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DEPARTMENT OF ECONOMICS

Working Paper

Heterodox macro after the crisis

By

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Heterodox macro after the crisis*

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Abstract

Macroeconomics is in crisis and this creates openings for alternative perspectives. The dominant heterodox traditions, however, have shortcomings that need to be addressed, both to improve our understanding of the real world and to take advantage of the opportunities offered by the irrelevance of most mainstream macro. This paper discusses three examples of areas that need attention: (i) investment functions (where popular specifications lack behavioral and empirical support), (ii) income distribution (where key developments have received little attention) and (iii) the relation between income inequality and financial markets (where extensions of existing models may help explain financial instability).

JEL codes: E12, E21, E22
Key words: investment, earnings inequality, financial instability

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1 Introduction

Macroeconomics is in crisis and this creates openings for alternative perspectives. The dominant heterodox traditions, however, have shortcomings that need to be addressed, both to improve our understanding of the real world and to take advantage of the opportunities offered by the irrelevance of most mainstream macro. This paper discusses three areas that need attention: (i) investment functions (where popular specifications lack behavioral and empirical support), (ii) income distribution (where key developments have received little attention) and (iii) the relation between income inequality and financial markets (where extensions of existing models may help explain financial instability).

First, the influential neo-Kaleckian specifications of investment behavior treat the utilization rate of capital as an accommodating variable and assume that accumulation is insensitive to variations in utilization. Empirically, this assumption is at odds with the observed patterns which show fluctuations in utilization around a fairly stable long-run level. The theoretical weakness of the specification comes from the implausibility of the implied behavior of individual firms. This theoretical critique points to a more general issue. Heterodox theory rightly rejects the Lucas-style 'microeconomic foundations' of mainstream macro, but this rejection must not lead to a neglect of microeconomic behavior: our models need convincing behavioral stories.

Secondly, heterodox macroeconomics has traditionally focused on the functional distribution of income. But the dramatic increase in inequality in the US and other economies since the 1970s owes relatively little to changes in the profit share, and an understanding of recent trends requires an extension of the analysis. One element in this extension may come from the notion of 'power-biased technical change'.

Thirdly, finance has been at the center of the 'great recession', and mainstream economists are scrambling to expand their models to include financial elements. Heterodox theory has taken finance seriously, and the manifestations and effects of 'financialization' (and neoliberalism, more generally) have been analyzed in a large literature. The literature has stressed the reduction in aggregate demand following an increase in the profit share, but other changes may have been at least as important. Institutional changes have affected the composition of asset demands, and the rising earnings inequality has also had repercussions for financial markets and financial instability.

The structure of the paper follows the above outline. Section 2 discusses investment behavior. Inequality is the focus of section 3, and section 4 looks at financial issues. Section 5 contains a few concluding comments.

2 Investment functions and behavioral foundations

The Lucas inspired research program has been a failure. The idea that a modern macroeconomy should be analyzed through the lens of an infinitely-lived, utility

maximizing representative household is bizarre, and the heterodox tradition rightly insists on the importance of the institutional and structural features of the economy. But the willingness in heterodox macro to consider different specifications and 'closures' of the macro models can be taken too far.

Real capitalism is always specific and the cultural, institutional and historical context matters for economic behavior.[1] But not all assumptions are equally plausible. We may reject the ways in which mainstream macro has tried to build microeconomic foundations, but that does not mean that behavioral considerations are irrelevant for the development of good macroeconomic models. The behavioral assumptions should be made explicit, and we should try to exclude models based on implausible assumptions. The modeling of investment can be used to illustrate this general argument.

In line with most post-Keynesian models, the 'Kaleckian model' ignores the choice of technique and assumes that the production function has fixed coefficients. Output is determined by aggregate demand, and all post-Keynesian models agree that the short-run utilization rates depend on aggregate demand. The Kaleckian model goes further, however. It extends the short-run variability of utilization rates to the medium and long run. The model implies that permanent shocks to aggregate demand - a change in saving rates, for instance - can lead to permanent and quantitatively significant changes in utilization. Indeed this is the key mechanism in the Kaleckian tradition that builds on Rowthorn (1981), Dutt (1984) and Marglin and Bhaduri (1990). But is this long-run variability of the utilization rate empirically plausible? And is it consistent with a reasonable story of goal-oriented behavior by firms?

The empirical question is best approached by noting how much variability is implied by the standard 'Keynesian stability condition' that the models impose. Consider a stripped-down Kaleckian model

$$\frac{S}{K} = s(\pi)\sigma u \tag{1}$$

$$\frac{I}{K} = \gamma_0 + \gamma_1 u \tag{2}$$

$$\frac{S}{K} = \frac{I}{K} = g + \delta \tag{3}$$

where S, I, K are saving, investment and the capital stock, all in real terms; u is the utilization rate of capital and σ the output-capital ratio at full utilization; $s(\pi)$ is the average saving rate which is typically taken to be an increasing function of the profit share π; g is the equilibrium rate of accumulation and δ the depreciation rate. Taking π as exogenous, the model can be solved for u and

[1] Katzner (2011), for instance, has stressed the differences between the US and the Japanese – and Korean? – economies, and Henrich et al. (2004) found significant cross cultural differences in exprimental results for the ultimatum game.

g,

$$u = \frac{\gamma_0}{s(\pi)\sigma - \gamma_1} \tag{4}$$

$$g = \gamma_0 + \gamma_1 \frac{\gamma_0}{s(\pi)\sigma - \gamma_1} - \delta \tag{5}$$

The 'Keynesian stability condition' requires that $\gamma_1 < s(\pi)\sigma$. We have good empirical evidence on the saving rate. Plausible values for the maximum (annual) output-capital ratio σ fall in the region $0.3 - 1$ and the gross saving rate $s(\pi)$ is about 0.2 in most OECD countries. Thus, the investment parameter γ_1, which in this model measures the long-run sensitivity of accumulation to changes in the rate of utilization, must be below $0.06 - 0.2$. This restriction has interesting implications. Using (4)-(5) it follows that

- shifts in the saving rate will generate a change in u that is at least 5-15 times larger than the change in the accumulation rate g :

$$\frac{\partial g}{\partial s} = \gamma_1 \frac{\partial u}{\partial s} < s(\pi)\sigma \frac{\partial u}{\partial s}$$

- the partial derivative of u with respect to s is given by

$$\begin{aligned} \frac{\partial u}{\partial s} &= u \frac{-\sigma}{s(\pi)\sigma - \gamma_1} \\ &< \frac{-u}{s(\pi)} < 0 \end{aligned}$$

  and even small shifts in $s(\pi)$ have large effects on u.

