

The macro-foundations of microeconomics or the micro-foundations of macroeconomics

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Abstract

This paper develops some micro-foundations for Kaleckian macroeconomics by integrating radical uncertainty into the theory of the firm. Standard Kaleckian pricing theory—which treats firms as mark-up-setters over prime costs—faces a fundamental indeterminacy problem: the mark-up itself is underdetermined by cost and demand conditions alone. This paper argues that radical uncertainty is the missing theoretical foundation that partly resolves this indeterminacy while deepening the macro-foundations approach.

The core contribution is the survival constraint framework, which formalises firm behaviour through three nested conditions operating on different time horizons: liquidity (covering variable costs), solvency (covering fixed overheads and debt service), and accumulation (generating retained earnings for investment). These constraints are not merely additional restrictions on profit maximisation—they represent a categorical shift in how firms solve their decision problems. Firms are not optimising over an objective function but satisfying feasibility conditions within an indeterminate environment.

Under radical uncertainty, the mark-up functions as a survival instrument rather than a profit-maximising mechanism. The paper further argues that survival constraints alone are insufficient; they must be grounded in a stability motivation. This stability-seeking generates endogenous growth imperatives, excess capacity as rational buffering, and strategic firm behaviour directed at position-building rather than profit-point optimisation. The micro-foundations thereby illuminate how radical uncertainty, operating through firm survival logic, generates the macro-level phenomena—distributional struggle, demand-constrained output, and chronic excess capacity—that define Kaleckian economic dynamics.

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Introduction

Kalecki's distinctive contribution was inverting standard microeconomic methodology: rather than aggregating from individual firm behaviour to macroeconomic outcomes, he showed how macroeconomic structures condition firm-level decisions. This paper focuses on only two channels that link macroeconomics with microeconomics. The first is the relationship between investment and pricing – a demand side characteristic. The second is the relationship between excess capacity and pricing – the supply side analogue. The former has been extensively dealt with in the literature, but the second has not been in the context of the theory of the firm.

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The paper further argues that survival constraints alone are insufficient; they must be grounded in a stability motivation. Rational firm behaviour under radical uncertainty is not merely satisfying constraints but maximising the buffer between current position and constraint boundaries. This stability-seeking generates endogenous growth imperatives, excess capacity as rational buffering, and strategic firm behaviour directed at position-building rather than profit-point optimisation.

This framework reconnects Kaleckian pricing theory to Kaleckian macroeconomics: the firm's stability-motivated pricing decisions, aggregated across the economy, produce the distributional conflict between capital and labour that drives Kaleckian output determination, investment dynamics, and capacity utilisation patterns. The micro-foundations thereby illuminate how radical uncertainty, operating through firm survival logic, generates the macro-level phenomena—distributional struggle, demand-constrained output, and chronic excess capacity—that define Kaleckian economic dynamics.

The macrofoundations of microeconomics

Theories of monopoly capitalism integrate microeconomic and macroeconomic elements to account for the behaviour of firms. Schumpeter (1912) includes changes in industrial structure and the degree of concentration amongst the major sources of endogenous change. Leibenstein (1987) argues that both theories of industrial organisation and theories of the firm generally neglect whether in changing the constraints that firms face the competitive environment of the firm changes its behavioural properties. This is the point of departure of both Kalecki's (1954) and Steindl's (1952) approach. Similarly, Sawyer (1989) inquires about the effect of changes in corporate structure on the constraints on growth that large firms face. Nelson and Winter (1982) see industry conditions as central to the capabilities and behaviour of the evolutionary firm, in which Nelson (1991) argues that intra-industry conditions play a part in explaining firms' diversity. Kay (1984: 100) concludes that the environment is the "ultimate designer" of a firm's strategy. Lee (2018) sees the firm as inseparable from the 'going' economy as the state-monetised social provisioning process. The common suggestion is that the firm cannot be considered independently of the meso- and macro- elements and influences that constitute its environment.

Kaleckians understand firms in the context of their role and general significance for the economy and society (Sawyer, 1989). Robinson (1977: 11) explains that a significant contribution of Kalecki's analysis is to integrate the analysis of pricing with that of effective demand, making Kalecki's a "truly general theory". Kalecki's microeconomics is the short-run theory of income distribution (cf. Feiwel, 1975; Robinson, 1977; Sawyer, 1985; Kriesler, 1987, 1989; Chiloso, 1989). The micro-theory of prices means that value is independent of the macro-theory determining

output (Halevi and Kriesler, 1991). Nuti (2015) suggests that both the macro-theory (based on the relative propensities to consume of capital and labour) and the micro-theory (based on the average degree of monopoly aggregated across all firms) are theories of distribution. This departs from a different point to standard marginal productivity theory. In standard theory, distribution is one aspect of the determination of relative prices. In contrast, Kalecki's micro-distribution theory relates to the determination of profit and wage shares of national income, which in turn explains macroeconomic variables.

Kalecki's distinctive contribution was inverting standard microeconomic methodology: rather than aggregating from individual firm behaviour to macroeconomic outcomes, he showed how macroeconomic structures condition firm-level decisions. As such, Kalecki segregates the different elements of the system and relates them using the degree of monopoly. These are not simply transpositions – they are different systems with different systemic components and relationships. The system is not summative. Microeconomics and macroeconomics are related but also partly autonomous in Kalecki's (1954) reasoning. Kriesler (1987) identifies the 'underlying principles' in the inter-relation between the micro- and macro-elements in the determination of output as the theory of the firm, the analysis of oligopoly (which originated the degree of monopoly), a conception of industry and of costs, as opposed to a reference to any specific model. The significance of the degree of monopoly is its relationship with costs and prices and so distributive shares in a dynamic non-equilibrium framework in the context of the trade cycle.

With respect to the firm's relationship to the macroeconomic environment, unlike neoclassical microeconomics, the Kaleckian firm is explicitly open to the macro circuit. Its sales depend on aggregate demand, which it cannot individually control. Its profits depend partly on the investment decisions of all firms collectively. Its wage-setting feeds back into the consumption demand it relies on. The firm is therefore strategically rational at the microeconomic level but collectively irrational at the macroeconomic level — the fallacy of composition is built into the theory. A crucial macroeconomic foundation is that what is rational for an individual firm is not necessarily rational in aggregate. A firm cutting wages reduces its costs, but macro-wide wage cuts reduce consumer demand, harming all firms (the paradox of costs). Higher saving by firms reduces aggregate demand and can lower total profits (paradox of thrift). This means micro optimisation cannot be understood without the macro constraint — a firm's environment is endogenous to collective behaviour. If the macro foundations condition firm behaviour, Kaleckian microeconomics is the theory of how firms actually behave within those constraints.

