

Towards a Keynesian theory of growth: on the relevance of some Sraffian debates¹

Abstract.

Kaleckian analysis is now dominant amongst Keynesian accounts of growth. Its success is founded on its portrait of growth episodes as a succession of steady-states where growth is governed by accumulation and no tendency to the cost-minimizing level of plant utilisation exists. This dominance is however challenged by Marxian, who regard the assumption as behaviourally invalid, and an obstacle to the long-run validity of Keynesian idea. By reviewing Sraffian ideas, we will argue that accepting the existence of a cost-minimizing level of utilization towards which competition ought to lead does neither invalidate the quest for a Keynesian theory of growth, nor deny a role to flexible capacity utilization in the long-run.

1. Introduction

Keynesian theory does not assume that any supply will meet its demand if only prices are flexible enough². Instead, it argues that where constraints to expansion exist they are most likely to arise because the economic system is unable to generate sufficient demand to fully employ labour and (potentially) other resources.

Hence, it is naturally interested in the policies that may alter, rather than reinforce, the embedded functioning of a capitalist economy by generating sufficient aggregate demand to recover output and employment when a crisis occurs: 'microeconomic' policy –credit regulation, income redistribution, industrial activism etc. are to be considered only alongside that goal.

Keynes gave the initial impulse to the body of work that now bears its name, with the publication of his *General Theory* (Keynes (1964 [1936])). He famously described his work as one in which he fought to escape the hold of older ideas, which he identified with classical (marginalist) thought, and the degree to which he and his successors have succeeded in such endeavour has been the subject of many subsequent debates towards the development of a working theory of the economy.

While the discussion in *The General Theory* is rich in concepts and nuances, it is possible to reconstruct the main pieces of Keynes' theory of output and employment from the set-up in

¹ This paper is a redrafted version of "Obstacles to a long-run theory of Growth", presented in the 'Young Sraffians Conference', Roma 3, 2012. I would like to thank Professors Vercelli and Trezzini for their help –the usual disclaimers apply.

² This crucially includes the determination of employment and investment.

chapter 18. The work is set in the Marshallian short-run: distribution and the capital and money stocks are fixed, so that the structure the level of prices arises quite independently of that of quantities, and can be taken as a “given” in the optimizing problems of (final) consumers.

On the quantity side, Keynes assumes the structure of output (as divided between consumption and investment) is also a given, through the multiplier mechanism³. However, the *level* of output, which determines the level of employment through the technology in use, is itself an unknown. To close the system, one must therefore know the *value* of investment.

Keynes assumes the investment function depends on the difference between expected profitability and the cost of money. Though the interest rate may not be increasing in the size of investment, profitability is assumed to lower the higher the amount of capital that is newly introduced, which guarantees some finite solution for the level of new to capital to be installed.

Once investment is known, propensities to consume and to hoard will adjust to determine output. At this level, the expectations of supply exactly match the effectual demand new incomes create: Keynes calls this “the point of effective demand” (Chick (1983)).

Keynes is famously concerned by the stability of this position, and considers the potential effects of changes in wages and interest, which he had taken at first as exogenous, in relation to it. He argues that he does not expect investment to be greatly responsive to short-run profitability changes, nor real wages greatly vary with price or output changes, so that his conclusion is not altered.

That this equilibrium is, in Keynes words, a “mean position [...] determined by “natural” tendencies, namely, by those tendencies which are likely to persist” (ch.18) is, if anything, a reason to intervene: even if we allow for some crowding-out of investment due to the competition with government expenditures for savings, or consider the possible “leakage” of expenditure through the foreign account, the Government, by increasing its expenditure, may still expand the economy. Though the assumptions upon which Keynes built his theory have later been refined, this conclusion retains its validity.

Within the marginalist school, the issue of the “stickiness” of prices (wages) was soon a point of contention, and remains so to this day. This was so because it was argued that if nominal prices (wages) were misaligned, market forces would tend to adjust them until equilibrium was achieved, unless special institutions prevented normal market mechanisms to achieve this goal⁴. This was based on an extension of the Austrian adagio where disequilibria in markets were only a step in the transition to a full-employment position.

³In one of few references to fiscal policy in his *magnum opus*, Keynes (ch.2) assumes this ratio to be affected when considering public expenditure, which will lower the proportion of desired savings (and therefore, *caeteris paribus*, increase the expansionary effect of a given level of investment).

However, as the elaborate neo-Walrasian revival which started around the same decade (Petri (2004)), proceeded to unravel the problems of existence and unicity of such a full-employment position could be guaranteed (under the otherwise very restrictive assumptions later defined by the Arrow-Debreu), it found it could not guarantee that short-run disequilibria converged to it unless one was to make the leap of faith that knowledge of the equilibrium position is not derived from the actual functioning of the economic system (the rational expectations hypothesis) and hence the set of optimal prices is public information, which ultimately makes markets a vacuous institution of no consequence to production and exchange decisions of agents.