- investment parameters that reduce the sensitivity of u to changes in the saving rate will increase the ratio of the change in u to the change in g. Thus, if one picks parameters that minimize the value of $\frac{\partial u}{\partial s}$ (by setting $\gamma_1 = 0$), then the ratio of $\frac{\partial u}{\partial s}$ to $\frac{\partial g}{\partial s}$ goes to infinity.

These predictions simply do not fit the stylized facts. Figures 1a-b depicts utilization and accumulation rates for US manufacturing industry. Both series exhibit strong cyclical fluctuations as well as long-term movements. But the long-term movements are of roughly the same magnitude: the trend rates of both accumulation and utilization are about 2-4 percentage points lower towards the end of the period.[2]

Industry-level evidence rejects the Kaleckian assumptions even more strongly. The computer industry has seen average annual growth rates of about 20 percent since the late 1960s while the iron and steel industry has declined, with capacity that is about 15 percent lower in 2010 than it was in 1972 (figures 2a and 3a). Yet both of these industries have utilization rates that fluctuate around

[2] This is in line with the econometric findings in Skott and Zipperer (2010).

80 percent; in fact, the average rate of capacity utilization in the declining iron and steel industry exceeds the average in the fast-growing computer industry (figures 2b and 3b). These industry data contradict the Kaleckian specification unless it is argued (quite reasonably) that the parameters in the accumulation function are industry specific and (quite unreasonably) that these parameters just happen to vary across industries in such a way that all industries end up with roughly the same trend rates of utilization, despite huge differences in growth rates.[3]

The behavioral/theoretical argument against the Kaleckian specification can be phrased in terms of 'stock-flow consistency'. The flow relation (2) for investment and the Kaleckian parameter restrictions are mathematically consistent but the implied changes in the stock-flow ratio u are economically implausible: goal-oriented firms will not behave in this manner. Suppose, for instance, that a firm has seen its demand grow at the rate 10 percent. If $\gamma_0 = 0.12, \gamma_1 = 0.1$ and $\delta = 0.1$, the investment function gives a steady-state solution for the utilization rate $u = 0.8$. Now suppose that the growth in demand drops to 5 percent. If the investment function is unchanged, the firm will initially invest at a rate that increases its capital stock at the old steady growth rate of 10 percent. As a result, the utilization rate starts to fall and the firm will approach a new steady growth path with $u = 0.3$. And had demand growth dropped another 3 percentage point to 0.2, the steady growth solution would have been $u = 0$! This makes no sense. Assume, for concreteness, that firms are motivated exclusively by profits.[4] A profit-oriented firm only invests if the increase in the capital stock raises expected future profits, and why invest in more machines if the firm already has an abundance of unused capacity?

Heterodox macro correctly emphasizes that the presence of profound uncertainty and animal spirits play an important role in investment decisions. But one can accept the importance of uncertainty and animal spirits without abandoning the notion that firms are goal oriented and that investment decisions must be understood in relation to these goals. There may not be a perfectly well-defined 'desired rate of utilization', 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.[5]

The Kaleckian model is admirably simple and has implications that may seem desirable. But the investment function is theoretically and empirically implausible, and the heterodox tradition offers several alternative specifications.[6]

[3] The construction of the utilization data raises a host of questions (e.g. Shapiro 1989). Data problems can not, however, provide a convincing reconciliation of the evidence with the Kaleckian specification.

[4] Some post-Keynesians may want to broaden the objectives to include growth, for instance. The precise objectives, however, make little difference to the general argument.

[5] The Kaleckian position has been defended by, among others, Dutt (1997), Lavoie (1995), Dallery and van Treeck (2011); Skott (2012) discusses their arguments in greater detail.

[6] From a history-of-thought perspective the common identification of the Kaleckian specification with 'post-Keynesian theory' is surprising. Robinson, Kaldor and Steindl all rejected the assumption of accommodating utilization rates in the long run, while Kalecki's own comments on this issue are open to several interpretations.

In my view the most promising approach draws on Kaldorian, Harrodian and Marxian theory (see Skott (1989) and Skott and Zipperer (2010)). Lagged responses and the distinction between short and long run effects are essential in this approach, and this makes for models that are more complex than the Kaleckian model. The benefits are a better empirical fit and a more convincing behavioral story.

3 Income distribution

Most if not all strands of heterodox macro view the share of profits as an important determinant of aggregate demand and economic performance. The details differ, but the centrality of income distribution is common ground. This emphasis on distribution is surely warranted, but it may be a mistake to focus narrowly on the functional distribution and there has been little attempt to analyze the causes and effects of broader changes in earnings inequality.

The changes in earnings inequality are enormous. In the US the 'great compression' in the 1940s saw earnings inequality plummet, but starting in the late 1970s inequality has risen and is now at levels comparable to those in the 1920s: the income share of the top ten percent fell from about 45 percent in the 1930s to about 32 percent in the period from the late 1940s to the early 1970s, and then rose to above 45 percent in 2008.[7]

The literature on neoliberalism and financialization has analyzed pressures on the wage share.[8] Outsourcing and the threat of outsourcing, for instance, may have raised firms' bargaining power, and workers have also been weakened by the institutional changes in the labor market. In the US, the changes include a decline in unionization and a fall in the minimum wage. These explanations could – if suitably refined to explain the differential impact on different groups of workers – account for the large rise in earnings inequality and the more modest change in the functional distribution.

