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# Challenges for Post-Keynesian Macroeconomics

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# DEPARTMENT OF ECONOMICS

## Working Paper

### Challenges for post-Keynesian macroeconomics

by

Peter Skott

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**UNIVERSITY OF MASSACHUSETTS  
AMHERST**

# Challenges for post-Keynesian macroeconomics\*

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## Abstract

Post-Keynesian macroeconomics faces several challenges. The labor market and the supply side, first, have not been getting the attention that they deserve in post-Keynesian growth theory. The failings of the Lucas-type 'microeconomic foundations', second, must not lead to a neglect of microeconomic behavior. Convincing macroeconomic theories must recognize and address the connections between macroeconomic relations and the microeconomic behavior whose aggregate manifestation the relations represent. Microeconomic behavior, third, takes place within an institutional structure that shapes economic behavior and economic outcomes. Macroeconomic theory must be both behavioral and structuralist.

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Key words: Neo-Pasinetti theorem, mature economy, induced technical change, autonomous demand, instability, goal orientation.

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# 1 Introduction

Contemporary DSGE models represent the culmination of a failed research program. But what do we put in their place? Post-Keynesian macroeconomics has many strengths but also faces significant challenges.

Post-Keynesians agree that aggregate demand plays a key role in both the short run and the long run. It is essential, however, to consider the dynamic interactions across goods, labor and financial markets, and the labor market and the supply side have not been getting the attention that they deserve in post-Keynesian growth theory. The failings of the Lucas-type 'microeconomic foundations', second, must not lead to a neglect of microeconomic behavior. Convincing macroeconomic theories must consider and address the connections between macroeconomic relations and the microeconomic behavior whose aggregate manifestation the relations represent. Most economic behavior is goal oriented, and the goal orientation can have important implications, even though optimization in any strict sense is impossible. Microeconomic behavior, third, takes place within an institutional structure that shapes economic behavior and economic outcomes. Macroeconomic theory must be both behavioral and structuralist.

The argument for a behavioral and structuralist approach to the development of post-Keynesian theory is presented by way of three examples. The first example illustrates the importance of a structural constraint that is ignored in contemporary mainstream macroeconomic models. The example, which will not be controversial among post-Keynesians, relates to the financial sphere and the determination of the average saving rate in a corporate economy (section 2). The second example may be more controversial. It focuses on labor markets and the treatment of the supply side in post-Keynesian models of economic growth (section 3). The third example takes off from well-known debates among post-Keynesians about the potential instability of the goods market and the implications of this instability (section 4).<sup>1</sup>

## 2 Saving in a corporate economy

Differential saving rates may arise for a variety of reasons. The recipients of profit income ('capitalists' and 'rentiers') tend to be rich, and rich households tend to save a larger proportion of their income than poor households. Duesenberry's relative income hypothesis has this implication, even if there are no intrinsic differences in the preferences of rich and poor. Differences in saving rates could also arise because capitalists are more 'patient' than workers and therefore save a larger fraction of their income. Kaldor (1966), however, suggested a very different, structural explanation. The differential saving rates, he

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<sup>1</sup>Jesper Jespersen has suggested that my three examples could have been given 'methodological headings' and that the first example addresses a 'fallacy of composition', the second a 'fallacy of ceteris paribus', and the third a 'fallacy of closed system analysis'. Jespersen (2009), Chick (2003) and Dow (2002) are among the contributions that have analyzed these and other fallacies.

argued, are rooted in the structure of a corporate economy: the saving rate out of profits is high because firms choose to retain some fraction of their profits.

It may appear that this argument can be made quite simply. In a closed economy without public sector, households' flow of disposable income ( $Y^D$ ) is given by

$$Y^D = Y - R$$

where  $R$  is retained earnings. If retained earnings are proportional to profits and households save a constant fraction  $s$  of their disposable income, aggregate saving – the sum of household and corporate saving ( $S^H$  and  $S^F$ ) – is given by

$$\begin{aligned} S &= S^H + S^F = sY^D + R \\ &= [s + s_f(1 - s)\pi]Y \end{aligned}$$

where  $\pi$  is the profit share. Thus, it would seem that an increase in the profit share must raise the average saving rate. The proportionality between household saving and household disposable income is questionable, however. Wealth also matters for consumption and saving, and retained earnings may generate capital gains that increase wealth.