The current resilience of this strand of marginalist thought is more striking when one considers that this conception of a market system was at odds with traditional neoclassical belief. Indeed, in old accounts of general equilibrium (Garegnani (1976)) competition had been associated with both free-entry and disequilibrium price setting, smooth technical change guaranteeing convergence to the full-employment position by appropriate shifts in the capital/labour ratios .

Retreat to this older kind of analysis, to which most macroeconomic research still defers, could not provide any relief. It is known that it is impossible to rely on these older concepts to provide a supply-and-demand reading of Keynesian thought (as the neoclassical synthesis attempted to do), for proof of a general mechanism of factor substitutability (itself an unlikely proposition, given that technical change commonly occurs in the form of shifts in the wage-profit curve (Kaldor (1955-56), Nell (1998))) cannot be obtained, as the smooth factor shifts this notion of equilibrium required cannot be guaranteed (Sraffa (1960)). The explanation is simple: if labour is unemployed and wages fall, this may make more capital-intensive investment more profitable, thereby farther decreasing the demand for labour.

Hence, by abandoning marginalist readings, we may consider the determination of distributional variables and prices as logically distinct from the determination of the vector of final demands, validating Keynes' short-run separation between the two.

2. Neo-Keynesian theory

Such separation seemed harder once a theory of growth was attempted. Consider an economy in which output expands proportionally in all sectors –e.g. a steady-growth path. If one makes the assumption that investment adjusts the capital level towards the optimal output-capital value, and taking the multiplier as a given, it follows that *only* one level of growth is possible in

4 The “New Keynesian” school is devoted to an understanding of the causes of such stickiness through an appeal to meta-market adjustment costs, externalities or incompleteness –which, in its “New Consensus. Such investigation, though sometimes fruitful in insights on the nature of information or the insitutional set-up of certain economies, is utimately superflous in its quest to validate Keynesian ideas.

equilibrium, given by the fraction of the two parameters: $g_w = s/v^*$; the warranted rate (Harrod (1939)).

Study of the 'warranted rate of growth' provided the means to stylize capitalist development into an analysis of linear trends of accumulation, as ruled by capacity savings. Building upon this equation, a group of Keynesian authors became interested in challenging the idea of the unicity of the 'warranted' rate, by adequate changes in the supply of savings.

In neo-Keynesian analysis, it was through changes in distribution that such flexibility was to be obtained (Kaldor (1955-56), Robinson (1956)): given that different social groups might have different propensities to consume, redistribution amongst them would alter the proportion of savings available to finance investment.

After Kaldor (1966), we consider two basic institutions of the market economy: households (who received their income from wages and distributed profits) and firms (who use a share of their profits to finance investment). Then, the savings-investment equality may be written:

$$shv^* - r + sfr = g$$

Where v is the output/capital ratio, sh and sf the savings ratios of the two institutional sectors

and g and r stand respectively for the rates of profit and growth. Rearranging:

$$r = gsf - sh - vshsf - sh$$

Or:

$$r = gsf$$

If the 'classical savings' function holds—and hence $sh=0$ (Kaldor (1955-56)) -or the savings of

the household sector are used to purchase monetary instruments, rather than finance the acquisition of new capital (Kaldor (1966)). It is this latter relation that came to be known as the "Cambridge equation".

In general both firm's financial practices (Park (2004)) and household inequality and savings behaviour are relevant to the economy and limit severely the applicability of any version of the equation. However, as Kregel (1971) has noted: "the model can allow any desired degree of complexity that increased generality implies without invalidating the essential proposition that as long as the investment decision is independent of saving, the rate of profits and thus distribution will depend on the rate of investment of firms and thriftiness conditions [p. 192]".

As it soon became evident, by allowing for a continuum of 'warranted growth rates' the problem of which one might rule the economy becomes a thorny issue. Kaldor (1955-56) had found it possible to speak of an "inherent tendency to growth and an inherent tendency to full employment" in normal conditions e.g. when distribution is flexible, competition prevails and investors are confident in the future, leaving the growth rate to be determined by that of labour; but such statement had the unfortunate consequence of placing Keynes' theory of employment in some uncomfortable Marshallian short-run, to be left as soon as accumulation funds find their way back onto real investment.

Robinson, in rightly refusing a central role to scarcity in the determination of long-run growth, used 'animal spirits' to close her system, appealing to history in order to explain such conventions. Robinson's (1956, 1962) theory of investment used an accumulation function where both "animal spirits" and the (normal) profit rate act as a possible guide for investment⁵. However, short-run factors were likely to upset such expectations, in which case, the 'warranted rate of growth' never becomes a correct approximation to actual growth.

Within the Sraffian-Keynesian field, a late methodological appraisal of neo-Keynesian theory was to come in Hollis and Nell (1975). There, 'reproduction' is simply vindicated as the 'necessary truth' of economic analysis: the latter can do without explicit consideration of time, knowledge etc. (p. 214-215). What one might consider the condition for the *validity* of the analysis of 'warranted growth' is here offered as the condition for growth theory *tout court*.

