $dr / dr_s < 0$.

where s_f is firms' retention rate of profits, and x is the proportion of investment financed through new equity issues.[10] As long as shareholders' profitability claims are not realised, shareholders require that managers adjust their financial policies and distribute a larger part of profits and get into debt to buy back firms' shares. At the microeconomic level, this is the only way for managers to increase the rate of return on equity and to signal to shareholders that they are confident with regard to firms' future profit opportunities. Paradoxically, as will be shown in the next section, it is precisely this microeconomic mechanism which allows firms, under certain conditions, to realise the profit rate expected by shareholders at the macroeconomic level, as a higher rate of distributed profits increases aggregate consumption by rentiers and hence profits.

Figure 2: Conflicting claims and the realisation of firms' objectives



[10] In insightful papers, Charles (2008) and Shaikh (2007) also introduce adjustment mechanisms involving firms' retention ratio, but they do so in quite different ways. For Charles (2008, p. 9), managers target some level of the retention ratio in order "to preserve their financial autonomy". When debt increases, managers are able to cut dividends and to increase their retention ratio in order to control uncertainty. For us, in a financialised economy, the causality is reversed: managers are obliged to distribute more dividends by means of increasing debt. For Shaikh (2007), the retention ratio adjusts to the gap between normal and actual utilisation rates. But the underlying economic rationale does not appear very clear to us.

The overall dynamics of the model are summarised in figure 2. On the left hand side, we recall the different profit rates and their link with aggregate demand dynamics. On the right hand side, we reproduce the sequential graphical representations of these processes. Indeed, we have four profit rates reflecting the respective claims of three social groups: r_{sh} and r_{sm} determine the profit rate pursued by firms, r_{sf}, and r_{sw} stands for workers' claims in the wage bargaining process. The confrontation of firms' objectives and workers' claims, weighted by their respective bargaining power, gives rise to the effective distribution of income between wages and profits, as reflected in the profit rate effectively incorporated into prices, r_s. Then, the effective demand constraint, r^{ed}, depends on investment, g^i, and saving, g^s, which are influenced by firms' retention ratio, s_f, and equity issuances, x, and the profit share, determined by r_s. The effective profit rate results from the confrontation of the effective demand constraint with the profit rate seen from the cost side, r^{pc}. Under Fordism, the effective profit rate feeds back into firms' target profit rate, while under financialisation dividend payments and share buybacks may provide a means to adjust actual to target profitability. It can be clearly seen in the figure that the objectives $u = u_s$ and $r = r_{sf}$ are mutually exclusive due to $r_{sf} \neq r_{sw}$.

4. Conflicting claims and adjustment processes: simulations with a stock-flow consistent model

Based on the arguments developed in the previous section, we have built a simple stock-flow consistent macroeconomic model, following the methodology developed by Wynne Godley and Marc Lavoie (Lavoie and Godley, 2001-2; Godley and Lavoie, 2007). The SFC framework is particularly appropriate for long-run equilibrium analysis since it allows simulating the traverse from one steady state, or final long-run position, to another, while clearly showing the adjustment processes towards these final equilibria.

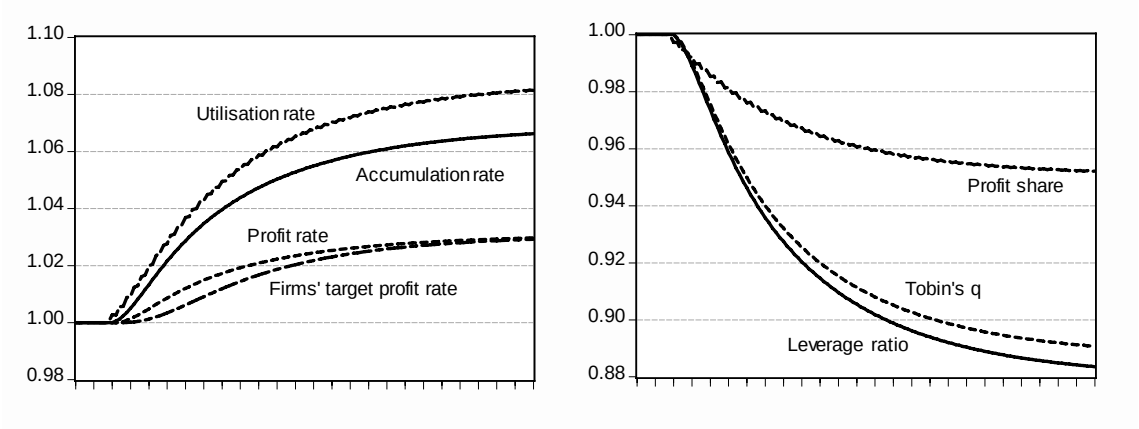
The basic structure of the model is very close to the one developed by Lavoie and Godley (2001-2). There are three sectors in our closed, private model economy: private households (workers and rentiers), firms, and banks, and there are two financial assets: money and equities. The main extension is that we integrate the conflict inflation framework and alternative types of adjustment mechanisms into the model to deal with the question of fully-adjusted positions. While all the crucial behavioural equations of the model have already been discussed in the previous section, the full set of equations is provided in the Appendix.

