Pluralism, the Lucas critique, and the integration of macro and micro*

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Abstract

Mainstream macroeconomics has pursued 'micro founded' models based on the explicit optimization by representative agents. The result has been a long and wasteful detour. But elements of the Lucas critique are relevant, also for heterodox economists. Challenging common heterodox views on microeconomics and formalization, this paper argues that (i) economic models should not be based purely on empirically observed regularities, (ii) heterodox economists must be able to tell an integrated story about goal-oriented micro behavior in a specific macro environment, and (iii) relatively simple analytical models have an essential role to play.

JEL codes: E1, B5

Key words: micro foundations, pluralism, old Keynesian theory, Kaleckian investment function.

1 Introduction

There can be no single, correct theory or model of 'the economy'. The economy is not a well-defined object and – even if it were – a theory does not aim to provide a complete picture of reality. As Joan Robinson noted, a map on a scale of one to one would be useless. Models and theories simplify and focus attention on specific aspects.

Equally self-evident, it seems to me, is the claim that there can be no single, correct method for gaining insights into the operation of the economy. We need broad historical analysis, detailed case studies, institutional work, data collection, statistical analysis, mathematical models, experimental evidence, and computer simulations, to mention just some of the useful ingredients. Researchers focus on different issues, approach them from different angles and employ different tools. The internal consistency of their work must be checked and its relevance, importance and implications should be debated.

I am not sure whether these views qualify as pluralism, or if so, what kind of pluralism. In fact, the merits of some kinds of pluralism seem questionable. Surely, not any school of thought should be considered legitimate. Should we welcome, in the name of pluralism, Chicago-school views of unemployment as the voluntary choice of workers to go on vacation when wages are low? To take an example outside economics, should we welcome creationism as an alternative to evolution? More generally, what do we do if different theories make mutually inconsistent claims about the same phenomenon? 'Diversity pluralism', moreover, seems to go hand in hand with a clubbiness that can be quite disturbing (or in some cases almost hilarious if one is in that mood). The manifestations include argument by authority and the insistent self-labeling and demarcation vis-a-vis other schools. The upshot can be to close off debate.

A general methodological discussion of pluralism is beyond my expertise, however.[1] This note has a more limited purpose: I want to discuss 'microeconomic foundations' and make a plea for pluralism (or eclecticism) in this particular area. Heterodox economists are united in the rejection of the mainstream approach to micro foundations, but some of the problems and divisions that characterize heterodox macro derive from the same questions that derailed the mainstream: the role of goal oriented behavior and the connection between micro and macro. A related, but separate controversy concerns the use of formal methods.

2 Macroeconomics

Contemporary, mainstream macroeconomics is guided by its quest for microeconomic foundations. Older style Keynesian macroeconomics, it is claimed, failed in this respect, and the Lucas critique demonstrates the implications of

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[1] See e.g. Dow (1997), Sent (2003), King (2004), Freeman and Kliman (2006), and Davis (2007, 2008).

this failure: reliable theory and empirical work must be based on structurally invariant parameters that can only come from explicit micro foundations.

Essentially, the Lucas critique has three elements:

- The claim that economic behavior is goal oriented, has an intertemporal dimension, and is influenced by expectations; household consumption, for instance, depends on expected future income; firms' investment on expected future demand.

- The argument that reduced-form equations that link current decisions to observable variables will reflect the expectations (as well as the underlying goals) of the decision makers; shifts in expectations – induced, for instance, by changes in economic policy – will therefore affect the equations and render them unstable.

