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Anticipations of the Crisis: On the Similarities Between Post Keynesian Economics and Regulation Theory

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Abstract

The purpose of this paper is to explore the similarities between Post Keynesian Economics (PKE) and Regulation Theory (RT). It is argued that, despite important differences between these traditions, the analytical contents of PKE and RT display broad similarities with respect to their treatments of the income-generating process, the crisis-prone nature of capitalism, and the institutional contingency of capitalist growth and development. This thesis is then exemplified and substantiated with reference to the 2007—2009 financial crisis and "Great Recession". Specifically, it is shown that important strands of both PKE and RT characterize and were successful in anticipating the crisis as the result of the exhaustion of a financialized growth process.

JEL Classification Codes: B50, E11, E12, E21, E24

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1. Introduction

The purpose of this paper is to draw attention to similarities between Post Keynesian Economics (PKE) and Regulation Theory (RT), and to use anticipations of the recent financial crisis and "Great Recession" in both literatures to exemplify these similarities.

The approach taken does not involve exhaustive reviews of the PKE and RT literatures, but instead focuses on representative contributions that demonstrate the overlap between these traditions. Moreover, no pretence is made that there are not, in fact, obvious and important *differences* between PKE and RT. Indeed, well-known differences exist *within* the two traditions. Hence since Hamouda and Harcourt (1989) it has become common to refer to Marshallian (or American), Kaleckian and Sraffian "strands" within PKE that may display more or less coherence, while there exists a long-standing distinction between the Parisian and Grenoble schools of RT and a distinction between RT as a whole and its sister school, the American Social Structure of Accumulation Theory (SSAT).[1] Nevertheless, by drawing on common themes within each tradition, the argument that follows will be that the analytical contents of PKE and RT display broad similarities, and that this theoretical overlap is exemplified by anticipations of the current crisis found in both the PKE and RT literatures.

The project so-described is important for two reasons. The first is intellectual: exploring commonalities between traditions creates a basis for dialogue and hence for learning and advancement. The second is institutional: building institutions (including research centres and publication outlets) is essential to the success of heterodox economics (Palley, 1996, chpt.3). And this process of institution building requires

[1] On these distinctions within RT see, for example, Paquette (1999) for a primer. Note that in what follows, RT is defined broadly to include the contributions of SSAT.

resources that interaction – and eventually, explicit cooperation and collusion – between broadly similar research traditions may help furnish.

The remainder of the paper is organized as follows. Section 2 begins by drawing attention to some important differences between PKE and RT, before section 3 argues that each of these differences can ultimately be seen to give way to a broad congruity between the two traditions. Section 4 argues that this congruity is reflected in the literatures that both PKE and RT produced prior to the onset of the 2007-2009 financial crisis and Great Recession, which anticipate the crisis as a product of the long boom that preceded it. Section 5 offers some conclusions.

2. On the *Differences* between PKE and RT

Some authors associated with either PKE or RT have gone to lengths to emphasize the differences between these traditions. For example, Cornwall and Cornwall (2001, chpt. 5) contrast their evolutionary Keynesian account of the dynamics of post-war capitalism with both RT and SSAT. It is therefore prudent to begin by acknowledging some potential sources of disagreement between PKE and RT. Two such sources are discussed in this section: the basic "mechanics" of the income generating process; and the nature of aggregate fluctuations in economic activity.

i) The income-generating process

The roots of RT lie in Classical (Marxian) analysis. The following two-equation system provides a stylized description of the dynamics of the income-generating process that is consistent with the Classical tradition:

$$g = s_\pi r \quad [1]$$

$$r \equiv \frac{1}{v} - \frac{w}{k} \quad [2]$$

where g denotes the rate of accumulation, s_π is the propensity to save out of profits, r is the rate of profit, v is the full capacity capital-output ratio, w is the real wage and k is the capital-labour ratio. Equation [1] relates the rate of growth to the rate of profit, while equation [2] defines the rate of profit as the surplus of real output per unit of capital over and above total wages per unit of capital. Substituting [2] into [1] yields:

$$g^* = s_\pi \left[\frac{1}{v} - \frac{w}{k} \right] \quad [3]$$

where g^* denotes the equilibrium rate of growth. In PKE, meanwhile, the dynamics of the income-generating process are exemplified by the following stylized Kaleckian analysis:[2]

$$g = \gamma + g_u u \quad [4]$$

$$u = \frac{rv}{\pi} \quad [5]$$

$$r = \frac{1}{s_\pi} g \quad [6]$$

where u denotes the rate of capacity utilization, π is the profit share of income, and all other variables are as previously defined. Equation [4] describes the rate of accumulation as a function of capacity utilization, while equation [5] is often referred to as the Kaleckian "pricing" equation (since the profit share, π, is understood to be determined by