The orthodox view suggests that if a corporation withholds earnings, households as the ultimate owners of the corporation will be able to 'declare their own dividends'. Retained earnings can be used by the firm to finance investment, and the associated increase in future profits raises the value of the firm's shares. Thus, if a household wants to spend dividends it did not receive, the household simply sells a fraction of its shares in the company. Since the share price has gone up, this leaves the household in exactly the same situation as if it had received the dividends (rather than the capital gain). For practical purposes, the argument goes, one can ignore corporate saving as an influence on aggregate saving.

The intuition behind Kaldor's counterargument is simple. The suggestion that share prices will appreciate automatically in line with retained earnings involves a *fallacy of composition*, Kaldor argued. It may be correct that the share price of a single firm (relative to the general level of share prices) responds positively to an increase in the firm's retained earnings. It is also correct that an individual shareholder can declare her own dividends by selling a part of her holdings of stocks that have appreciated in value. But households as a group cannot finance consumption by selling shares: there is no one to buy, and households' attempts to compensate for compressed dividends by selling off equity will lead to capital losses as equity prices fall. The capital losses temper the desire to consume, and the average saving rate increases as a result of the rise in corporate retentions.<sup>2</sup>

Kaldor's analysis considered the determination of the average saving rate, conditional on firms' financial decisions, including the retention rate and the rate of new issues of equity. This conditionality might appear to be a limitation

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<sup>2</sup>Skott (1981) addressed some weaknesses in Kaldor's original 1966 formulation of the 'neo-Pasinetti theorem'.

since undoubtedly there are feedback effects from financial markets (as well as from goods and labor markets) to these financial decisions.

Households would be calling the tune with respect to the average saving rate if firms made finance decisions that fully reflect households' preferences, information and expectations. Analogously, households would call the tune with respect to the amount of saving if firms always made investment decisions that matched the amount of saving at full employment. But dynamic feedback effects between consumption, investment and finance decisions do not automatically solve these coordination problems. The feedback effects need not even produce adjustments in the right direction.

Consider a simple scenario in which for some reason firms on average decide to reduce dividends and raise the retention rate. The macroeconomic effect of this change in firms' financial behavior is a rise in the average saving rate and a fall in aggregate demand. The aggregate demand problem could be corrected if firms responded to a decline in output and capacity utilization by reducing the retention rate to its former level. But why would a fall in aggregate demand and capacity utilization make firms want to increase dividends? A destabilizing reduction in investment and dividends would seem a more likely response.

DSGE models have paid little or no attention to financial issues and to the interaction between goods and financial markets. Gali's (2016) 'basic New Keynesian model' has no capital and no investment. There are financial assets, but all households are identical, there is no trade in financial assets, and the net financial position is zero for all households. More elaborate DSGE models include investment. But in the Smets-Wouters (2007) model, which is still being lauded as "a standard reference" (Blanchard 2016, p.1), investment in fixed capital is carried out by households who rent capital services to firms.

Financial assets and financial mechanisms have been hard to ignore following the financial crisis. Recognizing that the Smets-Wouters model "needs a cocktail of extremely unlikely shocks" to account for the depth of the recession after the financial crisis, Linde, Smets and Wouters (2016, p.1) propose three extensions. One of these is the introduction of a 'financial accelerator' along the lines of Bernanke et al. (1999). The producers of final goods still rent capital services, but households now save in the form of bank deposits, and final-good producers buy the capital services from 'entrepreneurs'. Investment is undertaken by the entrepreneurs, and the investment is financed in part by external finance. Asymmetric information implies that external finance is subject to a risk premium, and the size of the premium depends on entrepreneurs' net worth.