- The recommendation that in the face of these instability problems, economic models should be based on explicit microeconomic optimization since, unlike reduced-form equations, structural elements like preference orderings and production functions are invariant to changes in policy regimes.[2]

The attempt to implement the recommendation (the third element) has led to the sorry state of macro with its suggestion that modern economies should be analyzed through the lens of an infinitely-lived, utility maximizing representative household. This suggestion is peculiar, to say the least. Goal-oriented behavior is not the same as the full intertemporal utility maximization with perfect foresight (or rational expectations). Moreover, even if individual preferences could be taken as well-defined, exogenous and stable over time, microeconomic rationality imposes very weak constraints on the properties of aggregate excess demand functions. The use of a representative agent "is not simply an analytical convenience as often explained, but is both unjustified and leads to conclusions which are usually misleading and often wrong" (Kirman, 1992, p. 117). One may note in particular that if the behavior of the representative agent is to describe aggregate outcomes, the appropriate definition of the agent will itself typically depend on the policy regime. Thus, the representative-agent models are themselves subject to the Lucas critique.[3] In short, the Lucas inspired research program has been a failure.

The problems with the suggested solution do not, however, invalidate the first two claims. In fact discussions of the importance of expectations and the potential instability of behavioral relations – the second claim – are ubiquitous

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[2] With the additional recommendations that economic modelers impose rational expectations and that policy makers follow predictable rules.

One can debate whether the recommendations should be included as part of the critique. However, it is mainly the perceived implications – the recommendations – that distinguish the Lucas critique from similar arguments about the potential breakdown of empirical regularities (e.g. 'Goodhart's law').

[3] Skott and Davis (2012) discuss these issues in relation to the use of representative agent models for the evaluation of climate change.

in the heterodox literature and this claim should not be contentious. Heterodox positions with respect to the first claim seem more mixed or ambiguous. There are clearly exceptions but heterodox economists often play down the role of goal oriented behavior. Dutt (2003), for example, describes the "neostructuralist" approach as defined by

> (1) starting with some basic and commonly used accounting identities; (2) adding simple rules of behavior of individuals or groups derived from detailed empirical investigation; and (3) examining their consequences to analyze the performance and evolution of the system (p. 57)

The second step in his description is the crucial one. This is where behavior enters, and the emphasis is on simple rules and empirical investigation. There is no mention of any kind of goal orientation. In fact, the neostructuralist approach is explicitly contrasted with an approach based on optimizing agents which, Dutt argues, characterizes both Walrasian and Post Walrasian theories. The term heterodox is used to describe contributions "that do not invoke the optimizing agent (even in the sense of bounded rationality)" (p. 54). Thus, according to Dutt the use of goal oriented behavior – optimization with imperfections and bounded rationality – seems to fall squarely within mainstream economics.[4]

Another strand of literature discards macroeconomic modeling and insists that the behavior of aggregate economies reflects the emergent properties of an underlying agent-based system.[5] This strand can be seen as a reaction to the central role of the representative agent in the mainstream model but agent-based models also tend to eschew optimization, being populated by agents that typically follow simple rules of thumb.

3   Goal oriented behavior

The shortcomings of mainstream macroeconomics do not imply that goal oriented behavior does not exist. nor that behavioral considerations – including goal orientation – are irrelevant for macroeconomic models. On the contrary, it would seem desirable to make the behavioral assumptions explicit and then to try to exclude models based on implausible assumptions. This argument may

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[4] Davis (2008) makes a similar point,

> Consider, for example, the theory of choice as a core doctrine. Behavioural economists think the theory of choice in economics is wrong, but rather than abandon the theory of choice altogether, they want to revise it. Most heterodox economists, however, simply believe the theory of choice should be abandoned for non-individualistic conceptualisations of the economic process that have more in common with other social sciences.