For our simulations, we make two different sets of assumptions regarding the investment decision and the equilibrium adjustment mechanism, reflecting the balance of power between workers, managers, shareholders and bankers. The first frame ("Fordism") is essentially similar to the model proposed by Lavoie (2002, 2003). In the second frame, we analyse a "financialisation regime".

4.1 Lavoie's (2002, 2003) model: a "Fordist" interpretation

The term "Fordism" is used to describe the very particular accumulation regime during the thirty-year period after World War II, where workers were in a favourable bargaining position and where economic growth was strong and the wage share showed a tendency to increase.[11] Therefore, in our first simulation, we will give a positive shock to workers' bargaining strength, given by Ω_1 in equation (7). As discussed above, we assume $\delta_1 = 0$ and $\gamma_1 = 0$ in equations (1) and (2): managers fully impose their objectives on shareholders. This is the Galbraithian "technostructure". Managers' investment decisions are constraint by aggregate demand and the availability of finance and are therefore relatively sensitive to the leverage ratio, due to either liquidity constraints or a reluctant attitude towards rising debt ratios. At the same time, because managers are above all interested in growth, they are very pragmatic in the formulation of their profitability target, as formalised in equation (10).

Figure 3: Larger bargaining power of workers: "cooperative capitalism"



[11] The "Fordist accumulation regime" has been extensively described by the French Regulation School, following Aglietta (1976). See also Marglin and Schor (1990).

Figure 3 shows our simulation results for this configuration of the model. The left part shows the positive impact of an increased wage share on growth, utilisation and profitability. We see that managers' (firms') profitability target gradually adjusts to the actual profit rate. Clearly, the paradox of costs holds, and we are in a "stagnationist demand regime" ($\partial u / \partial r_s < 0$) with "wage-led growth" ($\partial g / \partial r_s < 0$), as described by Bhaduri and Marglin (1990). Since the positive effect of increased utilisation on the profit rate overwhelms the negative effect of a decreasing profit share, we are also in a regime of "cooperative capitalism" ($\partial r / \partial r_s < 0$). It can also be expected that unemployment decreases.[12]

Our results also permit us to re-emphasise that the growth-profit trade-off is only a microeconomic trade-off. In this Fordist case, profits and growth go hands in hands at the macroeconomic level. First, accumulation increases due to increased demand, and then firms increase their profitability (growth) objective. By assumption, this has no direct effect whatsoever in the investment function.[13] However, the higher actual rate of profit and the financing requirements linked to the higher accumulation rate encourage managers to reformulate their distributional claims vis-à-vis workers. In technical terms, after the initial decrease in the slope of the $\bar{w}$-curve in figure 2, the $\hat{p}$-curve gradually shifts upwards with the increase in firms' target rate of return, thereby mitigating somewhat the distributional effects of workers' enhanced bargaining power.

Our simulation results may provide an additional argument for why firms would accept a deviation from their utilisation target. As argued above, the standard rate of utilisation can be seen to derive from some optimality condition linked to firms' position in the goods market (cost-efficient production, ability to respond to variations in demand and to deter new entrants). However, this optimality condition may have to be traded off not only with the profit rate (growth) target, but also with firms' concerns regarding their financial position (see our argument in footnote 6). As can be seen from the right part of figure 3, both the leverage ratio and Tobin's q fall following the initial shock. Firms certainly did not care much about Tobin's q during Fordism. However, a drop in

[12] In the model, we somewhat crudely assume that the unemployment rate is inversely related to the utilisation rate. We have also introduced a simple feedback effect linking (changes in) the unemployment rate with workers' distributional claims and bargaining strength (see Appendix).