Central to monopoly capitalism is the replacement of the perfectly competitive sole proprietor firm with the modern giant corporation as a unit of analysis at the firm, industry and macroeconomic level. This changes the analysis in two fundamental ways. First, oligopoly is the dominant market structure. This tendency is particularly strong since unrestricted competition also tends towards market concentration (Hein, 2023). The recognition of the importance of monopoly and oligopoly replaces marginal productivity theory with the view that profitability and real wages are determined by firms' market power. Second, perfect competition is not a feature of any explanation. Despite industrial structure having an impact on profitability (Sawyer, 2022), perfect competition is not a feature of Kalecki's approach (Kalecki, 1938), which is a significant

distinction from the classical analysis of distribution from which it derives (Kriesler, 1987). There must be some form of imperfect competition for excess capacity to exist, even in the long run (Kalecki 1971a). The tendency towards stagnation, driven by a rising degree of monopoly, is an inevitable outcome of the maturity of the monopoly capitalist system (Sawyer, 2023).

Sawyer (1985) describes Kalecki's degree of monopoly as one of several theories of the firm, which view firms as determining prices relative to costs in the process of the pursuit of their objectives. These are effectively all theories of the firm bar perfect competition. It is a theory of price determination (and of the distribution of income) within theories that view the firm as a price maker (Sawyer, 1985) and a quantity taker (Hein, 2023), in an environment in which the structural elements of perfect competition are mostly absent. This approach examines how market concentration affects economic behaviour and outcomes.

The degree of monopoly is, in turn, instrumental to the determination of profit and wage shares of national income, which also has a bearing on the tendency for productive resources to be underutilised as firms' relative share of income increases. The degree of monopoly shows profits as arising from monopoly power, with higher profits accruing to the firms with more monopoly power. It affects both the distribution of income between profits and wages, but also the distribution of income amongst firms, with profits shifting to larger firms at the expense of smaller ones (cf. Sawyer, 1985; Dixon and Toporowski, 2013). Ultimately, monopoly capitalism is associated with secular stagnation as the rising degree of monopoly resulting in higher gross profits and a rising share of profit in national income depresses the propensities for investment and innovation (Kalecki, 1954; Steindl, 1952; Sawyer, 2022).

The link with capital markets forms the essence of monopoly capitalism – monopoly is not simply the outcome of product markets, but significantly a characteristic of capital markets (Toporowski, 2016). Large firms finance their reproduction and expansion from retained earnings, which modulates the role of financial capital that exists in earlier theories of monopoly capital (cf. Sawyer, 1988)². Kalecki's investment theory relates investment decisions to profitability, internal finance (dependent on profitability) and capacity utilisation. Formulating investment as a function of the profit rate simultaneously embeds the dual influences of the profit margin and capacity utilisation (Sawyer, 1995b), which could be separated were the profit margin rather than the profit rate used to calculate investment (Bhaduri and Marglin, 1990 cited in Sawyer, 1995b).

While firms' decisions are influenced by the broad macro-environmental factors that determine investment, more immediately expected / future profitability is a function of current profitability. The analytical distinction in Kalecki's approach between pricing and investment decisions results in pricing decisions only having an indirect bearing on investment ones to the extent that the profits and (changes in) output that result from pricing strongly influence investment (Sawyer,

² Rabinovich (2021) suggests that an investment-profit puzzle – in some sense excess profits without accumulation – has been attributed to the maximisation of shareholder value at the level of the firm (cf. Stockhammer, 2005-6; Dallery, 2009). Rabinovich (2021), however, suggests the explanation must view investment from the perspective of supply and be firm-based.

1995b). Equivalently, investment decisions are primarily based on the volume of internal accumulation of retained earnings from profits (Steindl, 1952), maintaining the a priori importance of (high volumes of) profit, which is not automatic (Baran and Sweezy, 1966; Cowling, 1982; Asimakopulos, 1975).

Investment is both a source of effective demand as well as adds to productive capacity. So, while on the one hand firms operate within demand constraints, pricing power structures, and distributional conflicts that are themselves macroeconomic phenomena, on the other hand approaching firms' pricing policy and so profit from an income perspective and profits from an aggregate perspective as accommodating investment suggests a determinism which does not exist. Although there is no micro-level counterpart to the macro-accelerator theory of investment, it is possible to move from a firm-level relationship to establish a two-way relationship between profits and investment at macro-level (Sawyer, 1989). However, Sawyer (1995b) suggests a direct link between pricing and investment is not assured. While such a link may exist at a macroeconomic level, it is spurious at the level of the firm. In particular, such a link would have to explain that since excess capacity is typical, actual supply can readily respond to an increase in demand, which in a sense causes a disconnect between the conditions of demand and the conditions of supply.

Toporowski (2016) argues that the accelerator theory of investment breaks down under monopoly. Firms with market power, operating with excess capacity, have a weak output response to changes in the demand for their products. However, they respond more strongly if the change is above a certain threshold amount or if change is sustained. Shifts in the demand curve therefore cause discontinuities in firms' responses. A weaker accelerator relationship becomes a function of financing costs. Monopoly capitalism places less emphasis on the internal structure of the firm and its relationship to the micro-theory of distribution. The origins of this behaviour in firm-level characteristics are less acknowledged by the literature.

Profit *margins* given price – *the flow rate of funds* – are the variable to be explained (Robinson, 1977). Profits, rather than price, send signals to firms with respect to investment (Kriesler and Nevile, 2012). The theory of profit margins is based on pricing theory and so the determination of prices as a whole (Melmiès, 2023). Lee (2013a; 2013b; 2018) argues that Post Keynesian pricing, in particular mark-up pricing, lacks a convincing theory of the determination of the mark-up and is empirically unvalidated. Melmiès (2023) argues that there are in effect two theoretical traditions. The first identifies profit margins as (indirectly) deriving from imperfect competition. Profit margins are the result of market structure. There is a direct link between competition and profit margins. The margin added to production costs depends on several parameters such as the prices of other firms, etc. that is, these are linked to market imperfection. The determination of the profit margin is a 'derivative' of the theory of imperfect competition. Critically, profit maximisation, which Melmiès (2023) explains as equating marginal revenue with marginal cost, is the hypothesis for the behaviour of firms, which Melmiès (2023: 6) refers to as "technologically constrained profit maximisation". Examples are early Robinson and Kalecki's degree of monopoly theory.

In the second profit margins are (directly) determined by the need for self-financed corporate investment. Unit margins are the result of a strategic and planned choice. This approach to the motivation of the firm based on the broader (and Melmiès, 2023 argues is more direct) maximisation of sales growth and self-financing of investment. The theory postulates that the firm sets a margin that meets a dual objective – to ensure sales growth while having the necessary funds available internally to self-finance part of the capital expenditure required to meet the sales growth generated in this way. Profit margins therefore meet the need for the firm to partially self-finance in the long term. Eichner is a prominent example. Melmiès (2023) suggests that Kalecki's principle of increasing risk is an early example. Alternatively, profit maximisation speaks to the conditions of supply, and growth maximisation, at least in its earlier incarnation, spoke to the conditions of demand.