Explanations based on globalization and/or institutional change face an important objection, however: low-pay workers have been hurt in terms of both relative wage and relative employment. This positive correlation between changes in relative employment and relative wages seems inconsistent with an institutional explanation. Unless the technology has shifted, firms should have taken advantage of the cheapening of low-pay labor and substituted low-pay workers for the high-pay workers whose wages had increased. Mainstream explanations of the rise in inequality therefore give a lot of weight to 'skill biased technological change' (SBTC). SBTC operates on the demand side of the labor market, and shifts in the relative demand for different types of workers can readily explain why low-pay workers have suffered in terms of both employment and wages.[9]

[7] See the "Top incomes database" compiled by Alvaredo et al. (2011). This database also shows that a great compression can be observed in other countries and that the recent increase in inequality is widespread.

[8] E.g. Boyer 2000, Hein (2008), Crotty (2005), Palley (2007) and Epstein and Jayadev (2007).

[9] Skill-biases are not seen as the only influence on inequality. Globalization, international

The SBTC hypothesis can be challenged on empirical grounds (e.g. Howell (1999)) but my purpose here is different. I want to suggest that the heterodox traditions provide natural starting points for an explanation of the observed developments. They can shed light on some of the reasons for the institutional changes that have been at least proximate causes of increasing inequality, and they can challenge the TINA claim ("there is no alternative") that is used implicitly or explicitly to support the skill-bias hypothesis.

SBTC affects the relative demand for different types of skill, but technical change has another dimension: it can influence the power of different groups of workers. Firms have the ability to dismiss and thereby hurt workers, and this is a source of power for the firm. But workers can also affect outcomes that matter for the firm, including profitability. All jobs entail some power in this sense: an investment banker makes investments which may make or lose millions for the bank, and a burger flipper can burn a few batches of burgers. The difference in degree is important, partly because it influences the wage that the firm will want to pay to help ensure that the worker will be acting in the firm's best interest. The wage will tend to be higher the larger are the assets or operations that the worker controls and the weaker are the quality and timeliness of the firm's information about both the worker's actions and the situation in which the worker acts. These determinants of worker power will depend on technology, and technological change is 'power biased' if it affects the balance of power between firms and different groups of workers.

An advertisement from the "Parts Bin" in the Daily Hampshire Gazette (my local newspaper in Amherst, MA), can be used as a simple illustration of the argument. The ad shows a picture of a "Fleet Black Box" and explains how this device gives the owner of a truck the ability to

> monitor driver performance as it pertains to obeying the law, safety and keeping operating costs in check (fuel economy, etc.) simply by plugging the Road Safety RS-2000 Fleet Black Box into the OBD II port of any 1996 and newer vehicle. You set the guidelines for high-speed driving, hard cornering, hard breaking/acceleration and other aggressive behaviors. According to the manufacturer, the RS-2000 is tamper-proof and offers second-by-second reporting of vehicle speed, G-Force, throttle position and even interior sound level.

As it says on the manufacturer's webpage, "it is like being able to sit next to every one of your drivers every second they drive".[10]

This technology marks a shift in the relationship between truck drivers and owners. It used to be difficult for the owner of a truck to keep track of its progress. The owner had no way to monitor continuously what happened en route, and a late arrival at the destination could be blamed on mechanical problems, bad weather or heavy traffic. The information problem also meant that if the truck were to break down, it was difficult for the owner to tell whether

trade and institutional factors also get some weight in mainstream accounts.

[10] http://www.roadsafety.com/fleet.php

the breakdown had been caused by driver negligence. With the new technology, this has all changed, and the balance of power has shifted against the drivers.[11]

Truck drivers are not unique. There is substantial evidence that the development of computer-based information and communication technologies (ICTs) has affected workers' power, not least in growing industries such as retailing, banking and telecommunications (e.g. Grimshaw et al. 2002; Miozzo and Ramirez 2003; Hunter and Lafkas 2003). The new technologies do little to monitor the more complex actions and options of high level executives, but large groups of low-paid workers face increased monitoring and more precise task specification. At the same time the new technologies have greatly enhanced the flexibility of firms and their ability to coordinate complex production networks. This is in contrast to the rigidity of earlier production systems which meant that in 1937 workers at General Motors were able to bring a large part of the operations of the company and many of its suppliers to a halt by sitting down in a few factories.

Industrial conflict threatened the productivity gains of large-scale production in the rigid production systems of the 1930s, and labor unions and government regulation can be viewed as a way to alleviate these threats and promote orderly industrial relations. Thus, the limitations of ICT facilitated the institutional changes that contributed to the great compression. Conversely, the improvements in ICT from the 1970s led to increasing attacks on the institutional framework that had been built up in the earlier phase.[12]

Some aspects of power-biased technological change (PBTC) can be formalized using an efficiency-wage model, and it can be shown that PBTC can account for a simultaneous rise in the relative wage and the relative employment of high-skill workers (Skott and Guy 2007). In other words, PBTC can explain the particular employment-inequality pattern that has been regarded as a key piece of evidence for the SBTC hypothesis. Unlike the SBTC hypothesis, moreover, PBTC explains an increased intensity of work effort, evidence for which is reviewed by Green (2004). In short, technological changes may have been important for the movements in inequality, not because of skill bias but because of their *power bias*: the changes have affected the ability of different groups to extract rents.

The PBTC hypothesis suggests that technological factors facilitated the institutional changes that have weakened labor. As such, the hypothesis may seem to offer little hope for a reversal of the changes through collective action or policy intervention. Moreover, to the extent that intervention were to be suc-

[11] This line of argument is closely related to ideas that have been around in the Marxian literature for a long time. Important contributions include, among others, Marglin (1974), Braverman (1974), Green (1988) and Bowles (1989). Quoting Marx's (1967, p. 436) statement that "it would be possible to write quite a history of the inventions made since 1830, for the sole purpose of supplying capital with weapons against the revolts of the working class", Bowles goes on to describe how the pursuit of profit may lead capitalist firms to choose "capitalist technologies" that are technically inefficient but enable firms to reduce wages and/ or enforce an increase in the intensity of work. A similar argument is presented by Green (1988). See also Auerbach (1988, p. 327).