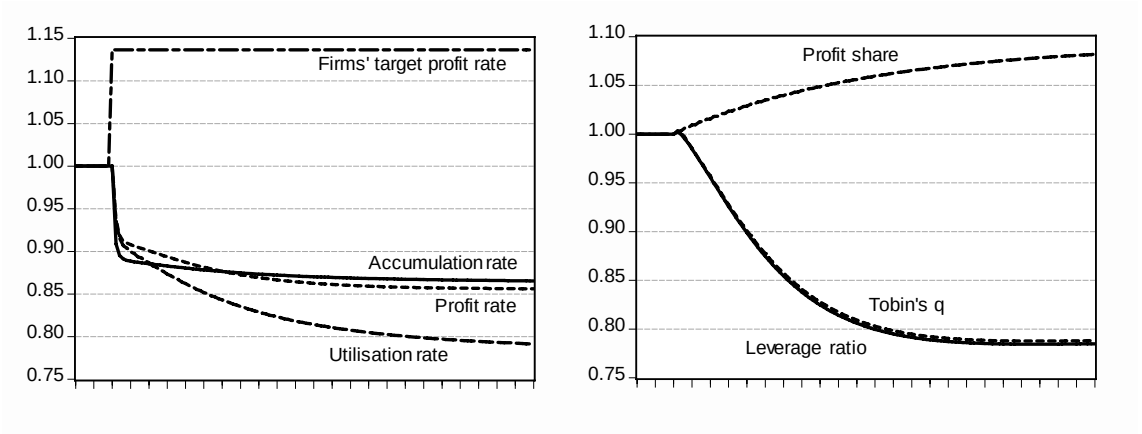
[13] We have also conducted simulations with a positive coefficient on target profitability in the investment function. With this alternative configuration, aggregate demand is still stagnationist and growth wage-led, but the profit rate is negatively affected by a higher wage share ("conflictive capitalism" in the Bhaduri and Marglin, 1990, sense). This result is reminiscent of the historical experience of the end of Fordism with an emerging pressure on firms' accumulation policy stemming from increasing profitability claims.

the leverage ratio should be highly appreciated by managers because it reduces financial fragility and the risk of default. We may therefore argue that managers accept the deviation of utilisation from target because it allows them not only to achieve a higher profit rate, but also to operate at a lower leverage ratio.[14]

4.2 Financialisation I: the "paradox of greed"

In the financialisation era,[15] shareholders impose their views on firms' policies. For simplicity, we assume $\delta_1 = 1$ in equation (1) so that shareholders' profitability target becomes the target of firms. Besides, equation (10) does not hold anymore. The shareholder-manager conflict delivers the target profit rate for firms, which then gives rise to firms' investment decision and is also transferred to the wage bargaining process. Target profitability becomes the dominant factor in the investment function (large γ_1 in equation (2)), and for simplicity we assume that there are no financing constraints ($\gamma_2 = 0$ in equation (2)) implying that firms always operate above the point of intersection between the expansion and finance frontiers in figure 1. In terms of the conflict over income distribution, managers simply discharge the claims formulated by shareholders on workers. This sequential translation of shareholders' claims refers to the theory of risk transfer (e.g. Aglietta and Rebérioux, 2004).

Figure 4: Higher profitability claims by shareholders: the "paradox of greed"



[14] Of course, this rather informal argument relies on an inverse relationship between the rates of profit and utilisation on the one hand, and the leverage ratio on the other. However, such a configuration, which is reminiscent of Steindl's (1958) "paradox of debt", seems particularly relevant for the Fordist regime (see also Lavoie, 1995; Hein, 2006, 2007).

[15] See e.g. Boyer (2000), Krippner (2005), Palley (2008), van Treeck (2007), Hein and van Treeck (2008) for discussions of financialisation.