Radical uncertainty and the limits of mark-up pricing

This paper does not cover the breadth of Post-Keynesian pricing, for example see Reynolds (1987), Lee (1998) and Lavoie (2022). Lavoie (1992) argues that the varying strains of Post-Keynesian pricing effectively reduce to two – a profit maximising strain and a growth maximising strain. This is also helpful to describe the two strains of mark-up pricing. Investment financing is fundamental to the Kaleckian account of firms. Both profit maximising and growth maximising strains have in common that firms primarily fund investment through retained earnings and so over the long-term investment requisites strongly affect the level of profits (Sawyer, 1995a). Prices do not clear markets, nor is that the intention (Lavoie, 1992). Prices are administered by the firm to the market (Lee, 1998; 2018); they are, thus, determined by the firm – not by the market (Lavoie, 2022). Firms set prices in pursuit of their own objectives. These objectives are profit or growth, but what they have in common is that prices are long-term strategic prices (Shapiro and Sawyer, 2003). The causality between savings, amongst others represented by the willingness to retain a portion of profits for investment, and investment at the level of the firm is reversed in either account (cf. Sawyer 1994).

So microeconomic relationships have macroeconomic determinants. Kalecki assumes a disequilibrium world (implies monetary production – the expansion of production requires the granting of loans by the banking system) irrespective of any conditions imposed on technology (or preferences) (Sawyer, 2001). For Kalecki, the firm's financial goal is not profit maximisation in the neoclassical sense. Firms only 'imprecisely' maximise profits (Sawyer, 1985) largely due to uncertainty (Kalecki, 1954). Rather, firms seek to cover overhead costs – essentially a survival constraint – and to generate retained earnings sufficient to self-finance investment. This last point is critical. Kalecki (1937) identified the principle of increasing risk – as a firm borrows more relative to its own capital, the risk of insolvency rises non-linearly. The lender will charge a risk premium to cover the greater risk exposure so that the cost of borrowing will increase with the volume of borrowing. The higher borrowing cost, however, raises the risk of default, and may at some point become prohibitive (Sawyer, 2001). This means firms prefer internal finance and are investment-constrained by their own profit flows, not just by interest rates. Access to credit is rationed partly by the firm's existing financial position.

Alternatively, finance markets are inherently imperfect in the sense that unlimited finance at a constant cost is not available to firms (Sawyer, 1985). While this could be interpreted as that capital markets reinforce the role of profits in the generation of finance for firms, it can equally be interpreted as that firms are finance constrained. Webster (1999) refers to Kalecki's (1937) principle of increasing risk as his 'microeconomic theory of investment'. The principle of increasing risk is applicable at firm-level, and it operates to limit firm growth. For the individual firm, its stream of profits is a significant factor in its ability to borrow. In the Kaleckian approach, aggregate profits are determined by aggregate investment. So it's not possible to proceed immediately to the aggregate level by summation of the individual level because the firm's borrowing depends on its investment plans, and the collective realisation of those investment plans determines profits, which, in turn, influence the ability of firms to borrow (Sawyer, 2001).

The macro elements of pricing, indeed macrofoundations, are different in the profit and growth maximisation strains. In the former, the structural characteristics of industry determine the conditions under which pricing occurs (cf. Kalecki, 1941a; 1954; 1971; Feiwel, 1975; Sawyer, 2022), in particular firms are oligopolistic (Sawyer, 1985; 1995a; Lavoie, 2014). The oligopolistic nature of industry is important in the explanation of key variables such as the distribution of income, investment and employment (Sawyer, 1985). Beyond wages and finance, this rejection of perfect competition is also significant for the determination of product prices.

So to understand prices in the profit maximising strain, it is necessary to understand the determination of profit, that is, the source of profit, and the process of competition that augments those profits or destroys them. Mark-up pricing determines the last component, the stabilisation of profit margins related to imperfect competition. This then recasts supply-side behaviour as a dynamic process that hinges on successively less variable profits that tend to drift upwards. In time, absolute capacity tends to drift upwards as firms tend to increase in size and make successively larger investments, adopt technical advance on an on-going basis, which raise prospective profitability and stimulate investment, but ultimately end up over-capacitated and stagnate rather than achieving improved efficiency, let alone uniform prices. That is, 'relative' excess capacity has no trend (Sawyer, 1989) because capacity utilisation is the variable that continuously adjusts (Steindl, 2005). Rather the equilibrating variable is capacity utilisation. In neoclassical economics, prices clear markets. In Kaleckian micro, capacity utilisation does the adjusting. Firms hold excess capacity deliberately for technical and strategic reasons, so the macro utilisation rate becomes the key signal firms respond to — linking aggregate demand directly to individual firm behaviour.

The degree of monopoly is a "shorthand expression for a variety of oligopolistic and monopolistic factors (such as collusion and sales promotion)" (Sawyer 1985: 20). The firm sets price as a mark-up, a gross margin, on average prime costs to cover overheads and achieve given profit, taking into consideration the prices of rival firms. "The crucial proposition is that the mark-up depends on the process of industrial concentration, on the vigour and weakness in competition, on market imperfections, on the industrial setting, on the morphology of markets, on the degree of freedom and constraints in price-setting, and on income distribution," notes Feiwel (1975: 96). In short, the mark-up is constrained by aggregate factors.

Kalecki (1954) makes a sharp distinction between prime (variable) costs — raw materials and wages directly tied to output. These are roughly constant per unit over a wide range of output, not rising as in neoclassical theory. Overhead (fixed) costs — management, depreciation, interest — don't vary with output in the short run. This flat marginal cost curve is empirically motivated and has major implications: there is no upward-sloping supply curve at the firm level. The firm doesn't equate marginal cost to marginal revenue in any meaningful operational sense. Pricing is a strategic, cost-plus decision.

That firms' market power determines the mark-up of prices over costs relies on more than monopoly power. "It relies on the shape of the costs inherent to the type of technology in use" (Lavoie, 1992: 97). For Arestis (1992) indeterminacy in any theory of price formation under imperfect competition arises from price-makers' ability to influence the relationship between price and costs in the process of determining prices with implications for the profit share and the real wage. Reynolds (1987) explains that Cowling and Waterson (1976) and in particular Cowling (1982) constitute an oligopoly representation which accounts for interdependence but which is capable of yielding a determinate solution, and so resolving the indeterminacy of the mark-up by formalising the relationship between industrial structure and firms' mark-ups — relating income distribution, effective demand and the long-run tendencies of a monopoly capitalist economy. This is echoed in Asimakopulos (1975), Sawyer (1982) and Arestis (1992). Shapiro and Sawyer (2003) emphasise the non-deterministic nature of the degree of monopoly, that is based on rather than determined by costs.

A difference between the Kaleckian (1954) and Eichnerian (1973; 1976) pricing procedure arises in macroeconomic perspective. In Kalecki's analysis investment is partly determined by profitability and in a closed private economy investment determines saving and the output level. The saving-investment relationship only holds at aggregate level and not at the level of the firm (Sawyer, 1995a). In Eichner's analysis, firms adjust mark-ups to match the profits required to finance investment, which, in turn, is a function of expectations about prospective growth (cf. Harcourt, 2006). Once the target rate of return enters into the pricing decision then a link is developed between the firm's pricing and investment decisions, which, in turn, implies a relationship between pricing and the growth rate of the firm (Reynolds, 1987; Arestis, 1996). Wood (1975) is an example as are Eichner (1976; 1985; 1987), Kenyon (1979) and Shapiro (1990). Rabinovich (2021) identifies that the earlier theories were theories of sales growth while later theories such as Stockhammer (2005-6) and Dallery (2009) are theories of capital accumulation. Further, financialisation has resulted in an increase in distributed profits, suggesting 'dividend-driven' or 'dividend elastic' mark-ups (cf. Hein, 2012; 2014; Hein and van Treeck, 2010). Melmiès (2023) suggests the 'internal-finance' elastic mark-up alongside dividend elastic ones.