[12] This argument is developed in greater detail in Guy and Skott (2008).

cessful in reducing inequality, the PBTC hypothesis (like SBTC) would imply costs in terms of increased unemployment. But perhaps we should not be too pessimistic.

PBTC does not exclude other non-Walrasian elements, and there is ample evidence that many workers fail to get jobs that make use of their qualifications. This mismatch in the labor market means that policy initiatives that reverse the increase in inequality need not increase unemployment, and may indeed cause it to fall. A rise in the minimum wage, for instance, can have monopsonistic effects: low-wage workers may gain both in terms of wages and employment, and aggregate unemployment may fall (Slonimczyk and Skott 2010). Thus, in the US, the decline in the minimum wage since the late 1970s is consistent with the observed patterns in inequality and relative employment.

In my view there is considerable evidence to support both the PBTC hypothesis and the mismatch argument, and the two theories are not mutually exclusive. In fact, other influences may also have contributed to rising inequality, including skill biases and globalization effects. My purpose here is not to propose a definitive explanation but merely to argue that the movements in earnings inequality demand attention and that the heterodox traditions offer promising insights. This field should not be left to mainstream economics.

4 Financial assets and financial instability

Heterodox models typically assume that the saving rate out of profits exceeds that out of wage income. This assumption has empirical support, and Kaldor (1966) provided an important theoretical argument for differential saving rates.[13] In a corporate economy, household wealth consists of financial assets, and financial markets and the distinction between financial and real assets are central to Kaldor's argument.[14]

Consider an economy where households hold their wealth in two financial assets, bank deposits and shares. For simplicity, assume that the desired wealth holdings are proportional to income

$$vN = \alpha pY \tag{6}$$

$$M = \beta pY \tag{7}$$

where v is the price of shares, N the number of shares and M the amount of deposits. The parameters α and β may depend on the expected returns, but in a simple benchmark version of the model they can be taken as constants.

Households receive wage income W, interest income iM, and dividends D. If firms retain a fraction s_f of their profits, the dividends can be written

$$D = (1 - s_f)\Pi \tag{8}$$

[13] Kaldor named his result a 'neo-Pasinetti' theorem since supposedly it supported the position held by Pasinetti in a debate with Samuelson and Modigliani. The name is misleading since Pasinetti based his argument on very different grounds.

[14] Kaldor's original presentation had weaknesses and the presentation here follows Skott (1981).

where Π is the level of profits.

The flow of income is (i) spent on consumption, (ii) spent on buying new shares or (iii) added to bank deposits (households do not hold any cash). Thus, we can write households' budget constraint as

$$W + (1 - s_f)\Pi + iM = pC + \dot{M} + v\dot{N} \tag{9}$$

where a dot over a variable denotes the rate of change, i.e. $\dot{x} = dx/dt$. Using (6) and (7),

$$\begin{aligned} pC &= W + (1 - s_f)\Pi + (i - \frac{\dot{M}}{M})M - vN\frac{\dot{N}}{N} \\ &= pY - s_f\pi pY + (i - \hat{M})\beta pY - \alpha pY\hat{N} \\ &= pY[1 - s_f\pi + \beta(r - \hat{Y}) - \alpha\hat{N}] \end{aligned} \tag{10}$$

where π is the profit share, 'hats' denote growth rates ($\hat{x} = (dx/dt)/x$), $r = i - \hat{p}$ is the real rate of interest, and where the last equation uses $\hat{M} = \hat{p} + \hat{Y}$ (which follows from equation (7)).

The saving rate can now be found as

$$\begin{aligned} \frac{S}{Y} &= 1 - \frac{pC}{pY} \\ &= s_f\pi + \alpha\hat{N} - \beta(r - \hat{Y}) \end{aligned} \tag{11}$$

Thus, the saving rate depends positively on the profit share. Note in particular that there is no heterogeneity among households in this model. It is not a case of "an identifiable class of hereditary barons – a class of capitalists 'with permanent membership' – distinguished by a high saving propensity and of a 'permanent' class of workers distinguished by a low saving propensity". Instead, the high saving propensity out of profits is "something which attaches to the nature of business income and not the wealth (or other peculiarities) of the individuals who own property" (Kaldor 1966, p. 310).

The 'neo-Pasinetti' result is strange from the perspective of mainstream theories. Firms are owned by households, and firms' financial decisions are not seen as a determinant of aggregate saving. In fact under the (restrictive) conditions of the celebrated Modigliani-Miller theorem, the financial policies of a firm are of no concern to its owners. If the firm chooses to finance investment through retained earnings, the value of the firm's shares will increase and its owners can 'declare their own dividends' by selling off some of their shares. The result is exactly the same as if the firm had paid dividends and financed the investment through the issue of new shares.[15] Kaldor's argument shows that

[15] Bliss's (1975) critique of the 'Cambridge model' expresses this point clearly:

> in the semi-stationary state, it is households that 'call the tune' when it comes to saving, not because only households can save, but because when firms save (retain earnings for investment) the ownership rights in those firms appreciate in value along with the new investment and so increase the net worth of the households that share in the ownership of the firms, and hence increase their ability to consume if they so wish. (p. 135)

this micro analysis does not apply at the macro level. If the corporate sector as a whole increases the retention rate s_f, households may respond by trying to declare their own dividends. But there will be no buyers if all households try to sell shares. Thus, the share prices will simply drop and the resulting capital loss will reduce households' desired consumption. In short, retention policies affect aggregate saving.