We first simulate the effects of an increase in shareholders' profitability claims, r_{sh}, in the absence of the adjustment mechanisms given by equations (11) and (12) above (see figure 4). In this case, shareholders will encounter a problem of realisation of their claims. Imposing their increased profitability target on managers and workers implies a direct negative effect on accumulation through the investment function, and an indirect one via the increase in the profit share. Not surprisingly for Keynesians, this depresses growth, utilisation and profit rates. In the absence of an adjustment mechanism, we find a "paradox of greed": the more shareholders want, the less they get.[16]

4.3 Financialisation II: variable financial policies, rentiers' consumption and indebtedness

Financialisation is not in reality so depressive, so we have to take into account some adjustment mechanisms allowing the economy to provide shareholders with what they want. Shareholders' claims can be fulfilled in reality, but this can only be the result of an unintended macroeconomic mechanism. Figure 5 summarises the dynamics of the model, when the adjustment processes introduced in equations (11) and (12) above, fully operate.

In the upper left part, we first observe a tendency towards depression after the initial shock. As before, higher profitability claims imply a direct drop in accumulation and an increase in the profit share, and hence a drop in utilisation, growth and profit rates. But then firms increasingly distribute profits to rentiers and buy back their shares (bottom left part). As a consequence, firms become increasingly dependent on debt financing and the leverage ratio, and hence interest obligations, increase (upper right). This further redistributes income to rentiers, and their consumption out of dividends, interests and wealth, leads to a recovery in profit and utilisation rates (upper left). The accumulation rate is then positively affected by the increase in the utilisation rate, but this does not compensate for the negative effect of increased profitability claims.[17] Indeed, we see that the virtual economy (personal net worth, Tobin's q) and the real economy (accumu-

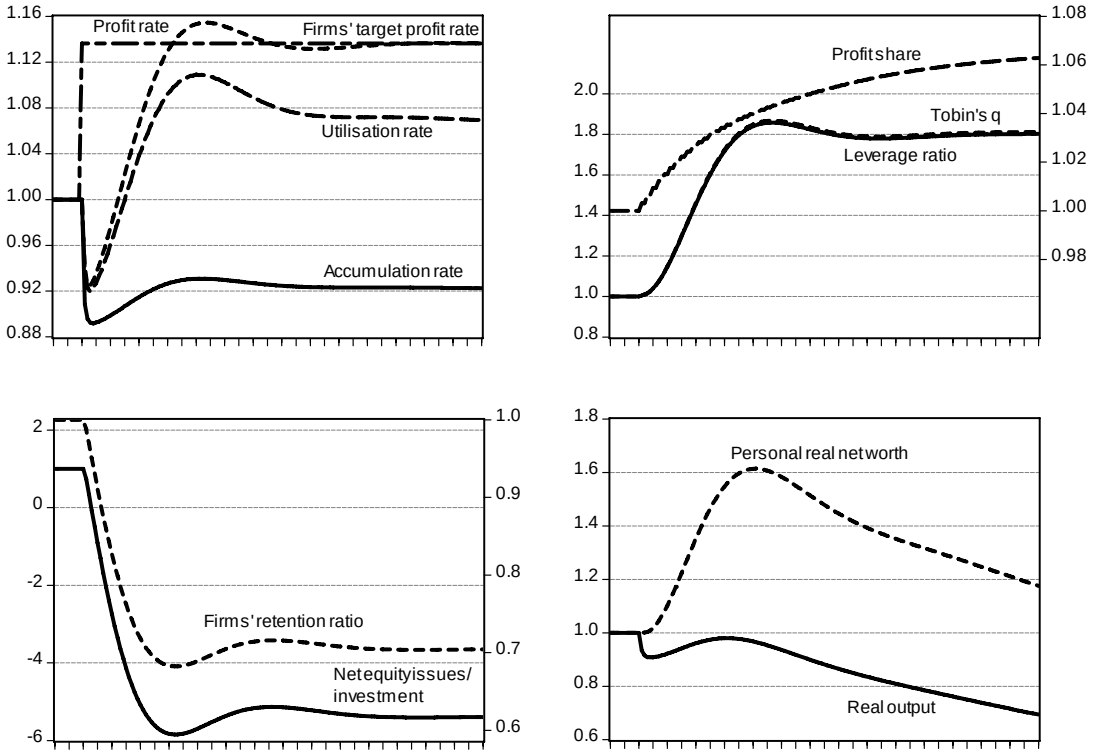
[16] This fundamental micro-macro divide seems to be neglected in much of the literature on "financialisation" (see van Treeck, 2008, or Skott and Ryoo, 2008, for a critique).