So the relationship between profits and investment differs in the different pricing strains. Growth maximisation holds that there is a clear mechanism by which equilibrium holds for the individual firms. Harcourt (2006) explains that the investment requisites of the firm mean that it decides on the price and mark-up at a given level of productive capacity with effectively two objectives in mind: consistency with expectations about demand and with retained earnings to fund it. In the

short run, profit margins adjust so that retained earnings match planned investment. In as far as profit maximising is concerned, the savings-investment relationship only holds at aggregate level and not at the level of the firm (Sawyer, 1995a), and as a result of competition in the longer term where the industry profit and growth rates need to be aligned if firms are to have sufficient retained earnings to finance investment given the debt ratio (Steindl, 1952).

In the profit maximising approach, the aggregate relationship is given by: $s_p * \Pi = I - s_w * W$, where s_p is the propensity to save out of profits (Π), s_w is the propensity to save out of wages (W) and I is investment expenditure. Assuming savings out of wages are zero reduces the relationship to $I = s_p * \Pi$ ³. Savings, and so profits, forcibly adjust to investment to the extent that equilibrium is meaningful. At industry-level, the equilibrium rate of internal accumulation (retained profits) is primarily a function of the industry rate of expansion (Steindl, 1952). In the absence of entry, internal accumulation exceeds the amount required to fund capital expansion such that the investment rate does not automatically limit the rate of internal accumulation. As such, there is no automatic mechanism that constrains the profit margin at a given level of capacity utilisation (Steindl, 1952; cf. Sawyer, 1995a). Investment decisions at firm level are separately such that for firm i : $I_i (\Pi_i^*) = s_i * \Pi^*$, where Π_i^* is maximised profits; I_i is investment, which depends on profits and s_i , the propensity to save out of profits.

Long run adjustment is more ambiguous in growth maximisation, but Sawyer (1995a) suggests that firms' willingness to borrow is related to the savings propensities of workers and rentiers. The firm's profit margins are related to the retention ratio, ratio of external financing, the growth rate and the incremental capital-output ratio such that (Sawyer, 1995a): $\pi = (1 - x) * k/r * g$ where π is the profit rate, x is the external finance ratio, k is the investment-increase in output ratio, r is the retention ratio and g is the growth rate. This can be rewritten as: $r * \Pi = I - E$ where E is the volume of external finance. This firm level equation holds for the individual firm as well as at aggregate level from summation. At aggregate level E has to equal the savings of workers ($s_w W$) and those of rentiers ($s_r R$).

The idea that equilibrium exists at the level of the firm implies that at least short run expectations of price and output, if not the target capacity utilisation rate, are fulfilled, which introduces a problem that does not exist for profit maximisation, since the construct of the long run accommodates unfilled short run expectations (Sawyer, 1995b). There is no reason that growth expectations and targeted capacity utilisation should obtain. Riach (1971) argues that over the long run, barriers to entry, concentration, etc. serve to protect the rate of profit on capital and not the share of profits, which Sawyer (1954) points out is not Kalecki's line of argument. Sawyer

³ This is contentious. Toporowski (2015) suggests that ignoring household savings understates the financial fragility of the firm. Retaining Kalecki's (1943; 1954) insight that investment determines firms' retained earnings, and following Steindl's (1952) formulation that household savings constitute a financial barrier to retained earnings, a discrepancy between household savings and investment is resolved by a financial (net retained profit) surplus or deficit on the side of firms. This amplifies business cycle fluctuations, but at the level of the firm drives a wedge between indebtedness and investment since firms can incur "unanticipated" debt (Toporowski, 2015: 258). This is arguably a reformulation of the claim that there is no automatic translation of investment decisions into actual investment, albeit explained by financial rather than real side factors.

(1985) explains that the profit rate on capital in the long-term results from the *distribution* of profits between old capital and new investment (Kalecki, 1954), although it is not assured that profits will increase as a consequence of increasing productive efficiency since these also depend on sales. Profitability is relational since the profitability of new investment is relative to the change in total profits so that the marginal profit rate (concentrated on new investment) is the more important factor (Steindl, 1990).

Synthesist approaches such as Lavoie (1992), Shapiro and Sawyer (2003) and Dunn (2008) emphasise that the firm is large and accumulative (Shapiro and Sawyer, 2003; Shapiro, 2011; 2012) and pricing behaviour explains the financing of investment, which is common to all approaches, and especially at the heart of Steindl (1952). Along with the recent growth motivated theories which emphasise capital accumulation, these approaches represent a shift towards an explicit consideration of the supply side – explicitly focusing on the role pricing plays in accumulation. Steindl (1990) points out that given the autonomy of demand in Kalecki's approach, the only place where the conditions of supply may play a role in an analysis completely conducted in demand terms is in the lag between planned and actual investment. Also, the capacity utilisation rate is the variable that adjusts to systemic imbalances and that too is an instrument of supply.

Two questions naturally arise. The first is the limit to this behaviour and finance constrained growth answers this question. The second, is the motivation for sustained capital accumulation. At the level of industry, Steindl (1952) sees the capacity utilisation rate as interacting with investment to determine the turning points in the business cycle, precisely due to the impact on productive capacity. Kalecki (1942) explicitly answers the issue of surplus capacity in the long run, which does not induce firms to limit productive capacity. Large-scale economies due to indivisibility means that firms have to operate at a particular effective limit for capacity determined by imperfect competition. Once excess capacity is reoriented to the supply side, then investment has to be directly linked not simply to the output-capacity ratio but also capital intensity and the changing (composition of) capital-labour ratio, in part related to the characteristically institutional nature of wages. The output-capacity ratio can alter but since costs are constant the altering ratio does not impact prices, which are constant at below full capacity. That is, the ongoing process of investment alters the volume of capital and so both the capital intensity of the firm and the scale of production. This relates to pricing in the first instance because it implies that the ratio of short-run costs to long-run costs is evolving, and is different, in any given short run – a factor in the determination of the profit margin.

The U-shaped cost curves of standard theory ensure the stability of the economic system. Kalecki's reverse L-shaped cost curve undermines this stability (Osiatyński, 1991). Curves which are horizontal over large ranges of output mean that small changes in demand result in large changes in output, that is, the system is highly unstable. Excess capacity as a buffering system. Excess capacity can adjust, but that ability to adjust is not without limits. U-shaped cost curves determine the (equilibrium) size of the firm and industry. What rather determines the size of the firm and its position of 'equilibrium' when its cost curves are reverse L-shaped is the availability of capital for particular firms along with the principle of increasing risk (Kalecki, 1937). This clearly

delineates the limits to accumulation, but reasons for the non-receding impetus for accumulation – a state of permanent disequilibrium – have to be sought elsewhere.