⁵Both were a *proxy* for profitability expectations: "The dominant influence on the swings of effective demand is swings in the expectations of profit". (Robinson (1971) p.80), paving the way for a Marxian interpretation when such profitability expectations are based upon changes in the profit rate rather than utilization.

Theirs is a view grounded on an economy characterized by “rigid and highly interdependent [technology], giving rise to dependencies among groups and firms [p.215]”. Once the system is defined by a set of methods of production that must be activated and renewed in regular manner, a great set of variables (household spending and training, firm investment, State services provision) would become interconnected in such a way that none can halt or change without jeopardizing the continuity of the economic system as a whole.

In other words, conventions prevail because of the little room for deviations from the warranted path: even the smallest change in investment policy must upset a whole range of social relations whose complex interlocking, however unlikely its emergence may seem, is regarded as the very condition for the system to exist at all.

In the particular field of accumulation, this means that as funds do not become available for the introduction of new capital until profits from installed plants (which cannot be operated faster to release additional resources without risk of breaking down) are obtained, so that growth is at all times constrained by available capital; as is final demand which only comes into being as the newly-installed capital is operated and its incomes distributed.

Hence, through technical rigidity the ‘warranted rate’ acquires a degree of persistence that motivates its theoretical interest. This does not mean the system is forever a copy of itself (and indeed technical change can be accommodated within the neo-Keynesian framework, as in the work of Pasinetti (1993)). It is rather that the system cannot but adopt a single path without breaking down –and from them onwards, its evolution become unknowable.

Paradoxically, authors in this tradition freely admit that no lesser characteristic of capitalist systems is that they ‘often in fact fail to reproduce themselves’ [p.251]. This, however, they think to be a problem that does not invalidate their theory –it only makes it inapplicable. While the task of neo-Keynesian models is to identify the ‘production’ model behind the economy, the latter is free to follow its path –one which is left to ‘prediction’ models to determine⁶.

Such distinction may at first view seem somewhat artificial, for it seems to uphold the wrong hierarchy in economic analysis. ‘Crisis’, as a special form of change, is the central concept of Keynesian economics, and the priority given to a theory which has no place for it cannot be justified on *a priori* grounds.

Such tension is however dissipated through the concept of ‘programmable’ models, in which the apparatus of production models serves to judge how some particular growth path could be established, in order to avoid a depression, chronic unemployment, etc.

Thus, neo-Keynesian analysis, as conducted by Sraffians, finds itself often linked to the work of Keynesian policy-makers –and indeed such “normative” perspective of neo-Keynesian analysis is often quite explicit (Pasinetti (1960, 2001)), in opposition to Marxian attempts (Skott (2002, 2010), Shaikh (2009)) to use these models to ground a variation of some form of Say’s law an

⁶ A distinction which parallels that between ‘natural’ and ‘market’ values in the works of other Classical theorists.

interpretation which, one must admit, was more than available in Old Cambridge theorists' early work.

3. Steady-growth models: Kaleckian and Sraffian

Still, it is fair to note that Kaldor (1955-56) did not wish to offer a theory of growth but one of distribution. In the first decade after WWII, a theory of a distribution of income derived from the requirements of accumulation might have seemed plausible enough, as Keynesian capitalism, while guaranteeing (in principle) a rate of growth compatible with continuous full employment, did not attack firm's autonomy in setting both accumulation and pricing plans for their products. Indeed, the only role for labour institutions seemed to be to facilitate this kind of capitalist planning by establishing a nominal anchor for wages that prevented inflationary spirals or exacerbated the problems of coordination inherent in the market economy.

During the 60s, this consensual arrangement fell apart in most developed capitalist economies, and a wave of labour demands succeeding at obtaining real wage increases far above those of productivity as the rate of growth itself accelerated. To explain this historical puzzle, it was argued that a higher rate of growth did in no way require a higher rate of profit, which could therefore be treated as exogenous⁷ once it was recognized that higher growth rate could be accommodated by using more fully installed capacity (Steindl (1979)), rather than lowering wages to free resources for new investment.

Kaleckian models combined flexible capacity utilization and exogenous distribution by using an independent investment function, but with an accelerator element, reacting positively to utilisation (Rowthorn (1981)). A stylized (linear) version, based on Lavoie (2008) could be:

⁷ Kaleckian authors (Dutt (1986)) would probably emphasize 'monopoly pricing' to explain the pattern of mark-ups over competitive prices. Determination of the (long-run) 'competitive' rate of profit, dear to Sraffian authors, would then be given by institutional practices and policy decisions far away from the individual firm or sector. Many authors, notably Pivetti (1985, 1988), have defended the rate of interest as the ultimate determinant of the rate of profit, given that any capitalist that borrowed funds to enter an industry could arbitrage between the interest on loans and the profit rate. Unfortunately, this explanation seems to exclude the financial system from price competition –to the extent interest and debt are the price and product of the financial industry (Park (2002))-, and may at most produce a lower bound to the profit rate. Alternatively, the real wage (see for instance Stirati (1992)) has been taken as a given -but it is unclear how well workers can transform their wage demands into real earnings, as the setting of prices remains the prerogative of capitalists. In the end, it seems more feasible to admit that different bargaining positions leave some autonomy for a real profit target rate -maintained through tacit convention within and across sectors as a result of free entry (Ciccone (1991)), a process that we may formalize through full-cost pricing procedures (Boggio (1992)), which provide a realistic picture of general convergence to long-period *price* equilibria (Lavoie (2010)).