[2] Other "strands" of PKE would describe the income generating process somewhat differently. For example, Kaldorians would emphasize the fundamental role of international trade in determining the rate of growth (see, for example, McCombie and Thirlwall, 1994). The Kaleckian model is privileged here by virtue of the ease with which it facilitates comparison and contrast with the stylized Classical system in equations [1] and [2]. This involves no great loss of generality, as will become clear in the following section.

the mark up established by firms in the determination of prices). Finally, equation [6] is simply the inverse of equation [1], describing the rate of profits as a function of the rate of growth. Substitution of [6] into [5] and the result into [4] now yields the equilibrium rate of growth:

$$g^* = \frac{\gamma s_\pi \pi}{s_\pi \pi - g_u v} \qquad [7]$$

Equations [3] and [7] illustrate two important differences between the Classical and Kaleckian descriptions of the income generating process. Hence note that it follows from [3] that:

$$\frac{\partial g^*}{\partial w} = -\frac{s_\pi}{k} < 0 \qquad [8]$$

and (for economically meaningful values of *r*):

$$\frac{\partial g^*}{\partial s_\pi} = \frac{1}{v} - \frac{w}{k} > 0 \qquad [9]$$

Meanwhile, it follows from [7] that:

$$\frac{\partial g^*}{\partial w} = \frac{\partial g^*}{\partial \pi}\frac{\partial \pi}{\partial w} = \frac{a\gamma s_\pi g_u v}{(s_\pi \pi - g_u v)^2} > 0 \qquad [10]$$

given that $\pi = 1 - wa$ where a denotes the labour-output ratio, and:

$$\frac{\partial g^*}{\partial s_\pi} = \frac{-\gamma g_u v}{(s_\pi \pi - g_u v)^2} < 0 \qquad [11]$$

In other words, the Classical and Kaleckian conceptions of the income-generating process suggest that the latter is *either*: profit-driven (an increase in the real wage squeezes profit and reduces growth, as in [8]) and supply-led (saving creates capital creates growth, as in [9]), as in the Classical tradition; or wage-driven (an increase in the real wage increases aggregate demand and hence capacity utilization and hence growth, as in [10]) and

demand-led (saving reduces demand reduces growth, as in [11]), as in the Kaleckian tradition.

ii) Long waves versus phases of economic growth

As befits its Classical foundations, an important theme in RT is that of *crisis*. The recurrence of periodic minor crises, associated with business cycle recessions, is acknowledged, but of greater interest are less frequent major crises that can perturb the institutional foundations of the mode of regulation. The occurrence of these major crises is often associated with an explicitly cyclical view of long run capitalist growth and development – specifically, the notion that capitalism is characterized by Kondratieff or long waves with a period of approximately 4-5 decades (see, for example, Gordon et al, 1982, chpt.2).

PKE, meanwhile, is traditionally associated with short run analysis. But the project of extending Keynesian analysis to the long run is well established (see, for example, the various survey essays on Keynesian growth theory in Setterfield, 2010a). And although much of the analysis associated with this project revolves around the comparative static properties of steady state equilibrium solutions, the notion that the long run is characterized by aggregate fluctuations can be found in PKE. Hence, for example, Cornwall and Cornwall (2001) discuss alternating medium run episodes (lasting for two or more complete business cycles) of better and worse macroeconomic performance in their conception of long run dynamics.

This having been said, the aggregate fluctuations in Cornwall and Cornwall (2001) bear greater resemblance to Maddison's (1991) distinct but aperiodic *phases of economic*

growth than a strict growth cycle. Indeed, Cornwall (1990, p.3) is explicitly critical of long wave analysis as an "inexorable mechanism" in which recovery inevitably follows decline. It is therefore tempting to conclude that RT displays a deeper and richer commitment to the notion that the long run is characterized by aggregate fluctuations, and that when PKE does move towards discussion of unsteady growth, the vision that emerges is distanced from the sort of explicitly cyclical interpretation of the long run that RT has shown a greater willingness to embrace.