[5] Colander – one the proponents of this approach – views the agent-based approach as part of a new Post Walrasian economics or complexity economics (Colander, 2003; Holt et al., 2011).

seem sufficiently vague to be unobjectionable. In my view, however, the debate on the modeling of investment shows that it has bite.[6]

3.1   Investment functions

Like other post-Keynesian theories, the Kaleckian growth model regards the rate of capital utilization as a key determinant of accumulation. As a simple formalization, let

$$g = f(u; z); \qquad f_u > 0 \tag{1}$$

where g is the rate of growth of the capital stock (the rate of net accumulation), u denotes the utilization rate, f_u is the partial derivative with respect to u, and z is a vector of other variables that may influence investment (the profit share, for instance, or autonomous elements of 'animal spirits'). The distinctive Kaleckian assumption is a low sensitivity of investment to changes in utilization. If s is the average rate of saving out of income, it is assumed that

$$f_u < s\frac{Y}{K} \tag{2}$$

where Y/K is the output-capital ratio. This 'Keynesian stability condition' is critical for the properties of the model.

The average saving rate may itself depend on other variables, including the profit share and household wealth. Empirically, however, the gross saving rate in most advanced countries lies between 0.15 and 0.25. With an output-capital ratio of about 0.5, the sensitivity f_u is therefore restricted to be less than 0.1. This restriction would not be objectionable for short run analysis. But the Kaleckian models extend the restriction to the long-run effects of a permanent rise in utilization. The extension implies shocks to aggregate demand - a change in saving rates, for instance - can lead to permanent and quantitatively significant changes in the rate of capital utilization. Indeed these large induced changes in utilization provide the mechanism behind the celebrated 'stagnationist' results.

Consider a simple example. Suppose a firm has seen the demand for its output grow at a constant rate of 10 percent a year and that to meet the demand, it has been accumulating capital at the same rate, keeping the utilization rate of its capital stock at a constant rate, say 80 percent. Now suppose that the growth of demand slows down to about 5 percent a year. The restriction $f_u < 0.1$ implies (convergence to) a utilization rate below 30 percent. And had the growth of demand dropped by another 3 percentage points, the firm would continue to accumulate capital at the rate of at least 2 percent, despite having a utilization rate that converges to zero.

A sustained change of 5 percentage points in the growth rate may seem large for an economy as a whole, although not unprecedented (as illustrated by the Japanese economy). For individual industries and firms, however, the sustained changes are often much larger than that. Utilization rates, by contrast, fluctuate

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[6]Recent contributions include Hein et al. (2012) and Skott (2012).

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around a fairly constant rate.[7] There is a simple explanation for this observed regularity: a profit-oriented firm only invests if the increase in the capital stock raises the expected future profits. Why invest in more machines if the firm already has an abundance of unused capacity?

3.2 Limitations of empirical evidence

This issue, it could be argued, should not be decided on a priori grounds but on the basis of empirical evidence (cf. Dutt's appeal to empirical investigation as the basis for behavioral equations). The evidence, in fact, does not support the Kaleckian position.[8] Moreover, a purely empirical approach runs into problems: the Lucas critique correctly identifies pitfalls in the interpretation of reduced-form regressions.

Consider two economies. In economy A output fluctuates randomly around a constant growth trend,

$$\log Y_t = \gamma t + \varepsilon_t \tag{3}$$

where ε_t is a random shock. The constant long-run rate of growth could be the result of policy intervention and labor constraints (the labor force growing at the rate γ); for present purposes, however, the mechanism behind (3) does not matter. Economy B is not anchored in this way; its growth rate follows a random walk,

$$\Delta \log Y_t = \Delta \log Y_{t-1} + \mu_t \tag{4}$$

Assume that firms adjust their capital stock based on the expected growth of demand and the current deviations from desired utilization:[9]

$$\log K_{t+1} - \log K_t = \Delta \log K_t = g_t = \gamma_t^e + \lambda(\log u_t - \log u^*) \tag{5}$$

where γ^e is the expected growth rate of demand.