The mark-up as a survival instrument

Markets and price mechanisms do not bring about equilibrium – general or otherwise – but function to distribute profits between firms (Toporowski, 2019), amongst other things, on the side of supply. Galbraith (1967) speaks of a profit hurdle that firms must clear in order to actively pursue growth – an explicit growth motivation is contingent on a profit threshold. We argue the opposite – there is a minimum pace of investment required to sustain or to grow profits, in which changes in distribution affect the rate at which profits can be reaped. This is the logical conclusion of Kalecki (1937), which relates increasing risk to total ‘commitments’ and is categorical that new investment puts all existing investments at risk – a risk that accelerates as the size of investment rises. However, Kalecki (1954) points out that the lesson of small capital is that a completely efficient firm can arbitrarily fail. This then constitutes the impetus to seek to dominate the market. Firms make decisions using focus values (Shackle, 1955; Earl and Littleboy, 2014).

The survival constraint can be formalised as follows. Let a firm’s financial position at any period t be characterised by:

- $R(t)$ — gross revenue (price $\times$ quantity sold)
- $C_p(t)$ — prime costs (variable: wages + raw materials), where $C_p = v \cdot Q$ for output, Q , and unit prime cost v
- C_o — overhead costs (fixed in the short run: management salaries, depreciation, interest on debt, rent)
- $D(t)$ — debt service obligations (interest + scheduled principal repayment)
- $\pi(t)$ — gross profit = $R(t) - C_p(t) - C_o$
- $RE(t)$ — retained earnings available for investment = $\pi(t) - T(t) - Div(t)$, where T is tax and Div is dividends

The liquidity constraint (short-run survival) is given by: $R(t) - C_p(t) \geq 0$. This is the minimum condition: revenue must at least cover prime costs. A firm that cannot cover its variable costs in a period has no operational reason to continue production in that period. This is the shutdown condition in any theory of the firm. But in the Kaleckian framework, it is the *floor*, not the target. The solvency constraint (medium-run survival) is given by: $R(t) - C_p(t) - C_o - D(t) \geq 0^4$.

The firm must cover overhead costs and debt service, not merely variable costs. This is a harder constraint than the liquidity condition, and it is the one that distinguishes the Kaleckian firm most sharply from the neoclassical model. In neoclassical theory, overhead costs are irrelevant to the pricing decision (they are sunk in the short run). In Kaleckian theory, overhead costs are existentially relevant — a firm that cannot cover them is heading toward insolvency regardless of whether it is covering prime costs. The mark-up must therefore be set at a level that at least satisfies this constraint in expectation. Further, there is the accumulation constraint (long-run survival) which is: $RE(t) \geq I^*(t)$, where I^* is the minimum investment required to maintain the firm’s competitive position — replacing depreciating capital, funding R&D necessary to prevent

⁴ That interest appears both in overheads and in debt servicing costs is not double counting. There are two separate roles interest plays – debt servicing and also in the determination of the growth of debt.

technological obsolescence, maintaining market share against rivals who are themselves investing. A firm that satisfies the liquidity and solvency constraints but fails the accumulation constraint is surviving in the short run while eroding its long-run viability. Kalecki's principle of increasing risk enters here: if $RE(t) < I^*(t)$, the firm must borrow to invest, increasing its debt burden $D(t+1)$, which tightens the solvency constraint in the next period. The constraints are therefore dynamically coupled.

The three-constraint structure expresses the accumulation threshold. Survival is not one thing but three nested conditions — liquidity (covering prime costs), solvency (covering overheads and debt service), and accumulation (generating enough retained earnings to maintain competitive position). Each operates on a different time horizon, and all three must hold simultaneously. This is what makes the survival constraint genuinely different from profit maximisation rather than just a softer version of it. Given the three constraints, the firm's pricing decision can be recharacterised. This is deriving the minimum mark-up a firm must charge just to stay solvent.

The basic price equation is: $p = (1 + m) \cdot v$, which just says that the price the firm charges equals its unit variable cost v (raw materials and direct labour per unit) marked up by a factor m . This is standard cost-plus pricing. Total revenue is: $R = p \cdot Q = (1 + m) \cdot v \cdot Q$ in which revenue is simply price multiplied by quantity sold — it just substitutes the mark-up pricing formula in. The solvency constraint is such that the firm needs revenue to cover three things:

- $v \cdot Q$ — its variable costs (what it spent to produce Q units)
- C_o — overhead costs that are fixed regardless of output (rent, management salaries, administrative costs)
- D — debt servicing (loan repayments, interest obligations)

So the constraint $(1 + m) \cdot v \cdot Q - v \cdot Q - C_o - D \geq 0$ simply says revenue minus all those costs must be non-negative — the firm cannot lose money without eventually ceasing to exist. Expanding $(1 + m) \cdot v \cdot Q$ gives $v \cdot Q + m \cdot v \cdot Q$. The $v \cdot Q$ terms cancel on both sides, leaving: $m \cdot v \cdot Q \geq C_o + D$, which rearranges to: $m \geq (C_o + D) / (v \cdot Q)$. This says that the minimum viable mark-up is the ratio of fixed obligations (overhead plus debt) to total variable cost revenue. That is, the mark-up exists primarily to cover the costs that don't go away when output falls. The firm isn't marking up to extract profit in the first instance; it's marking up to survive. This gives the survival mark-up — the minimum mark-up the firm must charge to remain solvent at output level Q ⁵. Several implications follow immediately.

First, the survival mark-up is inversely related to output. As output (and therefore capacity utilisation) falls, the survival mark-up must rise to cover the same fixed overhead over fewer units. This is a mechanism explaining the counter-cyclical behaviour of mark-ups: firms facing demand

⁵ There are two components to the demand facing the firm. The demand level determined by aggregate demand is exogenous. The demand the firm faces for its own product is endogenous. It depends on the price it charges, and so on the mark-up. Q is treated as given, but a portion of Q on the mark-up. So $Q = s(m) \cdot Q_{agg}$ with s decreasing in m . Raising m reduces Q , which raises m_{min} , suggesting the feasible set can be empty. The feasible set is non-empty only if the maximum over $m \leq m_{max}$ of $m \cdot v \cdot s(m) \cdot Q_{agg}$ is at least $C_o + D$. This means that there is a minimum viable output: below it, no m in the corridor satisfies solvency. m_{max} is defined relative to competitors' prices, which gives content to the corridor.

compression either raise prices (if market power permits) or move toward insolvency. It also explains why firms with high overhead-to-prime-cost ratios — capital-intensive producers — are both more vulnerable to demand fluctuations and more aggressive in defending their mark-ups. Second, the survival mark-up is directly related to debt service. A firm that has borrowed heavily faces a higher D term and therefore a higher minimum viable mark-up. This is the mechanism behind Kalecki's principle of increasing risk expressed in price-theoretic terms: leverage raises the floor on acceptable prices, constraining the firm's competitive behaviour. Third, the actual mark-up m set by the firm will generally exceed $m_{\min}$ — the excess being determined by the degree of monopoly. But the critical point is that $m_{\min}$ acts as a constraint on competitive behaviour. A firm cannot undercut rivals below its own survival mark-up without heading toward insolvency. Industry-wide price competition is therefore bounded below by the average survival mark-up across firms, which is itself a function of the industry's overhead structure and leverage — not just demand conditions. This formulation grounds the mark-up in the firm's financial structure and survival imperative. Market power determines how far above $m_{\min}$ the firm can push its actual mark-up — but $m_{\min}$ itself is set by the arithmetic of fixed obligations and output volume.