$$g_i = \alpha + \beta u$$

$$g_s = s r$$

$$u = r / r_n$$

Where (r_n, r, u) are the normal and conventional levels of profit and capital utilization, α some positive level of investment induced by the state of animal spirits. At steady-growth:

$$u = \alpha s r_n - \beta$$

$$g = \alpha + \alpha \beta s r_n - \beta$$

Which requires $rn > \beta s$. The model exhibits both the paradox of “thrift” and “costs”, as the growth rate is negatively affected by an increase of savings and an increase in the normal rate

of profit, but different specifications of the investment function may yield different results .

8

What is important here is that the model defines an equilibrium position where utilization acts to adjust the discrepancies between the propensities to invest and consume, without changes in normal distribution as in the old Cambridge model.

Several authors (Auerbach and Skott (1988)) have long been critical of any attempt at defining a steady-growth path without normal capacity utilization. Acknowledging utilization is indeed flexible in the short-run, they argue business would invest only to assure their plants operated at their optimal levels, and no farther.

Even if mistakes, financial constraints or changes in demand may make such adjustment difficult, persistent, constant deviations of utilization from its normal levels would lack any ready behavioural explanation: *if* the model is (as it must be) a disequilibrium one, it cannot be formalized in the language of a steady-state.

This problem has been recognized by Kaleckian authors, who now have defined a meta-adjustment process where normal utilization rates themselves move towards their actual levels (Lavoie (2003); Hein *et al.* (2011)). Yet, this notional definition of normal utilization rates fits uneasily with Kaleckian price theory, where “normal utilization” is embedded in the definition of a cost-minimizing technology (Shaikh (2009)), and with the analogous Sraffian views on ‘technique’ (Kurz (1992), Kurz and Salvadori (1995), Cesaratto (2012)). Consequently, some Sraffians have been no less partial in refusing to flexible capacity a role in the theory of growth⁹ even when rejecting the Cambridge theory of distribution.

A clear example is Eatwell (1983) and Eatwell and Milgate (1983) contributions, for whom investment itself must be made endogenous through the ‘state of long-term expectations’, so that not even a residual role is left for a theory of accumulation, normal utilisation of capacity

8 For an alternative version, where a different notion of profitability is used and such paradoxes may not hold, see Marglin and Bhaduri (1990). The present model might also

become profit- and savings-led for negative values of α and $rn < \beta s$.

carrying on every period as capital is perfectly adjusted to final demand. It should be noted that with circulating-capital only, such a view seems empirically plausible (Shaikh (1992)); and it was with reference to circulating capital that Serrano (1995) started his discussion of the 'Supermultiplier', in which flexibility was sought through the inclusion of finance, freeing the economy from the past history of savings.

As expressed in some of his models by Hicks (1950), investment was to be tied to the effective growth of autonomous demand –that is to say, demand that is not sustained by current income, from which it may dissociate itself through credit.

Consider the following closed-economy version, based on Serrano (1995), where autonomous investment (Z) is the only source of autonomous demand, and Y, C, I stand for gross¹⁰ output, consumption and induced investment respectively:

$$Y=C+I+Z$$

It is postulated that investment perfectly tracks final output, so that:

$$I=1+gY/v$$

Where v is the output/capital ratio, and g the rate of growth of autonomous demand.

Assuming farther that all wage income is consumed, we may write the 'Supermultiplier' in the following form:

9 Not least as price and quantity long-period equilibrium are often conceived of simultaneously, in terms of 'fully-adjusted' positions (Vianello (1985)). Nevertheless, the idea seems alien to the theoretical separation between the determination of prices and that of quantities (mere 'givens' in Sraffa (1960)), of which only the former have enough definiteness to belong to the 'core' of Sraffian theory (Garegnani (1990)).

10 With net output, we would have the traditional multiplier with autonomous demand rather than investment on the numerator.

$$Y = Z(1-w)l - (1+g)/v$$

Note also that, since $rK = I + Z$, the positivity of autonomous demand requires $r > g$. While

growth is bounded above by the profit rate, it is now free to wander around any value below it *at full capacity*, as indebtedness provides the additional savings.

Note also that debt-to-output ratios converge to the rate:

$$(dz^*, di^*) = (1-w)l - v(1+g)g - \rho, 1-w)l - v(1+g)\rho - g)$$

Where $g > \rho$ (ρ being the interest rate) is required to guarantee sustainability of the system:

otherwise, deficit spending would only be possible speculatively - and hence impossible over the long-run.