The growth in the number of shares, $\hat{N}$, is determined by firms' new issue policies and empirically $\hat{N}$ is close to zero, on average. Since the terms $r-\hat{Y}$ and β both tend to be small, too, a specification in which S/Y depends exclusively on the profit share may be a reasonable approximation for many purposes. This special case, which is used in many heterodox models, simplifies the analysis, and the simplification may be harmless for many purposes. Simple benchmark cases can also be misleading, however. Financial practices are not constant, and Minsky (among others) suggested that endogenous changes in financial behavior – e.g $\alpha, \beta, \hat{N}, s_f$ – can be a source of instability.

Most Minsky models have focused on gradual changes in the fragility of firms' balance sheets, as periods of tranquility lead firms to rely increasingly on external finance. In terms of the specification here, this route corresponds to changes in $\hat{N}$ and s_f for any given value of I/Y. But household behavior can also be a source of Minskian dynamics.[16] The portfolio parameters α and β need not be constant. The desired portfolio composition is likely to depend on expected returns, and expected future returns are influenced by current and past returns. The returns on equity include capital gains, and this introduces a positive (destabilizing) feedback mechanism: an increase in the demand for stocks generates capital gains and these capital gains induce further shifts of the desired portfolio composition towards equity.

One implication of this general line of argument is the possibility of inequality-induced financial instability. The simple neo-Pasinetti model treats the household sector as homogeneous. Households, however, differ substantially with respect to both their saving rates and portfolio composition. The Survey of Consumer Finances shows – not surprisingly – that low and middle income groups have few financial assets. Their wealth-income ratio is lower than that of the rich, and the composition of their portfolio is different. Housing makes up a larger fraction, and their holdings of financial assets are skewed towards fixed income assets. The rich, by contrast, hold a disproportionate amount of their wealth in stocks. Thus, in 2001 stockholding households had average net worth that was 3-4 times higher than that of non-stockholding households, and the mean and median share of stocks in financial assets was 9.2 and 0.0, respectively, for households with a head of household aged between 55 and 64 and net worth between \$10,000 and \$100,000, but 31.5 and 30.5 percent for households with net worth above \$1 million ((Curcuru et al. (2005, Tables 4 and 6)).

These patterns suggest that an increase in inequality will raise the demand for stocks. With a given supply of stocks, the result is a rising stock market,

[16] Models that focus mainly on firms include Delli Gati and Gallegati (1990) and Skott (1994); Palley (1994) emphasizes household behavior; Ryoo (2010) includes changes in the financial practices of both firms and households.

and the general Minskian argument now kicks in. As returns rise – boosted by capital gains – the desired portfolios shift further towards stocks, and the result may be the emergence of a financial bubble. The interactions are quite complex - despite the straightforward intuition - but the potential for an increase in inequality to induce financial instability can be confirmed using a simple formal model (Skott 2011)[17].

Variations in portfolio shares are central to this story of inequality-induced bubbles, and portfolio shares do exhibit considerable variation over time (see figure 4), but many other factors influence the average portfolio composition. Indeed, the income-distribution argument relies on the more general observation that relative asset demands depend on the composition and conditions of households. Thus, the same type of argument would suggest that other structural features will affect average portfolio decisions – demographic changes is an obvious source as are pension reforms or tax changes – and the destabilizing feedback effects from capital gains to portfolio shifts does not depend of the specific initial shock.

It should be emphasized, finally, that although the portfolio argument provides a mechanism through which changes in the earnings distribution may have contributed to the stock market bubble in the 1990s, it clearly provides – at best – one element for an understanding of financial instability and of the possible links between inequality and instability.[18] Moreover, the argument has little to say about the housing bubble in the 2000s.[19] Thus, the purpose of this section is not to provide an account of recent events. The purpose is much more limited: to illustrate how existing elements within the heterodox tradition can form a platform for a fruitful analysis of the interaction between financial and real forces.

5 Conclusions

Keynes and 'old Keynesians' like Tobin and Solow were keenly aware that good macroeconomics requires an understanding of the behavior of individual firms and households. But they also knew that the step from micro to macro is complicated, both because of technical aggregation issues – which mean that the aggregate behavior cannot be derived from the optimization of an invariant representative agent – and because the behavior of the micro units may itself be strongly influenced by the macro environment in which they operate. The financial instability argument in section 4 includes both types of complica-

[17] The benchmark stock-flow relations in (6)-(7) are best thought of as long-run targets. Aside from having relative returns influence the targets, the model therefore uses a specification with gradual adjustments towards the target ratios.

[18] Wisman and Baker (2011) discusses several other possible links between inequality and instability. See also Kotz (2010), Palley (2010) and Wolff (2010).

[19] Inequality may be relevant for the housing bubble too but the mechanism is different. The willingness of low and mid income households to go into debt may be explained in part by their attempt to maintain consumption standards and/or keep up with their neightbours and other reference groups, despite falling incomes.

tions. Changes in income distribution, first, affects the average portfolio and thereby the properties of the 'representative agent', and households, second, do not 'know the model' and cannot form rational expectations. They operate in an uncertain macro environment that is undergoing constant change, and the portfolio decisions are based on adaptive changes in their perceptions of this environment and the relative returns that it may generate.

The old Keynesian tradition has fallen out of favor. Following the Lucas critique mainstream, macroeconomics abandoned the old Keynesian approach in favor of 'micro founded' models based on the explicit optimization by representative agents. The heterodox tradition, meanwhile, has undergone its own bifurcation. Some branches of heterodox macro seem to emphasize the structural and macro constraints to such an extent that micro behavior is almost forgotten; other branches want to build up the macro economy from the emergent properties of an agent-based system. Undoubtedly these three different approaches can each produce valuable insights. Optimizing representative-agent models may be relevant for some questions, purely structuralist analyses of macro systems can highlight important interactions and system constraints, and computer-based methods allow us to examine interactions of a complexity that defy traditional techniques.