An imprecise profit objective differs from traditional profit maximisation. The objective function differs categorically, not just quantitatively. A profit-maximising firm solves: $\max \pi = R(Q) - C(Q)$ subject to: $Q \geq 0$. This is an unconstrained optimisation (in the standard formulation) yielding a unique output where $MR = MC$. The firm does not ask whether it is solvent — solvency is assumed. A survival-oriented firm solves a constrained satisficing problem: find m such that: $m \cdot v \cdot Q \geq C_0 + D$, and $RE \geq I^*$, and $m \leq m_{\max}$ where $m_{\max}$ is the maximum mark-up the market will bear given competitive conditions. The firm is not maximising profit but finding a feasible mark-up range and choosing within it based on strategic considerations — market share targets, competitor responses, and long-run accumulation goals. The difference is not merely that the survival-oriented firm “also considers” survival — it is that survival replaces maximisation as the operative logic. The firm is not solving an optimisation problem at all in the mathematical sense; it is satisfying a set of inequality constraints and then exercising strategic discretion within the feasible region.

Further, behaviour near the constraint boundary is qualitatively different. A profit-maximising firm facing a demand decline simply moves down its demand curve to the new profit-maximising output, accepting lower profits. There is no threshold effect — the response is smooth and continuous. A survival-oriented firm facing a demand decline that threatens to push R below the solvency constraint faces a discontinuity. Options include: raising the mark-up (if market power permits, at the cost of further volume decline), cutting overhead (layoffs, asset disposals, renegotiating debt), drawing down financial reserves, or — if none of these is feasible — insolvency. The firm's behaviour near the constraint boundary is therefore qualitatively different from its behaviour in comfortable territory. Empirically, this predicts sharp, non-linear responses to demand shocks: aggressive price defense, sudden cost-cutting programmes, distress asset sales — none of which follow from smooth profit-maximisation. Excess capacity moderates these effects but not at the boundary.

As with Post-Keynesian pricing in general, investment behaviour is decoupled from the marginal product of capital. The profit-maximising firm invests until the marginal product of capital equals the interest rate (the neoclassical investment rule). Investment responds smoothly to changes in the interest rate. The survival-oriented firm invests up to what retained earnings permit (the accumulation constraint), supplemented by borrowing subject to the increasing risk constraint. The interest rate matters, but primarily through its effect on $D(t)$ — the debt service obligation — rather than through its comparison with the marginal product. If retained earnings are high and the firm is well within the solvency constraint, investment may be insensitive to interest rate changes. If retained earnings are thin and debt service is high, investment may be severely rationed even at low interest rates⁶.

The distinctive Kaleckian content is that excess capacity is pervasive, not confined to industries with an entry threat. It is also financial in origin (a buffer against fixed commitments), tied to the distribution and demand feedback, and non-receding as a matter of trend. Excess capacity rises with demand volatility and with fixed commitments as well as with the scale of investment. The bias towards lower leverage and a preference for funding investment through retained earnings restrains the pace of investment. At the core of these offsetting influences is the scale of investment. Instability increases as a size of successive rounds of investment increases. On one hand, this necessitates a higher degree of excess capacity, whereas on the other hand it exerts a downward influence on the degree of excess capacity as firms constrain rising instability by moderating the frequency with which such investments occur. This is consistent with the effect the capacity utilisation rate has on the rate of investment at macro-level. At firm-level, then, it would appear that stability and growth pull in opposite directions, suggesting that a buffer-maximiser should often not grow. However, there is a stopping rule. Firms seek to dominate the markets within which they operate. Excess capacity is central to this pursuit just as the cost efficiency introduced by technical progress, embodied in the rate of investment. The (minimum) level of excess capacity is explained by indivisibility (Kalecki, 1941b; 1971a).

⁶ This is not to say that these issues have not been addressed in mainstream accounts: costly financial distress, credit rationing, precautionary cash holdings, Roy's safety-first criterion, Simon's satisficing and Alchian's survival argument all exist. Counter-cyclical mark-ups and excess capacity as strategic deterrence have mainstream explanations too. A financing-constraint story can be accommodated by mainstream models but not excess capacity, even in the long-run. However, the counter-cyclical mark-up literature is about cyclical behaviour, so it says nothing about non-receding excess capacity. Precautionary cash and distress costs likewise explain buffers, not a persistent gap between capacity and output. And Spence-Dixit deterrence is a strategic-commitment story. It applies where an entry threat exists, and it is not a general account of why utilisation stays below normal. Three mainstream routes do produce persistent excess capacity. Chamberlin's excess-capacity theorem in which under monopolistic competition with free entry, firms produce to the left of minimum average cost in the long run. Kalecki (1971a) is essentially making this point about imperfect competition. But it is scale excess capacity relative to the cost-minimising size, not idle capacity relative to normal output, so the Kaleckian notion is different. The second is capacity under demand uncertainty — models which deliver capacity that sits idle in normal states. Firms build for high-demand states and are under-utilised most of the time. Mainstream theory calls that optimal reserve capacity. Last is indivisibilities, a feature of Kalecki (1942). Mainstream models, however, only explain excess capacity in specific circumstances.

The time horizon is structurally extended. A profit-maximising firm in a static model has no time horizon — it maximises current profit. A loose profit-maximising firm — a survival-oriented firm — must ensure the accumulation constraint is met across periods, which requires explicit attention to the firm's long-run competitive position. This is why Kaleckian firms pursue market share and so growth rather than point-in-time profit maximisation: growth is the dynamic expression of survival. A firm that maintains current profitability while losing market share is satisfying the solvency constraint today while eroding $I^*(t+n)$ — the minimum investment needed to remain competitive — in the future. Survival orientation therefore endogenously generates a growth imperative that has no formalised analogue in the profit-maximisation framework⁷.

Price-setting incorporates forward-looking financial planning, not backward-looking cost curves. The profit-maximising firm sets price by equating marginal revenue to marginal cost — both of which are derived from current demand and production conditions. The survival-oriented firm sets price with reference to its overhead burden, its debt service schedule, its retained earnings target, and its assessment of what the market will bear given competitor behaviour. The mark-up is therefore a financial planning variable as much as a market variable — the primary implication of both the profit and growth maximisation strains. This is a fundamental point about what kind of problem the firm is actually solving.