The growth of demand follows very different stochastic processes in the two economies and, by assumption, has been following these processes for a long time. One does not have to be a Chicago economist to believe that the differences will affect expectations. Consider the simple case in which all firms in an economy experience the same shocks; that is, equations (3) and (4) describe the experience of individual firms in the two economies. In this case it seems plausible to assume that firms in economy A will recognize the long-run constancy of

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[7] An interesting paper by Nikiforos (2011) points out that standard measures of utilization may show no trend by construction. Given the scale of the variation in utilization rates predicted by the Kaleckian analysis the measurement problems are insignificant for present purposes. Nikiforos's own theoretical analysis of the endogenous determination of the desired utilization provides no support for the Kaleckian position.

[8] The study by Lavoie et al. (2004) is flawed and offers no support for the Kaleckian position (see Skott 2012). Schoder (2012) finds some evidence of path dependency in the utilization rate, but quantitatively it is small and the estimated model violates the Kaleckian restrictions; Skott and Zipperer (2010) reject the Kaleckian restrictions.

[9] Kaleckians may reject this assumption (or argue that the desired utilization rate is path dependent). This disagreement is irrelevant for present purposes: the point of the example is not to find to the 'correct' investment function but to illustrate the regime-dependence of the reduced-form investment function.

the average growth rate and base their expectations on that. Firms in economy B, by contrast, are likely to realize that their growth rate of demand has a lot of persistence. Thus, as a simplifying assumption[10]

$$\gamma_t^e = \begin{matrix} \gamma & \text{in economy A} \\ \Delta \log Y_{t-1} & \text{in economy B} \end{matrix} \tag{6}$$

Substituting (6) into (3) and (4), we get two different reduced-form investment functions. In economy A,

$$g_t = a + bu_t \tag{7}$$

where $a = \gamma - \lambda \log u^*$ and $b = \lambda$. In economy B,[11]

$$\Delta g_t = a + bu_t + cu_{t-1} \tag{8}$$

where $a = -\lambda \log u^*, b = 1 + \lambda$ and $c = -1$.

Empirical estimates of the investment function comes from advanced economies with relatively stable trend rates of growth, that is, from economies that may look roughly like economy A. The benchmark Kaleckian model, however, describes a dual economy in which a shock to the saving rate shifts the long-run rate of growth; in other words, an economy that is more like economy B. And here is the nub: reduced-form regressions based on economy A are biased in favor of finding Kaleckian results, but these estimates say little about the determinants of investment in a regime in which the long-run rate of growth is variable – or even about the effect of a one-off, persistent change to a new long-run rate of growth. The reduced-form equation (7) is valid only as long as the expected growth of demand remains constant.

It may seem surprising, in the light of this analysis, that estimated investment functions do not favor the Kaleckian specification. The reason, however, may be quite intuitive: although the average growth rate in advanced economies may have a fairly stable trend, this is not the case for individual firms. Firms make the investment decisions, and the shocks to the growth of demand for a single firm can be quite persistent, even if not quite the random walk posited by the simple economy B.

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[10] These are the 'rational expectations'. There is no justification for the imposition of rational expectations at all times, as in most mainstream models, but that does not mean that rational expectations are never justified. Persistent and significant expectational mistakes are implausible in hypothetical economies that follow well-defined stable growth paths. This statement should not be controversial (Harrod's warranted growth path is a trajectory of this kind, as are Joan Robinson's mythical ages). The general point, which requires neither steady growth nor rational expectations, is simply that the properties of the economy in which agents operate will influence the way they form expectations.

[11] From (5) and (6) it follows that

$$\begin{aligned} g_t - g_{t-1} &= \Delta \log Y_{t-1} - \Delta \log K_{t-1} + \lambda(\log u_t - \log u^*) \\ &= \Delta \log u_{t-1} + \lambda(\log u_t - \log u^*) \\ &= -\lambda \log u^* + (1 + \lambda) \log u_t - \log u_{t-1} \end{aligned}$$