[17] The expansionary effects of the higher dividend payout ratio and share buybacks crucially depend on the coefficients on the leverage ratio in the investment function and on Tobin's q in the savings function. We have assumed for simplicity that investment is not finance-constrained in the financialisation regime. However, when this assumption is lifted, a higher dividend payout ratio and share buybacks can be contractionary under certain conditions. See van Treeck (2007), Skott and Ryoo (2008) and Hein and van Treeck (2008) for a discussion.

lation, output) "move in opposite directions", a possibility analysed in a different setting by Bhaduri et al. (2006).

In the new steady state, we are in a "fully-adjusted position" from the point of view of shareholders, the effective profit rate being equal to their target rate. Although firms cannot operate at the standard, cost-efficient rate of utilisation, the economy is in "global equilibrium" because of shareholders being in "equilibrium".

Figure 5: Higher profitability claims by shareholders: variable financial policies



The macroeconomic phenomenon found here reminds of "Kalecki's Law" stating that "capitalists earn what they spent". However, under conditions of financialisation, capitalists' expenditures are no longer concentrated on accumulation, but on consumption out of distributed profits and wealth.[18] Therefore, the accumulation regime of financialisation is a regime of "profits without investment" (Cordonnier, 2006). This regime can be sustainable but it requires a substantial rise in firms' indebtedness, which allows firms to buy back more shares and to distribute more dividends. This depend-

[18] See Cordonnier (2006) for this original reassessment of Kalecki's Law, and van Treeck (2007) for an extension within a stock-flow consistent model.

ency towards debt makes the economy increasingly fragile, and, as we discuss below, highly dependent on banks' willingness to grant credit to firms.

4.4 Financialisation III: the "glass ceiling of profitability"

In our last simulation, we consider the possibility that the operation of the adjustment processes illustrated above is limited by means of a shareholder-creditor conflict, involving a maximum leverage ratio tolerated by banks. In their enlightening contribution, Cordonnier and Van de Velde (2008) assess the sustainability of ever-increasing profitability claims in the era of financialisation. Because the realisation of profits depends on capitalist expenditure on investment and consumption out of distributed profits, the maximum level of profitability that may be realised is given by the extent to which banks are willing to grant loans to firms. If shareholders express claims that require leverage to go beyond this maximum level, the system is confronted with a "glass ceiling of profitability". For Cordonnier and Van de Velde (2008), this will lead the economy into a depressionary spiral and firms will increasingly restrict their investment spending. Here, we adopt a different hypothesis. If shareholders' claims are unachievable, shareholders will have to accept the ultimate dominance of banks, and the economy will gravitate around the maximum leverage ratio tolerated by banks.[19] The adjustment mechanisms from equations (11) and (12) are generalised in equations (11') and (12'). When the maximum leverage ratio, or "glass ceiling of profitability" is hit, banks will oblige firms to reduce their dividend payout ratio and share buybacks. Managers do as much as they can to satisfy shareholders, but ultimately creditors are the dominant actors in the economy.

(11') $$\Delta s_f = -\delta_2 (r_{sf,-1} - r^*_{-1}) + \delta_{21} (levc - lev_{-1}),$$

$$\text{with } \delta_2 = \begin{cases} 0 & \text{if} \quad levc > lev_{-1} \\ 1 & \text{if} \quad levc < lev_{-1} \end{cases}, \; \delta_{21} = \begin{cases} 1 & \text{if} \quad levc > lev_{-1} \\ 0 & \text{if} \quad levc < lev_{-1} \end{cases},$$