The two expressions below represent two completely different ways of thinking about firm behaviour. The mainstream formulation is $\max \pi = R(Q) - C(Q)$ subject to: $Q \geq 0$. This says the firm chooses a quantity Q to maximise profit, where profit is revenue minus cost. The firm is solving an optimisation problem — it is searching for a peak, a maximum value. Everything follows from that single objective. Price, output, investment — all are derived from the condition that marginal revenue equals marginal cost. The constraint $Q \geq 0$ is trivial (since it is not possible to produce negative output) and essentially non-binding. Survival is assumed, not modelled. The survival-oriented formulation is to find m such that: $m \cdot v \cdot Q \geq C_o + D$, and $RE \geq I^*$, and $m \leq m_{\max}$. This is a completely different kind of problem. The firm is not maximising anything. It is searching for a mark-up m that simultaneously satisfies three conditions. First, $m \cdot v \cdot Q \geq C_o + D$ — the solvency constraint from above in which the mark-up must be high enough to cover overhead and debt. Second, $RE \geq I^*$ — retained earnings must be sufficient to fund the investment the firm needs to maintain its competitive position (I^* is the required investment level). Third, $m \leq m_{\max}$ — the mark-up cannot exceed some ceiling set by competitive pressure, demand sensitivity, or the threat of entry. A firm that in some sense charges too much loses customers or attract rivals. So the firm is not finding a peak — it is finding a feasible range, a corridor within which the mark-up must fall to keep the firm alive and growing.

⁷ Minsky has articulated survival constraints, cash-flow commitments and margins of safety. In addition to earlier Post-Keynesian contributions (Eichner, Steindl, Lavoie and Godley and Sawyer), the stock-flow and Minskyan modelling tradition already formalise debt service, retained earnings and finance-constrained accumulation (cf. Nikiforos and Zezza, 2017). The aim here is to begin to construct a detailed supply-side picture.

The difference is categorical and not just quantitative. It isn't that the survival-oriented firm is maximising profit with more constraints bolted on. The objective itself is different in kind. Profit maximisation asks: what is the best outcome I can achieve? Survival orientation asks: what do I need to do to stay in the game? One is about reaching a summit. The other is about staying above a floor — actually three floors simultaneously. The firm that survives and grows is not the one that found the highest profit point; it is the one that never fell below any of the three constraints across time, under conditions it could not fully anticipate. Consider a useful analogy.

Think of the difference between a racing driver trying to set the fastest lap time versus a driver trying to finish the race without crashing in unpredictable weather. The first is an optimisation problem. The second is a survival problem. The strategies they produce look similar on a sunny day but diverge sharply when conditions deteriorate — which is precisely when it matters most which problem is being solved.

This matters for the broader argument in several respects. First, the idea that firms do not maximise short run profits and have a more long-term orientation is a longstanding observation of heterodox approaches, including Kaleckian ones. This formalisation is a means of expressing the same thing, arguing that it directly derives from Kaleckian loose profit maximisation. Once we accept that firms are solving a feasibility problem rather than an optimisation problem, a large number of observed behaviours that look irrational under profit maximisation become completely rational — holding excess capacity, maintaining conservative financial structures, pricing countercyclically, prioritising market share over current profit margins. None of these make sense if the firm is maximising profit. All of them make sense if the firm is protecting its position within the feasible corridor under radical uncertainty.

The gap in the existing account: the stability motive

The formal treatment of the survival constraint establishes what firms must do to remain viable — cover prime costs, meet overhead and debt service obligations, generate sufficient retained earnings to maintain competitive position. It is a theory of necessary conditions. What it does not yet explain is the motivational structure that generates firm behaviour under radical uncertainty. Why do firms not simply satisfy the survival constraints and nothing more? Why do they pursue growth, defend market share, accumulate financial reserves beyond immediate needs, and resist strategies that would maximise current profit at the cost of future stability?

Mbeki's (2023) proposition — that firms are ultimately motivated by stability rather than profit — answers precisely this question. It is not a psychological claim about managers' preferences. It is a structural claim about what rational agency looks like when the environment is radically uncertain rather than probabilistically calculable.

The three survival constraints — liquidity, solvency, and accumulation — share a common feature: they are all threshold conditions that, if breached, produce irreversible outcomes. Insolvency is not a continuous cost to be weighed against benefits; it is a discontinuous termination event. The firm ceases to exist as an organisational entity. This asymmetry between the cost of constraint violation (catastrophic and irreversible) and the benefit of constraint satisfaction (continued operation, gradual accumulation) is the structural foundation of stability as motivation. Under radical uncertainty, where the distribution of future outcomes cannot be known, the rational

response to asymmetric payoffs is not expected-value maximisation — it is the minimisation of the probability of catastrophic outcomes. This is not risk aversion in the standard sense (a preference parameter over known probability distributions) but a rational strategy under genuine indeterminacy.

Formally, consider the firm's position at time t facing an unknowable future revenue stream $R(t+1)$, $R(t+2)$... The survival constraints define a feasible region F in the space of pricing and investment decisions — the set of strategies that satisfy all three constraints across the planning horizon with sufficient probability. A profit-maximising firm would choose the point in F (or outside it, if it ignores the constraints) that maximises expected profit. A stability-motivated firm chooses a strategy that maximises the size of the buffer between its current position and the constraint boundary — that is, it maximises the distance from insolvency rather than the level of profit. This buffer-maximisation logic is what stability as a motivation means. It is not that firms are indifferent to profit — profits are the mechanism by which buffers are built. It is that profit is instrumentally valuable as a contributor to stability, not intrinsically valuable as the objective itself. When the two come apart — when profit-maximisation would require strategies that reduce the stability buffer — the stability-motivated firm chooses the buffer.

The significance of the stability motivation is that it explains behaviour in comfortable territory. A profit-maximising firm would simply maximise profit within the feasible region. The stability proposition says something different: firms use slack to build reserves, accumulate financial cushions, invest in redundant capacity, and maintain relationships that can be drawn upon when conditions deteriorate. The stability motivation reframes the growth imperative. The survival orientation endogenously generates a growth imperative — a firm that maintains current profitability while losing market share is satisfying today's solvency constraint while eroding tomorrow's accumulation constraint. The stability proposition gives this imperative a deeper grounding. Growth is pursued because, under radical uncertainty, size and market position are the primary determinants of stability. Growth is therefore the dynamic form of stability-seeking: firms grow not to maximise some growth rate but because sustained growth is the most reliable strategy for maintaining and extending the stability buffer across an unknowable future. The stability motivation explains the character of firm strategy under uncertainty. Under radical uncertainty, payoff matrices are not known and cannot be constructed. Strategic behaviour therefore cannot be optimisation over known outcomes. What it can be — and is — is the deliberate construction and defense of positions that enhance stability regardless of which uncertain future materialises. The aim is to reduce the variance of future outcomes and extend the planning horizon within which the firm can operate with some confidence.