The extensions make it easier for the model to produce deep recessions and to account for the slow recovery after the financial crisis. The account, however, relies heavily on exogenous stochastic shocks to net worth (rather than on endogenous dynamics in net worth), and it seems striking how little has been achieved a full decade after the financial crisis. Following a standard financial accelerator model, Linde et al. assume that entrepreneurs die at a fixed rate (independently of their age), that surviving entrepreneurs save all profits, and that the death rate and the resulting turnover among entrepreneurs prevent entrepreneurs from gradually accumulating sufficient wealth to become fully

self-financed. These assumptions stand in sharp contrast to actual financial behavior, and the analysis completely ignores the changes in financial behavior that have occurred since the 1980s. Corporate retention rates have declined, share buy backs have soared with net new issues of shares turning negative, and the balance sheets of non-financial corporations have seen large increases in both financial assets and financial liabilities.<sup>3</sup> If small fluctuations in net worth over the business cycle are deemed worthy of explicit analysis because of their effect on the risk premium, these changes in financial behavior – which affect net worth – would seem to require very careful attention. And, as argued above, changes in firms’ financial behavior may have implications, not just for net worth but also for the average saving rate.

### 3 Labor markets and the supply side

ILO (2017) reports unemployment rates of 4.0 % in Mexico and 3.5% in India in 2016. If one were to take these data at face value, Europe suffered much worse unemployment: the reported average unemployment rate was 9.3% for ‘Northern, Southern and Western Europe’. But the recorded unemployment rates make no sense as indicators of the slack in the labor market and the ability of the economies to expand without encountering labor shortages.

Even at a highly abstract level it is important to distinguish between ‘dual economies’ like India that have huge reserves of underemployed workers and ‘mature economies’ like western Europe that may have significant unemployment, but where the measured unemployment rate conveys meaningful information about state of the labor market: an attempt by policy makers in western Europe to match Chinese growth rates by boosting aggregate demand by 10 percent a year would soon run into labor market constraints. In principle, immigration could relieve these constraints, but political forces block this route.

Maturity, it must be emphasized, does not imply ‘full employment’ or a Friedmanite ‘natural rate of unemployment’. Nor does it imply that the long-run rate of growth is independent of aggregate demand.

If the labor supply and labor productivity grow at rates that are exogenously given, the existence of a stable ‘natural rate of unemployment’ would undermine the relevance of aggregate demand for the medium and long run. This is the premise of most mainstream theory. But there is no ‘natural rate of unemployment’. The empirical evidence for a ‘natural rate of unemployment’ was weak even before the financial crisis (e.g. Howell et al. 2007), and the slow recovery has revived interest in employment hysteresis, even within the mainstream (e.g. DeLong and Summers 2012).

Path dependency (hysteresis) in employment can arise for a number of reasons. One mechanism that has both affinities with heterodox theory and support from behavioral evidence focuses on ‘fairness’. It is well documented that

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<sup>3</sup>The observed changes in firms’ financial behavior are often seen as an aspect of ‘financialization’. The label itself does not explain why firms have changed behavior. Promising steps towards a better understanding can be found in Davis (2018).

perceptions of fairness play an important role in wage formation. It is also well documented that norms of fairness change endogenously. Kahneman et al. (1986, p. 730) put it as follows

any stable state of affairs tends to become accepted eventually, at least in the sense that alternatives to it no longer readily come to mind.

Social psychologists and behavioral economists may have strengthened the evidence for path dependency, but a recognition of the conventional character of wage norms has a long history. Statements similar to the one by Kahneman et al. can be found in the writings of Marshall, Keynes and Hicks.<sup>4</sup>

Path dependency in wage norms naturally leads to path dependency in employment. Distributional conflict is a source of inflation, and wage targets will be strongly influenced by perceptions of what is fair. If the fair wage (or the fair rate of increase in wages) is path dependent, the employment rate associated with constant inflation also becomes path dependent. The path dependency in the norms of fairness, moreover, can generate path dependencies in relative earnings which may contribute to an understanding of movements in income inequality (Skott 2005).