Once the 'Supermultiplier' is allowed into the world of fixed capital, matters became more contentious. Trezzini (1998) noted that a change in the steady-rate growth of autonomous demand will not *instantaneously* shift the rate of accumulation to its same level.

Consequently, it may be argued that it is not possible to obtain a 'Supermultiplier' relation except as the end-point of some dynamical process. In the meantime, with *fixed* capital, capacity utilization will differ from its normal levels, so that it may be too soon to write off the flexibility of plant use in a theory of growth.

To counter this objection, certain authors (such as Bortis (1997, 2008)) have resorted to emphasize once more the complex interlocking of activities in a modern monetary economy – an argument that has less force once the flexibility of production and finance are not denied.

Alternatively, a re-evaluation of accelerator theories seems to be under way¹¹, to prove stability and convergence of this new 'warranted path' as investment reacts to persistent

11 Arguably, Garegnani (Eatwell and Milgate (1983), Preface, footnote 1) pointed in this direction, when writing: "Keynes is concerned with a short period analysis of aggregate output (the determination of the level of capacity utilisation) ... a long period analysis of aggregate output [requires] an analysis of the *reciprocal* adaptation of aggregate supply and aggregate demand" [my emphasis].

deviations of capacity from its normal values. Cesaratto *et al.* (2003) refer the reader to a flexible accelerator investment function as the behavioural foundation for 'Supermultiplier' analysis, though the argument is only sketched. Dejuán (2005) considers 'perfect foresight' as a stabilizer, arguing against 'naïf' backward-looking expectations, to offer his proof of convergence.

4. Beyond steady-growth

Still, Sraffians like Garegnani (1992) have long insisted that departures from normal capacity utilization were key to an alternative to neo-Keynesian theory, without endorsing for that reason -Kaleckian analysis –and indeed, a rejection of steady-growth paths is often quite explicit, as in Ciccone (1992), who grounds his criticism of the Cambridge equation in the very *irregularity* of demand.

It should be clear that such concerns are not incompatible with the formalization of growth paths. For instance, in the spirit of earlier contributions (Duesenberry (1949), Matthews (1954-55)), a formal representation of the effects of consumption asymmetry throughout the cycle has been used to explain irregular growth –yet at the cost of *ad hoc* assumptions on the investment function (Garegnani and Trezzini (2010), Trezzini (2011)), which bring them close to the Post Keynesian appraisal of 'provisional' equilibria (Chick and Caserta (1997)) and therefore to the methodology Kaleckian theory is built upon (Lavoie (2008)).

In my view, one should not deny a role to the flexible accelerator in a theory of growth, for it provides a robust foundation for the Keynesian case of supply adapting to demand which is not only of theoretical interest, but also a practical urgency when the 'need' for investment to *lead* the economy out of the recession smoothly fosters the talk of restoring 'profitability' or upholding investment 'confidence' through conservative policies, without consideration of alternatives.

It might be deceptive to consider the accelerator models of the 50s that preceded 'Old Cambridge' theory as some kind of equilibrium device. Already when Harrod discussed his 'warranted' rate, he was explicit he did not expect it to be realized, for it would be inherently unstable as a result of the over-(under-) shooting of investment plans. Harrod placed a great deal of emphasis upon this dynamic issue, from which (along with his other writings) we may infer he had wished to promote a theory marrying growth and the cycle.

Hicks (1950) and Goodwin (1951) attempted to develop a dynamic theory in precisely those very lines, but the conditions that those models required to maintain fluctuations forced such attempts to retreat into the background (Duesenberry (1958)), or to be regarded as part of a theory 'of the cycle', to be superimposed later to that 'of growth'¹². It is with this view in mind

that the 'Supermultiplier' approach (but also Shaikh (2009)) wishes to make use of multiplier-accelerator tools¹³: as a means to obtain stability proofs.

Yet, interest in multiplier-accelerator ought to progress to an appraisal of the possibilities that its 'floors' and 'ceilings' (even in the simplest piecewise-linear functions (Day (1994))) and other non-linearities of multiplier-accelerator models provided: a road to complexity¹⁴. Though in simple dynamics it is customary to abstain from any but convergent mechanisms -as sustained oscillations are seldom structurally stable (Blatt (1983), when complex dynamics become possible it may occur that the system becomes chaotic or at least capable of oscillations over a wide range of parameters -offering long-run stability to those authors attached to the notion without the tendency to normal capacity use or balanced growth ever producing a fully-adjusted trend¹⁵. Already, the articles in Puu and Sushko (2006) provide an interesting collection of works aiming at this direction¹⁶.

Alternatively, as championed by Palumbo and Trezzini (2003), we must remember that 'stability' of an equilibrium path (even if, as often implied, such path is unique and stability is

12 Reflecting on the Hicksian model, Kaldor (1951) writes: "[the model] works in exactly the same way under "static" assumptions with no trend as under "dynamic" assumptions, with a trend induced *from the outside*". [my emphasis].