Methodologically, however, I think Keynes and the old Keynesians got it about right.[20] The financial instability argument illustrates the limitations of the mainstream representative agent while, on the other hand, the Kaleckian investment theory fails to consider the microeconomic plausibility of the assumed parameter restrictions. We want an integrated story about goal-oriented microeconomic behavior in a specific historical and institutional context and an eclectic approach is needed to achieve this. Simple mechanical prescriptions (like 'you must always base your macro model on explicit and well-specified utility functions') are not helpful, and we do not want to exclude particular research tools, be it formal mathematical or statistical techniques, computer simulations, case studies or historical analysis. We need all the tools we can get, but the use of the tools requires sound judgment, and unfortunately it is hard to pin down exactly what that means.

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[20] I realize that many of my post-Keynesian friends see dramatic methodological differences between Keynes and the old Keynesians. I do not want to deny that differences exist, but compared to the comtemporary mainstream, it is the similarities that seem striking.

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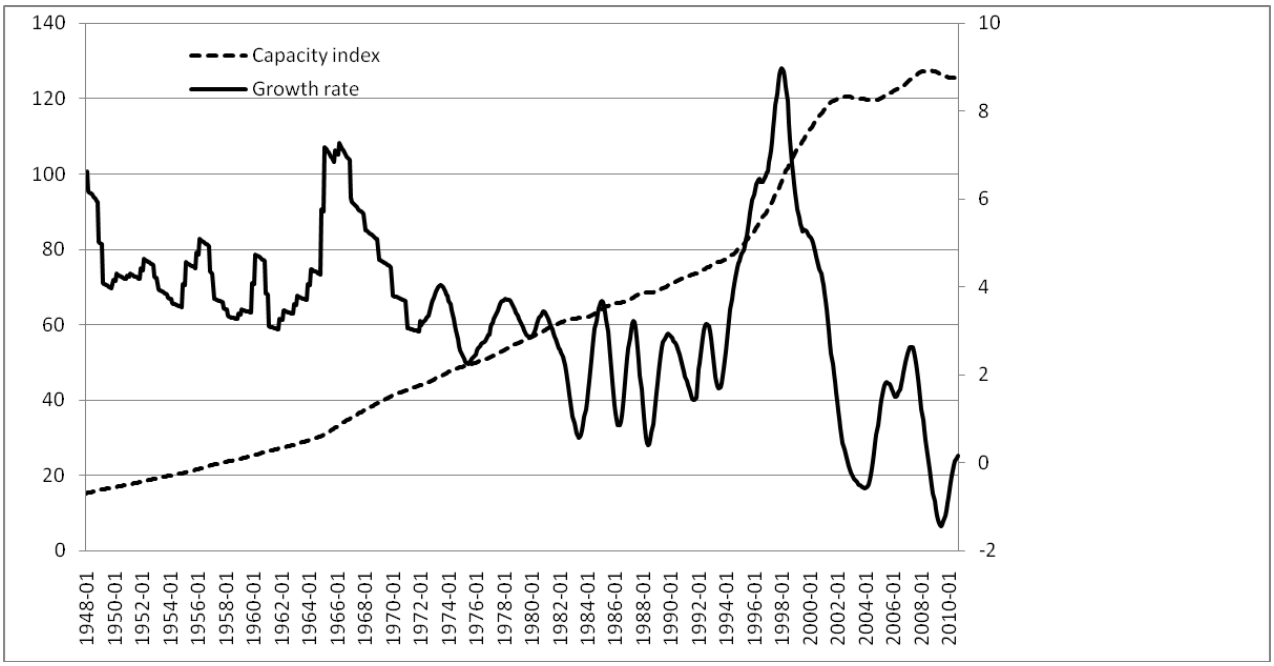