The non-existence of a natural rate of unemployment opens the door for aggregate demand to influence the employment rate. This level effect can, in turn, have repercussions for the long-run rate of growth. If the employment rate is constant, the growth rate of output must be equal to the sum of the growth rate of labor productivity and the growth rate of the labor force, but both the rate of technical change and the growth rate of the labor force may depend on the state of the labor market.

Several specifications have been used to capture this general argument. In one of his specifications, Dutt (2006) relates the *growth rate of the growth rate* of labor productivity to the level of the employment rate. Formally,<sup>5</sup>

$$\hat{a} = f(e - e_0); \quad f'(e) > 0, f(0) = 0 \quad (1)$$

where  $a$  denotes the growth rate of labor productivity (and  $\hat{a}$  is the growth rate of the growth rate of productivity);  $e$  is the employment rate. Dutt's formulation in equation (1) implies that productivity growth is perfectly elastic. If aggregate demand keeps the employment rate above  $e_0$ , the growth rate of productivity will keep rising. There is no upper bound on productivity growth, and there can be no long-run supply constraints from the labor market: no full employment ceiling can prevent the US or the European economies from maintaining annual growth rates of 5, 10 or 20 percent, according to this specification.

<sup>4</sup>Hicks (1975, p. 65) argued that no system of wages,

when it is called into question, will ever be found to be fair. ... [To avoid the system being called into question] the system of wages should be well established, so that it has the sanction of custom. It then becomes what is expected; and (admittedly on a low level of fairness) what is expected is fair. .

<sup>5</sup>Dutt also considers an alternative version in which  $\hat{a}$  is proportional to  $\hat{e}$ .



A less extreme specification relates the growth rates of the labor supply and labor productivity to the employment rate (Flaschel and Skott 2006). Formally, we may have

$$a + n = g(e); \quad g' > 0 \tag{2}$$

where  $a+n$  is the 'natural rate of growth', that is, the sum of productivity growth ( $a$ ) and the growth rate of the labor force ( $n$ ). Like Dutt's formulation, equation (2) implies that aggregate-demand effects on the level of unemployment translate into aggregate-demand effects on the long-run rate of economic growth; the long-run growth rate becomes endogenous. But the implications are different.

The magnitude of the sensitivity of the natural rate of growth to changes in employment is critical. A perfectly elastic natural rate of growth – as in Dutt's specification – would justify a near-exclusive focus on aggregate demand as the driver of growth. By contrast, a small elasticity and an upper bound on  $a + n$  in Flaschel and Skott's specification makes it impossible to ignore interactions between aggregate demand and the labor market, despite the endogeneity of the natural growth rate.

Realistically, the sensitivity of the natural growth rate to variations in employment is likely to be small. Firms may have an enhanced incentive to invest in R&D and to search for labor-saving changes in production if the labor market is tight. But for economies that are already at or close to the technological frontier, the effect surely is limited. The endogeneity of the labor supply may show greater promise. High demand will pull new groups of workers into the labor force, and the potential growth rate of the labor supply through immigration may seem almost unlimited. Until, that is, one considers the political constraints.

According to Lavoie (2014, p. 360) it is a defining characteristic of Kaleckian models of economic growth and distribution that 'labor is assumed not to be a constraint'; Hein (2014, p. 181), in a similar vein, suggests that in Kaleckian models 'the labor supply cannot generally be considered a constraint on growth'. These blanket rejections of the relevance of the labor market and supply constraints for the analysis of economic growth do not facilitate engagement with open-minded non-post-Keynesians.<sup>6</sup> Disregarding this tactical consideration, a focus on aggregate demand can give highly misleading conclusions if in fact economic growth is determined by the interaction between different markets, including goods and labor markets. As a simple example, consider the effects of changes in income distribution on economic growth. A large post-Keynesian literature has debated whether economic growth is wage-led or profit-led. The question has typically been addressed by examining the effects of changes in income distribution on aggregate demand. In a mature economy, however, the growth effects of a change in distribution cannot be determined by looking only at aggregate demand; a goods market (aggregate demand) that is profit-

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<sup>6</sup>To avoid misunderstanding, supply-side constraints have been discussed in the post-Keynesian literature; examples include Palley (2002) and Setterfield (2013). But the Kaleckian strand of the literature has had tendency to dismiss the constraints, and overall the constraints have been given insufficient attention, in my view.

led may be associated with a wage-led economy in a mature economy (Skott 2017a). Analogously, the overall effects on economic growth of the changes in financial behavior that have been associated with 'financialization' depend on the specification of the full model, including the assumptions that are being made about both the labor market and the determination of investment (Skott and Ryoo 2008).