13 See for instance Cesaratto (2012).

14 That was already lamented by Rossler (2006) as the main obstacle to the inclusion of Sraffianism into the Post-Keynesian fold. On the relevance of the concept of complexity to Keynesian analysis see also Goodwin (1990), Keen (2001), Moore (2001).

15 A theme close to Kalecki's (1971) well-known comment: "the long-run trend is but a slowly changing component of a chain of short-period situations; it has no independent entity, and the two basic relations mentioned above should be formulated in a such a way as to yield the trend cum business-cycle phenomenon [p.165]".

16 Also Puu *et al.* (2005), which provides a mechanism of endogenous growth *without* reference to the profit rate or making use of autonomous demand may be of particular interest in the light of the debates reviewed.

global) is not enough to leave out of theoretical analysis the possibility of disequilibrium in simple dynamics, for the problem of stability is a 'relative' one: if the equilibrium position shifts faster than it takes for the economy to reach it, actual dynamics cannot be reduced to the study of equilibrium points.

The criticism can be expressed even more forcefully: even models with no stable equilibrium may be of interest *if* they represent the actual nature of the economy. That we do not 'see' such instability may be simply a matter of perception –or may be due to the ability of the economic system to change its structure when confronted with such explosive motions (Vercelli (1991)).

Therefore economic models cannot abstract from the actual position of the economy, and must be confined to few periods after today: such has been the emphasis, for instance, of the policy exercises of Taylor (1990) and other SAM-based analysis, which use the real system as a boundary condition for large-scale simulations under different behavioural specifications, and can serve as a basis for applied work in the wider Keynesian tradition in which it arises as long as demand is not treated as necessarily identical to potential supply or given incomes.¹⁷

5. Conclusion

Sraffians agree that, unless agents are somehow financially constrained and the system operates at full utilisation, distribution has no direct role in the determination of growth, though it may of course have an influence over the pattern of final demands, or that of technical change. This involves the rejection of the idea of an investment function driven by profitability –or any other variable but expectations over final demand.

Perhaps more novel is a growing awareness that flexibility in utilisation is essential in freeing demand from potential output in the short-run, and to guide investment decisions in the long-run –and that such process need not converge to some equilibrium path in which normal utilisation can be simply assumed: rather, a dynamic treatment of the economy becomes necessary, in which the behavioural aspects of the accumulation function (such as the speed of reaction to an unexpected change in demand) may play an important role.

6. Bibliography

Auerbach, P. and Skott, P. (1988) "Concentration, competition and distribution". *International Review of Applied Economics*, **2**, 42–61.

Blatt, J.M. (1983) *Dynamic economic systems*. New York: ME Sharpe.

¹⁷ Specifically, extension to monetary variables has been made possible by the work of Godley and Lavoie (2007), finally providing full closure to the structure of national accounts by a systematic treatment of finance.

Boggio, L. (1992) "Production Prices and Dynamic Stability: Results and Open Questions", *The Manchester School*, vol. LX no. 3, 264-294.

Bortis, H. (1997) *Institutions, Behaviour and Economic Theory – A Contribution to Classical-Keynesian Political Economy*. Cambridge: Cambridge University Press.

Bortis, H. (2008) "The multiplier relation as the pure theory of output and employment in a monetary production economy". In: Gnos, C.; Rochon, L.P. *The Keynesian Multiplier*. Routledge, p.58-84.

Cesaratto, S. (2012) "Neo-Kaleckian and Sraffian controversies on accumulation theory", *University of Siena Working Paper*, 650, mimeo.

Cesaratto, S.; Serrano, F.; Stirati, A. (2003) "Technical Change, Effective Demand and Employment". *Review of Political Economy*, 15(1), p.33-52.

Chick, V. (1983) *Macroeconomics after Keynes: A Reconsideration of the General Theory*. Cambridge: MIT Press.

Chick, V. and M. Caserta (1997) "Provisional equilibrium in macroeconomic theory", in P. Arestis, G. Palma and M. Sawyer (eds), *Capital Controversy, Post-Keynesian Economics and the History of Economic Thought: Essays in Honour of Geoff Harcourt*, vol. 2, London: Routledge, pp. 223–37.

Ciccone (1992) "Accumulation and Capacity Utilization: Some Critical Considerations on Joan Robinson's Theory of Distribution". In: Bharadwaj, K.; Schefold, B. *Essays on Piero Sraffa*. HarperCollins.

Ciccone, R. (1991). "Book review of Amitava Krishna Dutt: Growth, Distribution and Uneven Development". *Contributions to Political Economy*, 10, p.94-102.

Day, R. (1994) *Complex Economic Dynamics*. Cambridge: MIT Press.

Dejuán, Ó. (2005). "Paths of Accumulation and Growth: Towards a Keynesian Long-Period Theory of Output" *Review of Political Economy*, 17(2), 231-252.