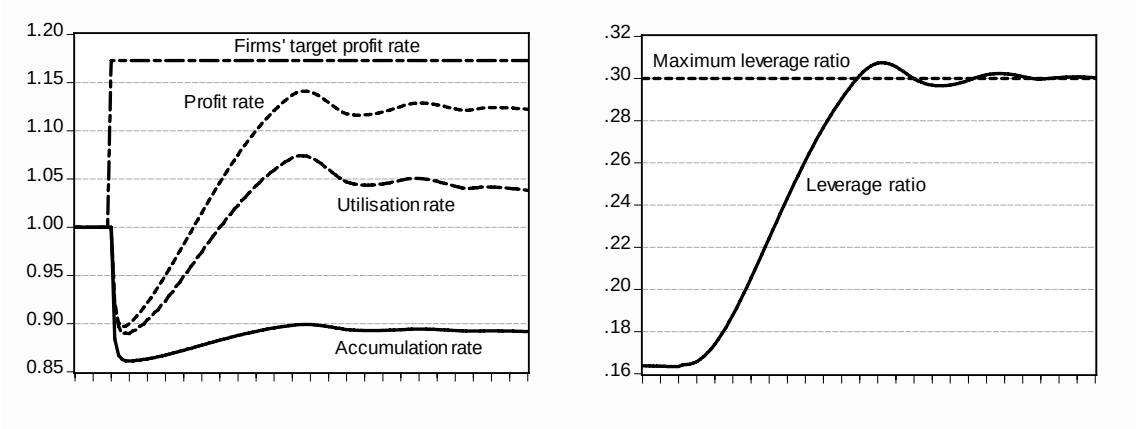
(12') $$\Delta x = -\delta_3 (r_{sf,-1} - r^*_{-1}) + \delta_{31} (levc - lev_{-1}),$$

$$\text{with } \delta_3 = \begin{cases} 0 & \text{if} \quad levc > lev_{-1} \\ 1 & \text{if} \quad levc < lev_{-1} \end{cases}, \; \delta_{31} = \begin{cases} 1 & \text{if} \quad levc > lev_{-1} \\ 0 & \text{if} \quad levc < lev_{-1} \end{cases}.$$

[19] We could also imagine an endogenous maximum leverage ratio to deal with cyclical animal spirits by banks (Minsky, 1986). Once reached, it could continuously drop and lead the economy into the depressionary spiral described by Cordonnier and Van de Velde (2008).

The simulation results are shown in figure 6. We record essentially the same dynamics as in figure 5, but the adjustment towards shareholders' profitability claims is not fully completed. In the new steady state, the economy as a whole is in "global equilibrium" without shareholders being in "equilibrium", but with banks imposing their objectives.

Figure 6: Higher profitability claims by shareholders: the "glass ceiling of profitability"



5. Conclusions

In this paper, we have reassessed the debate over "fully-adjusted positions" in a conflicting claims framework with target return pricing. We have argued that the adjustment to long-run equilibrium positions should not be framed exclusively in terms of the standard rate of utilisation. Rather, firms may have to compromise on different objectives, in particular when there are conflicting claims by different social groups inside and outside firms. We have applied this general argument to two different historical configurations of capitalism, which we have loosely defined as "Fordism" and "financialisation". Building on Lavoie (2002, 2003), we have developed a "common language" for shareholders, managers, and workers, allowing us to analyse the different conflicts opposing these groups in terms of target profit rates. We have been able to produce simulation results that seem broadly consistent with the stylised facts of both the Fordist and the financialisation periods.

We hope that our argument can be seen as another step towards a reconciliation between long-run equilibrium analysis and more historically oriented macroeconomics. In our model, the nature of and the adjustment to the final equilibrium position is historically-determined and depends on the objectives of the dominant social groups. In the

Fordist era, managers and workers were the leading groups. Managers were dominant vis-à-vis shareholders in their investment decisions, which were oriented towards expansion rather than profitability and only constrained by aggregate demand and the availability of finance, but not by shareholders' profitability claims. Workers imposed increases in the wage share, and firms resisted workers' claims only to the degree to which actual profitability increased. Firms adjusted their profitability targets to actual profitability. With financialisation, shareholders formulate inflexible profitability objectives, which are imposed on both managers and workers.[20] We have discussed a simple macroeconomic mechanism that may actually allow shareholders to achieve their target. This shareholder-dominated long-run equilibrium is, however, subject to the conflicting objectives of the banking sector, which may wish to keep firms' debt ratios below some maximum level.