Macroeconomics is about interactions across markets, about general (as opposed to partial) equilibrium. As noted by Keynes ([1936] 1973, p. xxxii),

important mistakes have been made through extending to the system as a whole conclusions which have been correctly arrived at in respect of a part of it taken in isolation.

Keynes was commenting on pre-Keynesian theories that looked at the labor market in isolation and assumed that a decrease in money wages will reduce the real wage and eliminate unemployment. Methodologically, however, a focus on goods markets in isolation raises similar issues.

Mainstream theory ignores aggregate demand in the long run. The focus is exclusively on the determination of aggregate supply (which may be endogenous, as in the myriad of endogenous growth models). Aggregate demand, it is assumed, will adjust to the supply side. Many post-Keynesian growth models have taken a completely opposite position. The labor market is ignored, and it is assumed that supply adjusts to a trajectory of demand that is itself exogenous with respect to the supply side. Neither of these extreme positions is plausible.

## 4 Product markets and Harroddian instability

The third example concerns the long-running debate in post-Keynesian economics on utilization rates and the stability of the steady growth path. 'Kaleckian' models assume that a sustained increase in the utilization rate of capital will affect saving more strongly than investment. This long-run version of a short-run Keynesian stability condition is rejected by the 'Harroddian' side.

The long run has no independent existence; it is just a sequence of short runs. This oft-repeated statement is correct but does not imply that the assumptions underlying a short-run analysis can be extended to the long run, as in the benchmark Kaleckian models. An increase in the utilization rate may have small immediate effects on the rate of accumulation but large cumulative effects. The benchmark Harroddian model captures a stylized version of this possibility: it assumes that the accumulation rate is predetermined in the short run but changes in response to deviations of the actual utilization from the desired rate.

My reading of the empirical evidence is that it supports the Harroddian side. The accumulation rate is not perfectly elastic in the long run, but a sustained increase in the utilization rate has a powerful cumulative effect on investment, much more powerful than its cumulative effect on saving.<sup>7</sup> This finding violates the extension of the Keynesian stability condition to the long run.

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<sup>7</sup>Proponents of the Kaleckian model sometimes seem unaware that their own econometric

Investment functions are notoriously difficult to estimate, but strong behavioral arguments also support Harroddian conclusions. Why would a firm keep expanding its capital stock at a constant rate if it had large amounts of unwanted excess capital capacity? Granted, we live a world of fundamental uncertainty and firms cannot maximize profits in a precise sense. The 'optimal' degree of utilization may not, therefore, be well-defined. There may be range of 'acceptable utilization rates', as suggested by Dutt (1990) and Setterfield (2017), among others. It is also perfectly possible that there is path dependency in the perceived value of the optimal utilization rate (Lavoie 1995, Dutt 1997, Schoder 2012, Nikiforos 2016). But the plausible range of acceptable utilization rates, taking into account path dependencies, surely is narrow. Firms that considered 75 percent utilization optimal will not, following a 2-percentage point increase in the saving rate, start believing that 50 percent is an optimal utilization rate. Yet, this order of magnitude in the adjustment of the desired utilization rate is implied by the Kaleckian models (Skott 2012).<sup>8</sup>

The question is not whether there is a unique, well-defined desired utilization rate at which accumulation becomes perfectly elastic. Harroddian instability does not require a vertical long-run accumulation function. The accumulation function may have relatively flat segments in a range of acceptable utilization rates. There may also be path dependencies. The key question is about magnitudes. In this respect there is a close affinity with the discussion of endogeneities in the natural rate of growth. In my view, neither evidence nor behavioral plausibility supports the assumptions that have become common in post-Keynesian growth models. The natural rate of growth is relatively insensitive to changes in employment; the medium and long run accumulation rate is relatively sensitive to sustained changes in the rate of capacity utilization.