The microfoundations of macroeconomics

While the profit maximising and growth maximising strains differ on the causal relationship between profits and investment, that firms don't maximise profit but seek survival is a very well-worn Post-Keynesian and institutionalist claim, but which has not been formalised. The first contribution this paper makes is to propose a mechanism which moves from radical uncertainty to the survival constraint and then distributional consequences. The second is the headline claim

that firms are motivated by stability. The last is the explicit introduction of the supply side to a theory that is almost wholly conducted in (aggregate) demand terms.

Kalecki's profit theory holds that firms must invest in order to reap profits, which has a microeconomic counterpart in the triple-threshold interaction between (retained) profits and investment. The direction of cause is reversed, but more significantly, the determinants of investment at the level of the firm differ move in different directions. At the aggregate level, the capacity utilisation feeds back on investment and regulates its pace. At the level of the firm demand and supply are not determined independently of each other. The firm is receptive to aggregate demand signals; the demand for its own product depends on the price, and so the mark-up, it charges; but most delicate as a balancing act is the effective level of excess capacity against the creation of new capacity.

This new theory connects the micro theory of the firm to the macro theory of distribution. The firm is reconceived not as a profit engine that faces survival as a constraint but as a stability-seeking organisation that uses profit as an instrument. The distributional struggle between labour and firms — central to Kalecki's macro framework — is from this perspective not just a conflict over shares of output but a conflict over who bears the costs of uncertainty. The mark-up transfers uncertainty from the firm (whose overhead and debt service are fixed) onto workers (whose wage share falls) and consumers (who pay administered prices). The degree of monopoly is therefore, in part, a measure of the firm's capacity to externalise its stability costs onto other parties. As such, the firm's stability motivation is the micro-level engine driving the macro-level distributional outcomes.

We posit the following micro-to-macro link, reiterating the paradox of costs. In Kalecki, distribution depends on the actual mark-up (the degree of monopoly), not on the floor. This account implies distributional effects only through $m_{\min}$. If every firm raises the mark-up, output falls, the wage share falls, consumption falls, output falls further, and $m_{\min}$ rises again. That is a paradox-of-costs feedback that delivers the 'chronic excess capacity and demand-constrained output' claim. In this way, the mark-up transfers uncertainty to workers, and is tied to that mechanism. A higher mark-up on average redistributes income to firms, but a secularly rising mark-up structurally alters the distribution of income. However, while each firm raises m to defend its floor, which collectively lowers output and does not raise aggregate profits because profits are set by investment and capitalist consumption. That is, there is a fallacy of composition.

The stability imperative highlights that the performance of investment, which cannot be guaranteed, requires a non-hostile environment in those times when it fails and profits falter, but debt obligations remain due. Alternatively, much emphasis has been placed on that excess capacity accommodates to (aggregate) demand, but it is also forward-looking since supply is partly autonomous. Investment planning is both about the amount of capital to be invested, but also about the method of production that will be applied.

Ultimately the firm faces two kinds of constraints: technological constraints and market constraints. Much has been said about the latter in the context of Kaleckian theory of the firm.

The former are less frequently mentioned although they form part of the basis of any theory of supply, investment or technological progress. Generally, Post-Keynesian accounts assume Leontief production technology, which implies a rejection of marginal productivity theory as marginal products are not defined. Critically, it allows for less than full employment of both capital and labour. In fact, because factor demands are inelastic to factor prices, there is no market-based equilibrating mechanism toward full utilisation of all factors of productions. Thus, even should there be full utilisation of capital – that is, when $u = 1$ – the production technology allows for structural unemployment of labour. The full utilisation of capital is, however, ruled out by Kalecki (1941a; 1941b). When effective demand is not strong enough to ensure full capacity utilisation, that is when $u < 1$, both capital and labour are unemployed (Tavani and Zamparelli, 2017).

The fixed-proportions production function means that output is given by $Q = \min(ak, bl)$ $a, b > 0$ where the operator “min” means that q is given by the smaller of the two values in parentheses. The issue is one of the relative scarcity of the factors of production. For example, suppose that $ak < bl$; then $Q = ak$, and we would say that capital is the binding constraint in this production process. The employment of more labour would not raise output, and so the marginal product of labour is zero; additional labour is superfluous in this case. We know from supra-surplus capitalism (cf. Canterbury, 1984; Halevi and Kriesler, 2020) it follows that capital is relatively abundant, and capital intensity rises over time (Kalecki, 1954; Steindl, 1952). This loosens the relationship between the employment of factors and the conditions of supply.

We know from Kalecki (1954) that rising industrial concentration destroys the incentive to innovate. As such, there is a ceiling on cost minimisation. A production plan is efficient if there is no way to produce more output with the same inputs or to produce the same outputs with less inputs. The representative Kaleckian firm does not do this. Assuming cost minimisation breaks down because, unlike in standard theory, it is not the case that the firm will not waste any input with a positive price. The representative firm is not a cost minimiser rendering cost minimisation useless as an explanation of the adoption of technology and description of the evolution of technical advance. Rather, the firm is bound to minimise losses in every period since loss minimisation simultaneously satisfies product market and financial requisites. Given non-receding excess capacity, countercyclical mark-ups suggest that imprecise profit maximisation consists in switching proximate strategies. It is at times essentially a ‘minmax’ (during slumps firms minimise the maximum potential loss) or a ‘maxmin’ (during booms firms maximise the minimum potential gain) behavioural rule in which firms systematically minimise the maximum potential loss as opposed to cost minimisation.

So in the absence of cost minimisation and the supply relationship – the process of cost minimisation creates an implicit demand for inputs and intuitively the supply curve shows the minimum price that the firm will accept for producing its output – what explains factor utilisation? Kalecki (1941a) ties the rate of capacity utilisation to the wage-share of income. Kalecki (1971b) relates the level of employment to trade union power. Kalecki (1941b) relates factor productivity to technical progress. Labour productivity and the ratio of productive capacity to capital alter the technique of production and directly influence the volume of employment and the structure of capital equipment.

In Steindl's and Kalecki's approaches, firms are distinguished as high-cost producers versus low-cost producers – which are marginal but also imperfectly competitive – and entry is restricted. Unlike the standard case, there is then no concept of zero economic profit – either for the individual firms through entry and for the industry through entry and on aggregate. Sawyer (1994) observes that differentials between firms are reinforced through path dependency given that these differentials imply different rates of growth. These cost differentials play a part in the process of competition. The triple-floor requirements of the firm give a detailed explanation of this phenomenon. While the speed of investment is often associated with the pace of innovation, shifting the micro perspective to the supply side explicitly links the theory of the firm with the literature on endogenous technical progress. This goes hand in hand with the conception of competition as a dynamic strategic process driven by firms navigating radical uncertainty – closer to Schumpeterian rivalry but grounded in Kaleckian class structure and pricing theory rather than innovation cycles alone.

Conclusion

Deriving from the loose profit maximisation tradition, the floor-driven mark-up as a microeconomic manoeuvre explicitly defines the relationship between the profit margin and investment at the level of the firm. Stability comes to the fore as a motivation for firm behaviour. Further, its integration has consequences for macroeconomic analysis. This paper paves the way for the reorientation of the growth of the firm to a supply-side perspective.

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