Clearly, much more work needs to be done. Both our "Fordist" interpretation of the adjustment mechanism proposed by Lavoie (2002, 2003), and our particular view of conflicting claims in the financialisation regime are incomplete. For instance, our attempt to formulate the various objectives of different actors in terms of target profit rates may seem simplistic. Therefore, one may wish to consider the implications of shareholders targeting some measure of financial profitability (earnings per share, return on equity, etc.) rather than a real profit rate. Also, adding further actors and sectors to the model may increase the dimension of conflict in the economy. For instance, as noted by Duménil and Lévy (1999), the Central Bank may not tolerate every rate of capacity utilisation and the potential implications for the rate of inflation. Similarly, the objectives of government and the foreign sector could be considered.[21]

Despite these lacunae, we hope that our work contributes to opening up the debate over fully-adjusted positions, which has been intriguing heterodox economists for so long.

[20] Epstein (1992) has also discussed different historical configurations in terms of capital-labour and industry-finance relations.
[21] Missaglia (2007) has extended the framework proposed by Lavoie (2002, 2003) to the open economy.

Appendix: Model variables and equations

Endogenous variables:
c_r: Total real consumption
cg: Capital gains
cg_exp: Expected capital gains
cons: Total consumption
cr: Rentiers' consumption
cr_r: Rentiers' real consumption
cw_r: Workers' real consumption
e_d: Demand for equities
e_exp: Expected stock market value
e_s: Supply of equities
fb: Bank profits
fd: Dividends
ft: Total profits
fu: Undistributed profits
g: Accumulation rate
gy: Growth rate of rentier income
gy_r: Real growth rate of rentier income
h: Profit share
i: Investment
i_r: Real investment
il: Banks' lending rate
k: Capital stock
k_r: Real capital stock
l_s: Total loans (supply)
lev: Firms' leverage ratio
levc: Maximum leverage ratio tolerated by banks
lf: Firms' loans outstanding
m_d: Money deposits (demand)
m_s: Money deposits (supply)
n: Employed workers
npot: Potential employment
p: Price level
pe: Price of equity
pinfl: Price inflation
pinfl_exp: Expected price inflation
q: Tobin's q
r: Profit rate
re: Rate of return on equity
re_r: Real rate of return on equity
rl: Banks' real lending rate
rm: Banks' real deposit rate
rs: Target rate of return actually incorporated into prices
rsf: Firms' rarget rate of return
rsw: Workers' target rate of return
theta: Mark-up of firms
u: Utilisation rate
un: Unemployed workers

ur: Unemployment rate
v: Rentiers' net worth
v_exp: Rentiers' expected net worth
w: Wage rate
w_r: Real wage rate
wb: Wage bill
wb_r: Real wage bill
winfl: Wage inflation
winfl_exp: Expected wage inflation
ws: Wage share
y: Output
y_r: Real output
ydr: Rentiers' disposable income
ydr_exp: Rentiers' expected disposable income
ydr_r: Rentiers' real disposable income
ydr_r_exp: Rentiers' expected real disposable income
ypot: Potential output
ypot_r: Real potential output

Exogenous variables and parameters:
beta1: Propensity to consume out of rentier disposable income
beta2: Propensity to consume out of net worth
delta1: Indicator of shareholders' power
delta2: Speed of adjustment of dividend payout ratio to profitability gap
delta21: Speed of adjustment of dividend payout ratio to excess leverage
delta3: Speed of adjustment of share buybacks to profitability gap
delta31: Speed of adjustment of share buybacks to excess leverage
gamma0: Autonomous investment
gamma1: Investment response to profitability target
gamma2: Investment response to leverage ratio
gamma3: Investment response to utilisation
im: Banks' deposit rate
lambda0: Autonomous preference for equity
lambda1: Response in preference for equity to deposit rate
lambda2: Response in preference for equity to rate of return on equity
lambda3: Indicator of transactions demand for money
mju: Labour productivity
omega1: Response of wage increases to frustrated claims by workers
omega10: Autonomous bargaining power of workers
omega11: Effect of unemployment rate on workers' bargaining power
omega2: Response of wage inflation to expected price inflation
psi1: Response of price increases to frustrated claims by firms
psi2: Response of price inflation to expected wage inflation
rho1: Speed of adjustment of firms' profitability target to actual profitability
rho2: Sensibility of workers' claims to changes in unemployment rate
rsh: Target profit rate of shareholders
rsm: Target profit rate of managers
sf: Firms' retention rate
sigma: Capital-to-full capacity ratio
thetab: Banks' markup on interest rate