a: Level and growth of capacity

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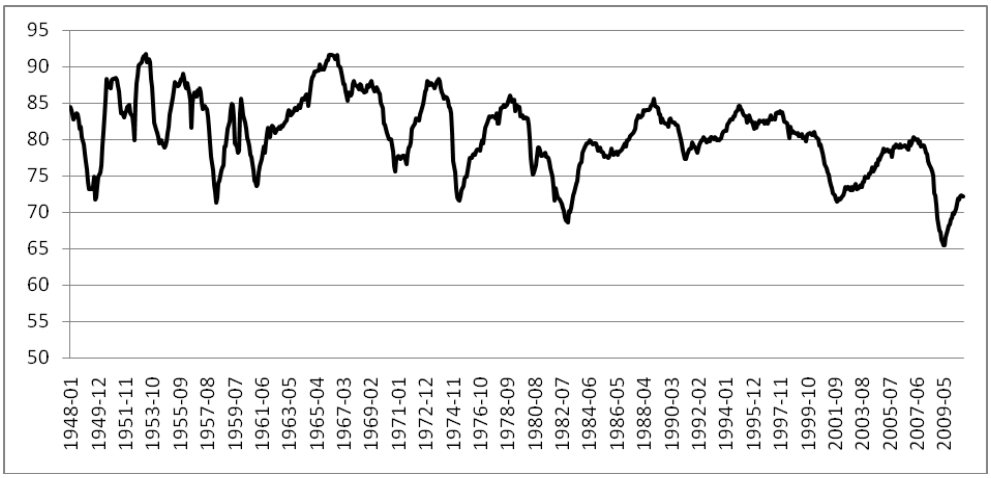
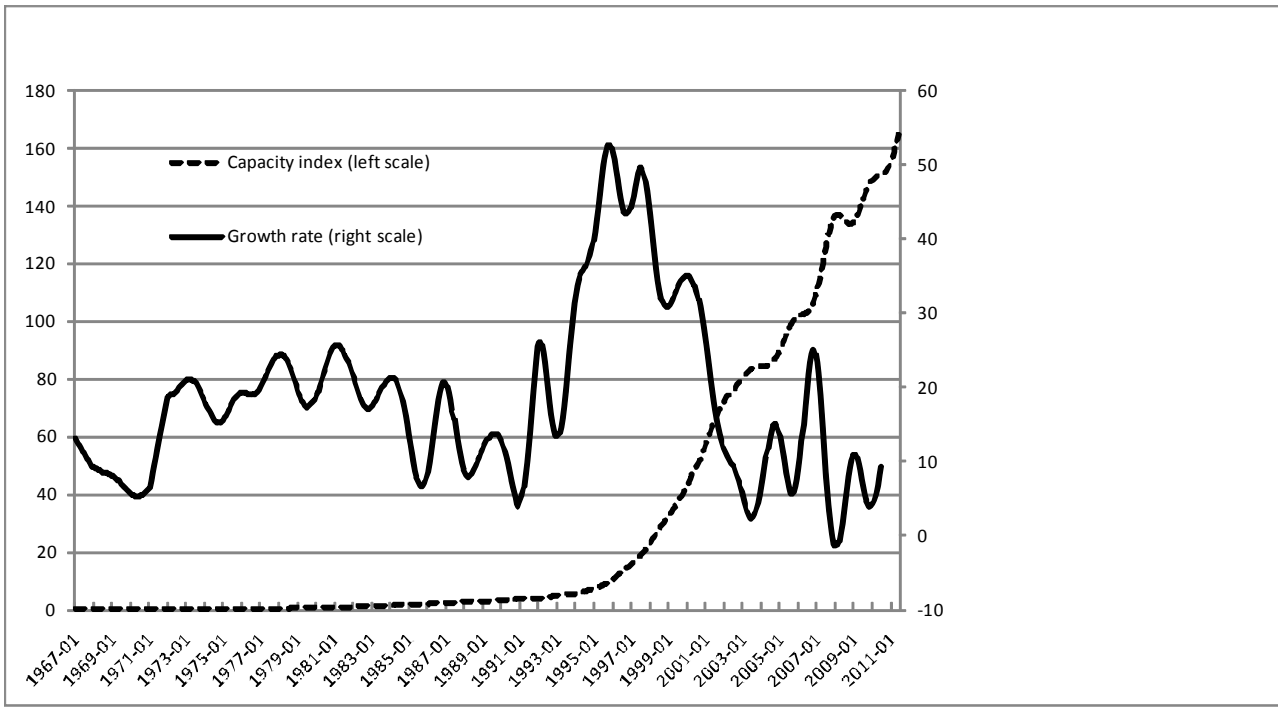
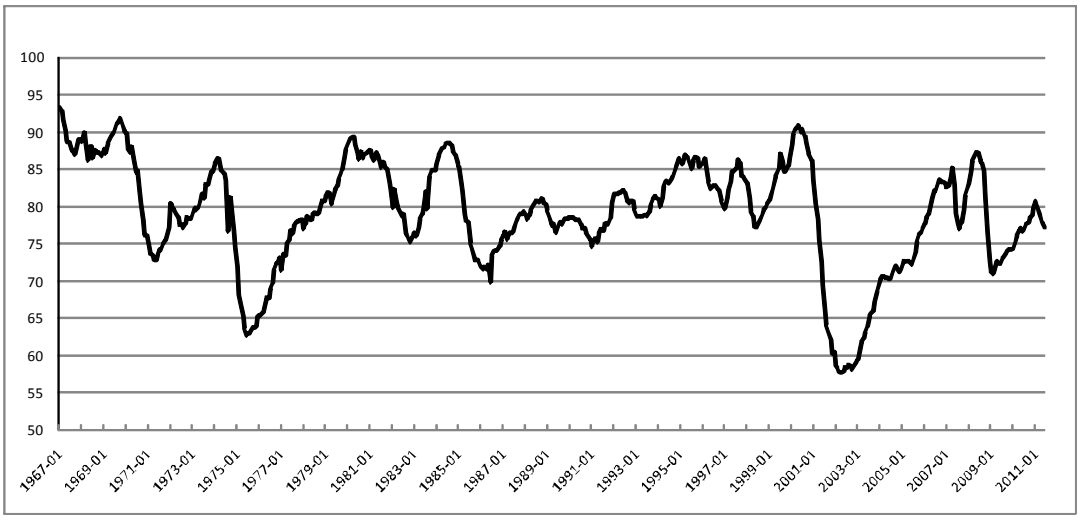


b: Utilization rate

Figure 1:. Industrial capacity and utilization in US Manufacturing; Standard Industrial Classification; seasonally adjusted. Data source: Federal Reserve (http://www.federalreserve.gov/releases/g17/).