To illustrate, let the aggregate growth rate follow (3) but assume that firm-level expectations are governed by

$$\gamma_{i,t}^e = \gamma + \rho(\Delta \log Y_{i,t-1} - \gamma) \tag{9}$$

where the subscript i denotes firm level, γ is the trend growth of aggregate demand (cf. equation (3)), and ρ captures the persistence of the deviations of firm-level from aggregate growth. The idiosyncratic firm-level shocks cancel out in aggregation and, using (5) and (9), aggregate investment can be written as

$$g_t = \gamma(1 - \rho) - \lambda \log u^* + (\rho + \lambda) \log u_t - \rho \log u_{t-1} + \rho g_{t-1} \tag{10}$$

This equation can be used to find a long-run between utilization and accumulation: setting $g_t = g_{t-1} = g$ and $u_t = u_{t-1} = u$, we get

$$g = \gamma + \frac{\lambda}{1 - \rho}(\log u - \log u^*) \tag{11}$$

According to this equation a sustained increase in g requires an increase in u; the long-run sensitivity of accumulation to a change in utilization is $\lambda/(1 - \rho)$. This estimate may violate the Kaleckian restriction even if $\lambda < s$. But in fact the regression underestimates the true long-run sensitivity. A permanent rise in the aggregate growth rate of demand will affect the formation of expectations: once the parameter γ in (9) equals the new aggregate growth rate, the accumulation rate will adjust without any increase in utilization.

The examples are special and stylized but they carry two important – much more general – lessons:

- While rejecting Lucas's recommmendations, the first first two elements of the Lucas critique are relevant, also for heterodox models; we should not build economic models purely on empirically observed regularities.

- Aggregate outcomes are not decided by a representative firm whose demand follows the same process as aggregate demand.[12]

3.3 Historical context and uncertainty

Post-Keynesians and other heterodox macro economists are well aware that the investment function (and other behavioral equations) may be unstable. In Dutt's words, the behavioral relations "are context and time dependent, which means that the same model cannot necessarily be used for all economies" (2003, p.59). In a similar vein, Davis (2008, p. 360) argues that "individuals are socially embedded rather than atomistic", and numerous authors have made the point that profound uncertainty and animal spirits affect investment decisions and may lead to instability.

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[12]This point is related to the Phelps-Lucas analysis of island economies and the difficulty of disentangling ideosyncratic and general shocks.

I have no disagreement with these arguments. One can accept, first, the context dependence, the social embeddedness, and the importance of uncertainty and animal spirits without abandoning the notion that firms are goal oriented. In fact, the profit motive and the very existence of capitalist firms are examples of social and historical contingency, and clearly for many purposes the analysis can and should be refined to include additional context-specific elements; changes in the financial sphere, for instance, may affect the ability of small firms to obtain finance. Goal orientation, second, has important implications for economic processes, as exemplified by the investment example. It is true, of course, that because of uncertainty the 'desired rate of utilization' may not be sharply defined. But the notion that firms will keep investing at a constant rate, even as utilization rates go to zero, fails the test of behavioral plausibility. Goal oriented behavior does not account for all shifts in reduced-form relations. Some shifts can be hard to explain, even ex post. But the presence of exogenous shocks does not imply that no shifts can be explained.

4 Constrained optimization and formal modeling

Goal oriented behavior is often formalized mathematically as constrained optimization. Part of the objection to micro foundations may have to do with this formalization. Dow (2007), among others, defines the divide between mainstream and heterodox schools primarily in terms of mathematical formalism: orthodoxy "being defined by mathematical formalism" and heterodoxy by the "adoption of different methodological approaches" (p. 461).[13]

Mathematical formalism is distinct from goal oriented behavior. In the previous section I did use mathematical equations to describe key elements in the argument but the equations merely served to clarify the reasoning. There was no need to present firms' goal orientation in the form of explicit maximization programs. Formalization of this kind could potentially yield more precise implications (which would of course be contingent on the particular assumptions used in the formalizations). But formalization was not required to present a general argument about the behavioral plausibility of the Kaleckian investment function when firms are goal oriented and try to maximize profits.