Duesenberry, J. (1949) *Income, Savings and the Theory of Consumer Behavior*. Cambridge: Harvard University Press.

Duesenberry, J. (1958) *Business Cycles and Economic Growth*, New York: McGrawHill.

Dutt, A.K. (1986). "Growth, Distribution and Technological Change". *Metroeconomica*, 38, p.113-133.

Eatwell, J. (1983) "The Long-Period Theory of Employment" *Cambridge Journal of Economics*, 7, p. 269-285.

Eatwell, J.; Milgate, M. (1983) *Keynes' Economics and the Theory of Value and Distribution*. Oxford University Press London: Duckworth.

- Garegnani, P. (1976). "On a change in the notion of equilibrium in recent work on value and distribution: a comment on Samuelson". In M. Brown, K.Sato and P. Zarembka (eds.) *Essays in Modern Capital Theory*, Amsterdam: North Holland, pp, 25-45.
- Garegnani, P. (1983) 'Letter to the authors' –n1, 'Preface'. In: Eatwell, J.; Milgate, M. *Keynes' Economics and the Theory of Value and Distribution*. Oxford University Press.
- Garegnani, P. (1990) 'Sraffa: classical versus marginalist analysis', in K. Bharadwaj and B. Schefold (ed.) *Essays on Piero Sraffa: Critical Perspectives on the Revival of Classical Theory*, London: Unwin Hyman.
- Garegnani, P. (1992) "Some notes for an analysis of accumulation" In: Halevi, J.; Laibman, D.; Nell, E.J. (eds.) *Beyond the Steady State: a Revival of Growth Theory* New York: St Martin's Press.
- Garegnani, P.; Trezzini, A. (2010). "Cycles and Growth: A Note on Development in a Market Economy". *Centro Sraffa, Università Roma 3*, mimeo.
- Godley, W.; Lavoie, M.. (2007). *Monetary economics: An integrated approach to credit, money, income, production and wealth*, Palgrave Macmillan, London
- Goodwin, R.M. (1951) "The Nonlinear Accelerator and the Persistence of Business Cycles". *Econometrica*, 19, 1-17.
- Goodwin, R.M. (1990) *Chaotic Economic Dynamics*. Oxford: Oxford University Press.
- Harrod, R.F. (1939) "An Essay in Dynamic Theory". *The Economic Journal*, 49(193), p.14-33.
- Hein, E.; Lavoie, M.; Van Treeck, T. (2011). "Some instability puzzles in Kaleckian models of growth and distribution: a critical survey". *Cambridge Journal of Economics*, 35, p.587-612.
- Hicks, J.R. (1950) *A Contribution to the Theory of the Trade Cycle*. Oxford: Oxford University Press.
- Hollis, M.; Nell, E.J. (1975) *Rational Economic Man – A Philosophical Critique of Neo-Classical Economics*. Cambridge: Cambridge University Press.
- Kaldor, N. (1951) "Mr. Hicks and the Trade Cycle" *Economic Journal* (61), p.833-847.
- Kaldor, N. (1955-56). "Alternative theories of distribution". *The Review of Economic Studies*, 23(2), p.83-100.
- Kaldor, N. (1966) "Marginal Productivity and the Macro-Economic Theories of Distribution: Comment on Samuelson and Modigliani". *The Review of Economic Studies*, 33(4), p.309-319.
- Kalecki, M. (1971) *Selected Essays on the Dynamics of the Capitalist Economy. 1933-1970*. Cambridge: Cambridge University Press.
- Keen, S. (2001). *Debunking Economics*. Sydney, Pluto Press.

Keynes, J.M. (1964 [1936]). *The General Theory of Employment, Interest and Money*. Harbinger, New York.

Kregel, J.A. (1971) *Rate of Profit, Distribution and Growth*. Chicago: Aldine Atherton.

Kurz, H. (1992) "Accumulation, Effective Demand and Income Distribution" In: Halevi, J.; Laibman, D.; Nell, E.J. eds. (1992) *Beyond the Steady State: a Revival of Growth Theory* New York: St Martin's Press.

Kurz, H. Salvadori, N. (1995) *Theory of Production: A Long-Period Analysis*. Cambridge: Cambridge University Press.

Lavoie, M. (2003) "Kaleckian effective demand and Sraffian normal prices: towards a reconciliation". *Review of Political Economy*, 15(1), p.53-74.

Lavoie, M. (2008). "Surveying short-run and long-run stability issues with the Kaleckian model of growth". In: Setterfield, M. (ed.) *Handbook of Alternative Theories of Economic Growth*. Aldershot: Edward Elgar.

Lavoie, M. (2010) "Should Sraffian economics be dropped out of the post-Keynesian school?" Conference paper presented at: *Sraffa's Production of Commodities by Means of Commodities 1960-2010, Critique and reconstruction of economic theory*, Roma Tre. Mimeo.