A Harroddian instability argument is not the end of the analysis, but the beginning. Income and employment fluctuate, and at times the fluctuations develop into severe, prolonged recessions. A narrow analysis of the goods market provides no explanation for the turning points; following a negative shock, nothing seemingly prevents a cumulative downturn. But stabilizing mechanisms can be found by looking at interactions across the main markets. Not all macro-economic models need to include goods, labor and financial markets explicitly – the detailed specification of a model should depend on the particular question that the model is designed to illuminate. In an analysis of Harroddian insta-

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results reject the extension of the Keynesian stability condition to the long run (Skott 2012, 2017a).

<sup>8</sup>Let

$$\begin{aligned}\frac{S}{K} &= s\sigma u \\ \frac{I}{K} &= a + bu\end{aligned}$$

where  $\sigma$  is the output capital ratio at full utilization,  $u$  is the utilization rate, and where  $s\sigma > b$  (the stability condition). The average saving rate  $s$  is about 20% in the OECD, and if  $\sigma = 0.5$ , we must have  $b < 0.1$ . If, say,  $b = 0.08$  and  $a = 0.015$ , the equilibrium solution for utilization is  $u = 0.75$  when  $s = 0.2$  and  $0.5$  when  $s = 0.22$ .

bility, however, the interaction between the goods and labor markets becomes essential.

An increase in aggregate demand raises the employment rate, and this increase in employment generates feedback effects to other variables, including aggregate demand. High employment – a small reserve army of labor – undermines discipline in the factories (Kalecki [1943] 1971, p. 141), and one would expect this deterioration of the business climate to put a damper on firms’ investment decisions as well as on their willingness to expand output and employment; Skott and Zipperer (2012) find support for this expectation.<sup>9</sup> Another set of effects relate to wage setting and inflation. Wage bargaining does not set the real wage, but nominal wage formation is influenced by the state of the labor market. Inflation and the emergence of supply constraints in turn affect monetary and fiscal policy. Central banks move to raise interest rates, automatic fiscal stabilizers kick in when employment increases, and discretionary fiscal policy may follow, especially if the movements in the employment rate are large and sustained.

The local instability of the steady growth path allows one to tell an integrated story of endogenous business cycles with bounded fluctuations in the unemployment rate. The Harroddian mechanism generates local instability; the interaction of the goods market with labor markets and economic policy turns the instability into bounded fluctuations (Skott 1989, 2015, von Arnim and Barales 2015). The interactions between goods and labor markets also align the average growth rate and the ‘natural rate of growth’ to each other; as argued above, the natural growth rate may be endogenous and influenced by aggregate demand.

A recent literature recognizes the potential Harroddian instability but offers a different route to stabilization: autonomous demand may stabilize the economy.<sup>10</sup> Consumption by capitalists, residential investment, and exports are seen as the main private-sector candidates for autonomous demand. These components of aggregate demand can, it is suggested, be taken as exogenous: they evolve independently of past, current and expected future movements in output.

Assuming that autonomous demand grows at a constant rate, the growth rate of the economy as a whole may in some circumstances get pulled towards that same rate. But this stabilization argument faces an obvious empirical challenge: the private-sector components of demand that have been singled out as potentially autonomous are much more volatile than aggregate output, and it is hard to see how they could serve as a stabilizing force.<sup>11</sup> At the very

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<sup>9</sup>High employment is correlated with high aggregate demand. Employment rates, however, are not perfectly correlated with utilization rates, and the positive partial effect on investment of a rise in utilization (holding constant the employment rate) is perfectly consistent with a negative partial effect of employment (holding constant the utilization rate). Capital utilization rates should not be used as a measure of the state of the labor market.

<sup>10</sup>The contributions include Serrano and Freitas (2015), Cesaratto (2015), Allain (2015) and Lavoie (2016); Skott (2017b, 2018a) and Nikiforos (2018) present critiques.