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[13]Dow's argument, it seems to me, is setting up a straw man. Most mainstream economists believe mathematical tools are immensely useful but I know of no mainstream economist who would claim "the sufficiency of mathematical formalism as a methodological approach" (p. 461).

Fgure 1: Piero della Francesca, "Baptism of Christ", c. 1448-1450.

To underline the distinction between goal orientation and formalization, consider an example from a completely different arena. The art historian Baxandall (1985) has suggested that paintings (and other works of art) be viewed as "solutions to problems in situations" (p. 35). The jargon is different but solutions to problems in situations would seem to translate into 'constrained optimization' in economese. I bring this up, not to advocate a Becker-like imperialism but to suggest, in some ways, precisely the opposite.

The argument that typically agents behave in a goal oriented manner does not imply that the standard mathematical formalism will always be useful. Using one of Baxandall's examples, the Italian renaissance painter Piero della Francesca was commissioned to paint his 'Baptism of Christ' by "men with complicated fifteenth-century needs embodied in subtly and implicitly defined fifteenth-century genres" (p.105). Piero brought to this task a set of historically and culturally specific skills, including a thorough knowledge of pictorial perspective, and the finished picture represents his solution to this constrained optimization problem. An attempt to formalize the process and the solution mathematically – replete with utility function, technological and budget constraints – makes no sense. But that does not mean that no insights can be gained from looking at the painting as the result of an intentional process. Thus, the

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example may illustrate the potential fruitfulness of thinking in terms of goal orientation as well as the context specificity of behavior and the limitations of formalization.

Having stressed the limitations of formalization, let me add that in my view some common claims about these limitations are unfounded. Dow (2007) links a rejection of mathematical formalism and optimizing behavior to the openness of the economic system:[14]

> Open systems, which allow for human agency (creativity, the non-deterministic exercise of choice, etc.) and the (indeterminate) evolution of the institutional structure within which individuals exercise agency, do not have the invariant kind of causal mechanisms which yield up laws, and allow instead for a plurality of explanations and modes of explanation (p. 452)

I find these arguments confusing. Of course the economic system is 'open'. But as Hodgson (2001, p. 35) puts it, "the policy towards science must be pluralistic and tolerant, but science itself must be intolerant of what it regards as falsehood". The openness of the system does not imply that falsehoods should be tolerated and that a plurality of explanations of the same phenomenon is intrinsically good. Moreover, the openness of the system and the complexities of the dynamic interactions do not eliminate or reduce the need for formalization. On the contrary, dynamic interactions make it almost impossible to achieve progress without formalization (which needless to say is not to claim that formal models are sufficient for progress). It may be difficult to keep track of simultaneous interactions without formalization and dynamic interactions only serves to compound those difficulties.

A valid point may remain. A heavy emphasis on formal modeling techniques involves significant dangers. Worswick (1959, p. 121) commented that

> It is sometimes thought that the objection to the use of mathematics in economics is that it is too hard. The more serious objection, however, is that it is much too easy.

The ease of mathematical manipulation may lead to a neglect of those issues that are hard to formalize or, equally dangerous, to a distortion in the way we look at those problems that are being analyzed. Formal mathematical analysis may also lead to a focus on mathematical elegance and a refusal to deal with the messiness of real history. These dangers of a fixation on formal techniques notwithstanding, a refusal to formalize arguments that can be formalized carries its own dangers, and arguably these dangers are equally serious.

5   Concluding remarks

Following the Lucas critique, mainstream macro has pursued 'micro founded' models based on the explicit optimization by representative agents. The result

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[14] See also Chick and Dow (2001).

has been a long and wasteful detour with enormous costs, both in terms of the loss of knowledge in the profession and, more importantly, mistaken policy. Heterodox macro is in a better state than its mainstream counterpart (which does not say much) but also has its problems.