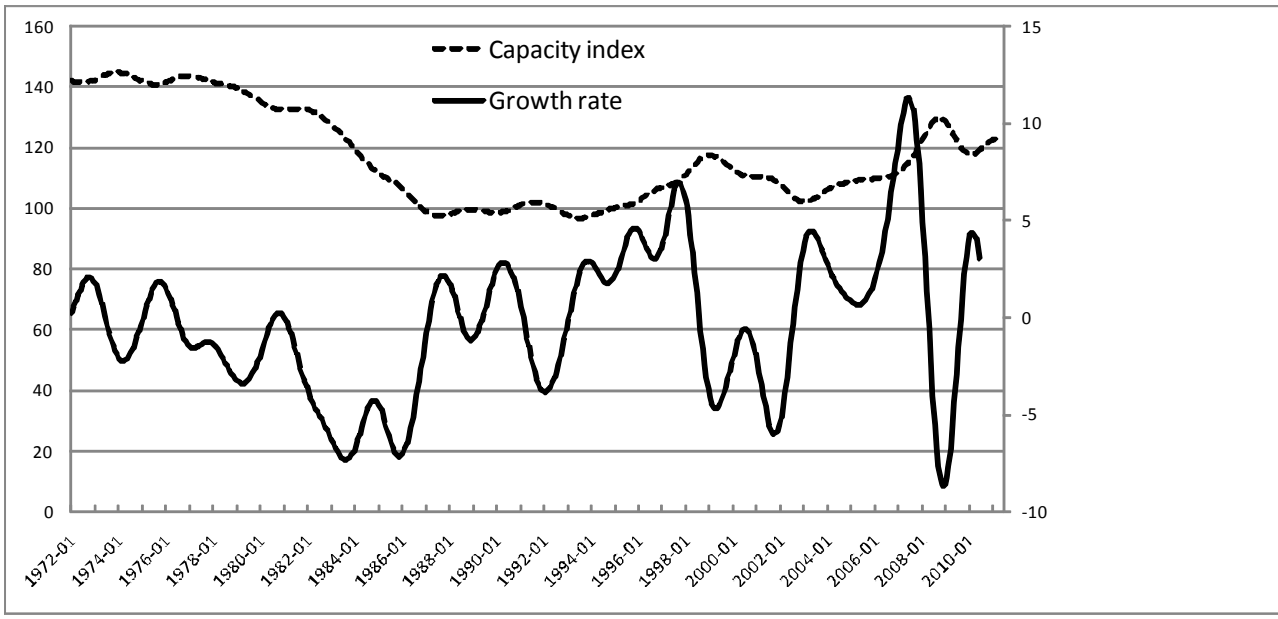


a: Level and growth of capacity

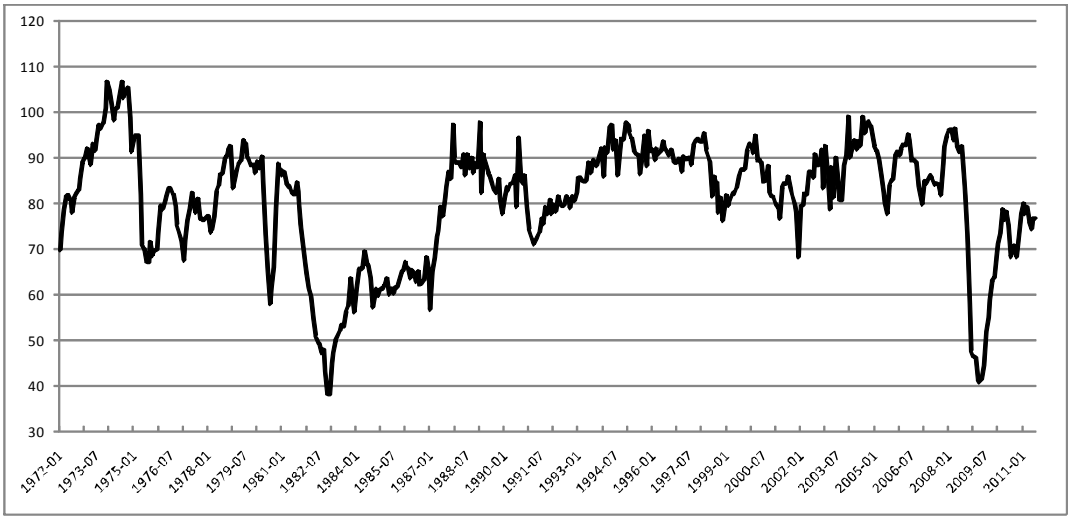


b: Utilization rate

Figure 2: Industrial capacity and utilization in "Computers, communications eq., and semiconductors" (NAICS = 3341,3342,334412-9); s.a. Data source: Federal Reserve (http://www.federalreserve.gov/releases/g17/).



a: Level and growth of capacity



b: Utilization rate

Figure 3: Industrial capacity and utilization in "Iron and steel products" (NAICS = 3311,2); s.a. Data source: Federal Reserve (http://www.federalreserve.gov/releases/g17/).

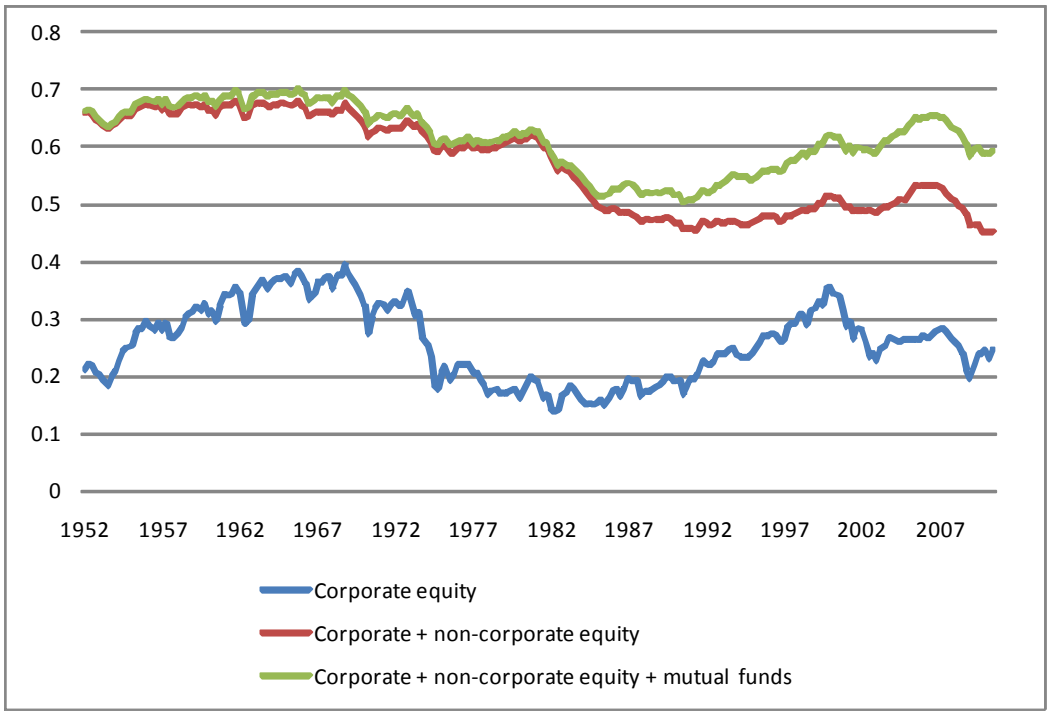


Figure 4: Shares of equity in financial net worth; US households and non-profit organizations (source: Federal Reserve Board, http://www.federalreserve.gov/releases/z1/Current/data.htm, Table B.100)