us: Standard utilisation rate
x: Ratio of net equity issues to investment

Distribution and inflation:

rs = (us - (us / p)*(w / mju))/sigma
w = (omega1*(rs(-1) - rsw(-1)) + omega2*pinfl_exp)*w(-1)+w(-1)
p = (psi1*(rsf(-1) - rs(-1)) + psi2*winfl_exp)*p(-1)+p(-1)
omega1 = omega10 - omega11*ur(-1)
w_r = w/p
winfl = (w- w(-1))/w(-1)
winfl_exp = winfl(-1)
pinfl = (p- p(-1))/p(-1)
pinfl_exp = pinfl(-1)
rsw = rsw(-1) + rho2*(ur(-1) - ur(-2))
rsf = delta1*rsh + (1 - delta1)*rsm
    Fordism (delta1 = 0): rsf = rsm = rsf(-1) + rho1*(r(-1) - rsf(-1))
    Financialisation (delta1=1): rsf = rsh = rsf(-1)
n = y_r / mju
y_r = y/p
un = npot - n
npot = ypot_r/mju
ypot = k / sigma
ypot_r = k_r / sigma
ur = un / npot
theta = (rs*sigma)/(us - rs*sigma)
ft = (theta / (1 + theta)) * y
h = ft/y
wb = w*n
wb_r = wb / p
ws = wb/y

Firms' investment and financing decisions:

g = gamma0 - gamma1*rsf(-1) - gamma2*lev(-1) + gamma3*u(-1)
    Fordism: gamma1 = 0
    Financialisation: gamma2 = 0
i_r = g * k_r(-1)
k_r = k_r(-1) + i_r
k = k_r*p
lev = lf/k
lf = lf(-1) + i - fu - (e_s - e_s(-1)) * pe
fu = ft - fd - il * lf(-1)
fd = (1 - sf) * (ft(-1) - il(-1) * lf(-2)) * (1 + g(-1))
e_s = e_s(-1) + x * i(-1) / pe
u = y/ypot
y = i + cons
i = i_r*p
r = ft/k
sf = sf(-1) (Fordism)
    Financialisation: sf = sf(-1) - delta2*(rsf(-1) - r(-1)) + delta21*(levc(-1)-lev(-1))

x = x(-1) (Fordism)
Financialisation: x = x(-1) - delta3*(rsf(-1)-r(-1)) + delta31*(levc(-1) - lev(-1))

Personal consumption and portfolio decisions:

c_r = cw_r + cr_r
cons = c_r * p
cw = cw_r*p
cr = cr_r*p
cw_r = wb/p
cr_r = beta1*(ydr_r_exp) + beta2*(v(-1)/p(-1))
ydr_r_exp = (1+gy_r)*ydr_r(-1)
gy = (ydr - ydr(-1)) / ydr(-1)
gy_r = (ydr_r - ydr_r(-1)) / ydr_r(-1)
v = v(-1) + ydr - cr + cg
v_r = v/p
cg = (pe - pe(-1)) * e_d(-1)
e_d = e_s
e_exp = (lambda0 - lambda1 * rm + lambda2 * re_r(-1)) * v_exp - lambda3 * ydr_exp
v_exp = v(-1) + ydr_exp + cg_exp - cr
cg_exp = (1 + g(-1)) * cg(-1)
pe = e_exp/e_d
re = (fd + cg) / (pe(-1) * e_d(-1))
re_r = re - pinfl
ydr_r = ydr/p
ydr = fd + fb + im*m_d(-1)
ydr_exp = (1 + gy)*ydr(-1)

Banks and further monetary variables:

rm = im - pinfl
il = (1 + thetab)*im
rl = il - pinfl
fb = il * l_s(-1) - im * m_s(-1)
l_s = lf
m_d = m_d(-1) + v - v(-1) - (e_d - e_d(-1)) * pe - (pe - pe(-1)) * e_d(-1)
m_s = l_s
q = (lf + e_s * pe) / k

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