<sup>11</sup>Stabilization via exports raises additional questions. How can exports stabilize the world economy? What stabilizes the foreign incomes that supposedly stabilizes the home country’s

least there is a strong disconnect between the theoretical models that have been proposed and the evidence: the models assume that autonomous demand grows at a constant rate.

Government spending arguably could be seen as exogenous. But it would seem peculiar for Keynesians to advocate a constant-growth rule for government consumption. As a descriptive proposition, moreover, the government sector acts as a stabilizer through automatic fiscal stabilizers as well as discretionary policy. Both prescriptively and descriptively a 'functional finance' perspective on fiscal policy would seem more fruitful than theories that negate any link between the state of the economy and government policy.

Fiebiger and Lavoie (2018) appear to abandon the concern with instability and the stabilizing effect of autonomous demand. Instead, they see both cycles and long-run growth as being driven by autonomous demand, singling out residential investment as the most important component of autonomous demand. Treating residential investment as exogenous, however, flies in the face of both evidence and theory. The housing market and residential investment react strongly to movements in interest rates, and movements in interest rates react strongly to output and employment. The fact that residential investment – like other components of demand – can be subject to exogenous shocks does not imply that the entire trajectory of residential investment should be viewed as exogenous. We can and should do better. Residential investment is carried out by goal oriented decision makers; the behavior of builders and households – and the financial constraints that they face – can be analyzed. There is a large endogenous element.

The current popularity of models that emphasize autonomous demand as a driver of economic growth appears to be based on a perception that somehow these models are particularly 'Keynesian': the models make investment "in both the long run and the short run, independent of the savings that would be forthcoming from the normal utilisation of productive capacity" (Cesaratto 2015, p. 154). This argument is puzzling. Keynes did not ignore the supply side, and disregarding exegetical issues, why would one insist that changes in the rate of saving can have no effects on current or future investment? Do saving rates not influence aggregate demand and the utilization rate? And do firms not react to changes in capacity utilization?

The claim for the unique status of autonomous demand even seems internally inconsistent: how can it be 'Keynesian' to have growth be driven by how much households choose to consume out of any given income but 'un-Keynesian' to have growth driven by how much households choose to save out of any given income? Consider a simple consumption function

$$C = a + bY$$

If stories that link the trajectories of investment and output to exogenous movements in  $a$  (autonomous demand) are truly Keynesian, why is it not Keynesian to link trajectories of investment and output to exogenous movements in  $b$ ?

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exports?

Changes in  $a$  and  $b$  both affect the average saving rate for any given level of income.

Autonomous demand can be used to stabilize a Harrodian economy and ensure that utilization converges asymptotically to the desired rate precisely because the trajectory of autonomous demand generates changes in the average saving rate associated with any given level of income. Moreover, an increase in the growth rate of autonomous demand leads to an increase in the steady-growth value of the saving rate, and the model implies that in steady growth the level of investment will be equal to the level of saving that would be forthcoming from the normal utilization of capital. The hallmark of the autonomous-demand story is not the independence of investment from saving, but the lack of behavioral explanations for the key assumptions about changes in saving.

Serrano and Freitas (2015) make a slightly broader appeal, suggesting that autonomous demand represents a "true heterodox alternative" because it allows for a "reconciliation of demand-led growth, exogenous distribution and a tendency to normal degree of capacity utilization" (p. 17). This argument is related to Lavoie's (2016) claims that "the paradox of thrift or the paradox of costs can be preserved ... by taking into account an autonomous growth component" (p. 195). One should be uncomfortable, I think, with arguments that justify assumptions by their ability to deliver desired conclusions. But the argument is strange for another reason: one does not need autonomous demand in order to get Keynesian conclusions. Harrodian models with feedback effects from the labor market are perfectly consistent with Keynesian conclusions.