Having been critical of old Keynesians (who were often indiscriminately labeled as neoclassical or bastard Keynesians) and having rightly rejected the Chicago inspired shifts in mainstream macro, the heterodox tradition has bifurcated. Some strands of heterodox macro emphasize structural and macro constraints to such an extent that micro behavior is almost forgotten; other strands disaggregate completely and view the macro as the emergent properties of an agent-based system with agents that follow simple behavioral rules. Important insights may come from both of these different approaches. Purely structuralist analyses of macro systems can highlight important interactions, and computer-based methods allow us to examine interactions of a complexity that go beyond what traditional techniques can provide. But in their rejection of the 'micro foundations' of mainstream macro, the heterodox traditions are in danger of throwing out the baby with the bath water.

Methodologically, Keynes and the 'old Keynesians' got it about right (and whatever methodological differences existed between Keynes and the 'old Keynesians', it is their similarities that seem striking compared to the contemporary mainstream). Keynes and Keynesians like Tobin and Solow were keenly aware that good macroeconomics requires an understanding of the behavior of individual firms and households and they rightly insisted that this behavior is to a large extent goal oriented. They also realized that the implications of goal orientation are not always straightforward and transparent. The step from micro to macro is complicated, both because of technical aggregation issues – which imply that the aggregate behavior cannot be derived from the optimization of an invariant representative agent – and because the goals and the constraints under which individual agents pursue these goals depend on the historical and institutional context.

I am not advocating a return to the Keynesian economics that dominated the field until the mid 1970s. The old models had many problems: they largely ignored distributional issues, for instance, and the dynamics was weakly developed. We should draw an all the techniques and insights that have emerged over the last 35 years, both from heterodox economics and from the Post Walrasian developments discussed by Colander (2003). But a broad vision is needed to hold together and help interpret the findings from these diverse techniques.

Holt et al. (2010, p. 5) seem to question the need for an anchor of this kind. The post Walrasian vision, they argue,

> sees the economy as so complicated that simple analytical models of the aggregate economy—models that can be specified in a set of analytically solvable equations—are not likely to be helpful in understanding many of the issues that economists want to address. ... we have to go into the trenches, and base our analysis on experimental and empirical data. From there we build up, using whatever

> analytic tools we have available. This is different from the old vision
> where economists mostly did the opposite of starting at the top and
> then built down.

It is never a question of only "building up" or only "building down"; all would agree on that, I expect. But I do worry about too much "building up". Dutt raised a related issue in his comments on Colander (2003) arguing that "the contributions he describes as Post Walrasian do not amount to an approach to economics but really constitute a collection of more or less interesting approaches" and that these approaches "are unlikely to coalesce to form a challenge to neoclassical orthodoxy" (p. 63)

Figure 2: Pablo Picasso, "Violin and
grapes", 1912.

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Let me try to illustrate the need for an anchor using another simple example from the art world. Painters have been struggling with the problem of how to present a three dimensional world – with time as a fourth, irreversible dimension – on a flat canvas. Many different solutions have been suggested; Piero's use of perspective is one example. Cubism offered another approach. Like a pluralist economist who recognizes that there is no single correct theory, a cubist painter tries to represent different views within the same frame. But as noted by Gombrich (1989, p. 45), the cubist method of building up the image has a problem

> of which the originators of Cubism were very well aware. It can be
> done only with more or less familiar forms. Those who look at the

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> picture must know what a violin looks like to be able to relate the various fragments of the picture to each other.

Eclectic or pluralist macroeconomists face a similar problem. The fragmented inputs from the large range of possible neostructuralist 'closures' and post Walrasian models can be illuminating, but the partial insights that they offer must come together as elements of a larger picture. Methodologically the traditional Keynesian approach offers a good starting point for this larger picture. The Lucas prescriptions are mistaken but macroeconomists need to take seriously the implications of goal oriented behavior at the micro level: they must be able to tell an integrated story about goal-oriented micro behavior in a specific macro environment, and it can be useful to lay out this story in relatively simple analytical models.

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