Marglin, S.A.; Bhaduri, A. (1990). "Unemployment and Real Wage: The Economic Basis for Contesting Political Ideologies". *Cambridge Journal of Economics*, 14, p.375-393.

Matthews, R.C.O. (1954-55). 'The Savings Function and the Problem of Trend and Cycle'. *Review of Economic Studies*, 22(2) , p.75-95.

Moore, B. (2001). *Shaking the Invisible Hand*.

Nell, E.J. (1998) *The General Theory of Transformational Growth*. Cambridge: Cambridge University Press.

Palumbo, A.; Trezzini, A. (2003) "Growth without normal capacity utilization" *European Journal of the History of Economic Thought* 10(1), p.109-135.

Park, M.S. (2002). "Growth and income distribution in a credit-money economy: introducing the banking sector into the linear production model". *Cambridge Journal of Economics*, 26, p. 585-612.

Park, M.S. (2004) "Credit Money and Kaldor's 'Institutional' Theory of Income Distribution". *Review of Political Economy*, 16(1), p.79-99.

Pasinetti, L.L. (1960). "Rate of profit and income distribution in relation to the rate of economic growth". *Review of Economic Studies*, October, 29(4), 103-120.

Pasinetti, L.L. (1993) *Structural Economic Dynamics*. Cambridge University Press.

Pasinetti, L.L. (2001) "The principle of effective demand and its relevance in the long run". *Journal of Post Keynesian Economics*, 23(3), p.383-390.

- Petri, F. (2004) *General Equilibrium, Capital and Macroeconomics*. Cheltenham: Edward Elgar.
- Pivetti, M. (1985) "On the monetary explanation of distribution". *Political Economy: Studies in the Surplus Approach* 1(2).
- Pivetti, M. (1988). "On the monetary explanation of distribution: a rejoinder to Nell and Wray", *Political Economy: Studies in the Surplus Approach*, 4, p.276-283.
- Puu, T.; Gardini, L.; Sushko, I. (2005) "A multiplier-accelerator model with floor determined by capital stock". *Journal of Economic Behavior and Organization*, 56, p.331-348.
- Puu, T.; Sushko, I. (eds.) (2006). *Business Cycle Dynamics: Models and Tools*. Berlin: Springer.
- Robinson, J. (1956). *The Accumulation of Capital*. London: Macmillan.
- Robinson, J. (1962) *Essays in the theory of Economic Growth*. New York: St Martin's Press.
- Robinson, J. (1971) *Economic heresies*, London: Macmillan.
- Rossler, J.B. (2006) "Complex Dynamics and Post Keynesian Economics". In: Setterfield.M. (2006) *Complexity, Endogenous Money and Macroeconomic Theory: Essays in Honour of Basil J. Moore*. Cheltenham: Edward Elgar.
- Rowthorn, R. (1981). "Demand, real wages and economic growth". *Thames Papers in Political Economy*, Autumn 1-39.
- Serrano, F. (1995) "Long period effective demand and the Sraffian supermultiplier" *Contributions to Political Economy*, 14, p.67-90.
- Shaikh, A. (1992) "A Dynamic Approach to the Theory of Effective Demand". In: Papadimitrou, D. *Profits, Deficits and Instability*. The Macmillan Press Ltd., London.
- Shaikh, A. (2009) "Economic Policy in a Growth Context: A Classical Synthesis of Keynes and Harrod", *Metroeconomica*, 60(3), p.455-494.
- Skott, P. (2002) "Aggregate demand policy in the long run". In: Arestis, P.; Desai, M., Dow, S. *Money, Macroeconomics and Keynes: Essays in honour of Victoria Chick, Vol.1*. London: Routledge.
- Skott, P. (2010). "Growth, Instability and Cycles: Harrodian and models of accumulation and income distribution". In: Setterfield, M. *Handbook of Alternative Theories of Economic Growth*. Cheltenham: Edward Elgar.
- Sraffa, P. (1960) *Production of Commodities by Means of Commodities. Prelude to a Critique of Economic Theory*. Cambridge: Cambridge University Press.
- Steindl, J. (1979). "Stagnation theory and stagnation policy". *Cambridge Journal of Economics*, 3(1), p.1-14.
- Stirati, A. (1992) "Unemployment, institutions and the living standard in the classical theory of wages". *Contributions to Political Economy*, 11, p.41-66.

Taylor, L. (ed.) (1990) *Socially Relevant Policy Analysis*. Cambridge: MIT Press.

Trezzini, A. (1998) "Capacity utilisation in the long run: some further considerations". *Contributions to Political Economy*, 14, p.33-36.

Trezzini, A. (2011). "The Irreversibility of Consumption as a Source of Endogenous Demand-driven Economic Growth". *Review of Political Economy*, 23(4), p.537-556.

Vercelli, A. (1991) *Methodological Foundations of Macroeconomics: Keynes and Lucas*. Cambridge: Cambridge University Press.

Vianello, F. (1985) 'The pace of accumulation' *Political Economy*, 1(1) p.69-87