Using a fix-price model with an exogenous profit share, (i) an increase in the average saving rate may reduce both the employment rate and the long-run rate of growth, (ii) an increase in animal spirits may boost both the employment rate and the long-run rate of growth, and (iii) an increase in the profit share may lead to a decline in employment and the rate of growth (Skott 2015, Skott 2018b).<sup>12</sup> The treatment of the profit share as exogenous is questionable, however, and notions of wage-led or profit-led economic growth cease to be well-defined if the profit share is itself endogenous: the reduced-form correlation of the profit share with other variables will, in general, depend of the nature of the underlying exogenous shocks (Skott 2017a). With this caveat, similar 'Keynesian results' can be obtained using a range of other models with Harrodian instability and stabilizing feedback effects from the labor market to wages, prices, investment and economic policy.<sup>13</sup>

Formal models of endogenous cycles typically do not include stochastic shocks, and autonomous shocks clearly do occur. A new government, for instance, may raise military spending for reasons that are completely unrelated to the state of

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<sup>12</sup>Fiebigger and Lavoie (2017) claim that the introduction of a labor market makes for 'a supply-side explanation of growth and cycles'. This claim would have some validity if directed against the original Goodwin model. As a critique of my integration of Keynesian and Marxian elements, the claim is harder to understand. Aggregate demand plays a key role in the determination of the cyclical pattern, the average rate of employment over time, and the long-run rate of growth. Is that a supply-side explanation of growth and cycles?

<sup>13</sup>Fazzari et al. (2013) present an intermediate model that combines supply constraints from the labor market with autonomous demand.

the economy. Animal spirits, consumer confidence, or the prevalence of credit constraints can also be subject to shocks. There is nothing new in this. Traditional Keynesian models have always been used to analyze demand shocks of this kind. Shocks to government consumption are also an integral part of mainstream DSGE models for that matter. Exogenous shocks will add irregularity to the fluctuations in non-stochastic models of endogenous cycles. They do not justify treating entire trajectories of demand as exogenous.

## 5 Conclusion

Open minded mainstream macroeconomists recognize that current DSGE represent 'badly flawed descriptions of reality' but maintain that 'starting from explicit microfoundations is clearly essential' (Blanchard 2016).

The implied methodological commitment to the Lucas revolution must be rejected. The macroeconomic mainstream conflates goal orientation with a highly restrictive version of optimization, and compounds the problem by ignoring interactions across markets and between distinct economic decision makers. Microeconomic behavior, moreover, takes place within an institutional structure that is intrinsically 'macro'; the structure of a corporate economy, for instance, has implications for the determination of the average saving rate, as argued in section 2.

A rejection of the DSGE paradigm should not, however, lead one to reject goal oriented behavior and the need for microeconomic analysis. Goal orientation does not exclude deviations from 'homo economicus'. Households and workers have cognitive limitations and are influenced by habits and social norms. The conventional element in notions of fairness provides an illustration that goal orientation does not exclude path dependency.

Strict optimization is impossible in a world of uncertainty, but goal orientation still has bite, especially on the firm side; the Kaleckian investment function is behaviorally unconvincing. This argument may be increasingly recognized, but the attempt to address Harrodian instability by an appeal to autonomous demand is also unconvincing. Residential investment does not grow at a rate that is exogenous and constant. It is carried out by goal oriented decision makers who are influenced by movements in income and interest rates.

The interaction across markets (and between markets and economic policy) provides a solution to the Harrodian puzzle. Mainstream analysis of the medium and long run errs by ignoring the role of aggregate demand, but that is no reason for post-Keynesians to move to the opposite extreme and reject the relevance of the labor market and the supply side for economic growth. Aggregate demand is one of the determinants of long-run growth, but it is not the only one.

The development of post-Keynesian theory in this behavioral and structuralist direction may require models that are more complex than the baseline post-Keynesian models of the goods market. Complexity is not a virtue in itself, but neither is oversimplification. In a (possibly apocryphal) quote Einstein put it

succinctly, 'everything should be made as simple as possible, but no simpler'.<sup>14</sup>

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<sup>14</sup>The attribution of the precise wording to Einstein is questionable; see <https://quoteinvestigator.com/2011/05/13/einstein-simple/>



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