3. Transcending the differences: searching for the common core of PKE and RT

The purpose of this section is to show that despite the differences between RT and PKE identified in the previous section, there exists a broad analytical congruity between the two traditions – one that is cemented by the importance that is attached in both traditions to the role of *institutions* in the functioning of a capitalist economy.

i) The income-generating process again

Setterfield (2009) argues that the dynamics of the income generating process in both Classical *and* Keynesian economics can be summarized by a *single* canonical model of the form:

$$y_p \equiv q + n \qquad [12]$$

$$q = \overline{q} \qquad [13]$$

$$n = \overline{n} \qquad [14]$$

$$y = y(Z) \qquad [15]$$

$$Z = \overline{Z} \qquad [16]$$

where y and y_p are the actual and potential rates of growth (respectively), q is the rate of growth of labour productivity, n is the rate of population growth and the vector Z is a collection of variables associated with *either* the rate of growth of saving (as in the Classical tradition) *or* the level and/or rate of growth of autonomous demand (as in the Keynesian tradition). This system of equations admits solutions for two distinct growth rates. First, combination of [12]-[14] yields:

$$y_p = \bar{q} + \bar{n} \qquad [17]$$

Meanwhile, from [15] and [16], we get:

$$y = y(\bar{Z}) \qquad [18]$$

Equations [17] and [18] represent the natural and the actual (equilibrium) rates of growth, respectively. On the basis of these equations, we can then identify two different growth regimes that are common to *all* heterodox growth models (regardless of whether they are of a Classical or Keynesian genus). The first is a labour constrained (or, following Robinson (1956), "golden age") regime, where $y = y_p$. As is clear from [17] and [18], this regime will arise only if $\bar{q} + \bar{n} = y(\bar{Z})$. In terms of the model specified above, this is an unlikely special case – but it may become a more general case if additional dynamics exist that cause q, n, or Z to adjust whenever this condition is not, at first, observed (on which see Setterfield, 2009). The second growth regime describes non-labour constrained or "dual" economies (Skott and Ryoo, 2008), where $y \neq y_p$. In this regime, the first

Harrod problem (the inequality of the actual and natural rates of growth) is observed, and the employment rate will be non-constant.[3]

Of course, the synthetic model described above does not eliminate the basic differences between profit/supply-led growth and wage/demand-led growth identified earlier. But it does provide the opportunity to reinterpret these differences, as either:

- special cases of a general "non-neoclassical" conception of the income-generating process (as found, for example, in Bhaduri and Marglin, 1990); or
- a fulcrum for more specific debate over the mechanics of the growth process within a broadly common research programme – as in the debates about the behaviour of the actual and natural rates of capacity utilization between Duménil and Lévy (1999), and Lavoie (1995) and Dutt (1997)

[3] This claim is straightforward to demonstrate. To begin with, note that the actual and potential levels of real output, Y and Y_p, respectively, can be written as:

$$Y = \frac{Y}{N} N$$

and:

$$Y_p = \frac{Y_p}{L} L$$

where N denotes the level of employment and L the size of the labour force. It follows that:

$$y = q + e$$

and:

$$y_p = q + n$$

where e is the rate of growth of employment. Hence in the presence of the first Harrod problem (i.e., when $y \neq y_p$):

$$e \neq n$$

Finally, note that it follows from the definition of the employment rate, $\varepsilon = N/L$ that:

$$\hat{\varepsilon} = e - n$$

Hence if $e \neq n$, we must observe $\hat{\varepsilon} \neq 0$ – i.e., a non-constant rate of employment. A corollary of this result is, of course, that $y = y_p \Rightarrow e = n \Rightarrow \hat{\varepsilon} = 0$, in which case the employment rate *will* be constant.

Finally, and with specific reference to the similarities between RT and PKE (rather than Classical and Keynesian macroeconomics more generally), it is very important to note that RT is not characterized by unequivocal commitment to a Classical view of the income generating process. As Paquette (1999, p.968) notes, it is a distinguishing feature of the Grenoble school of RT that it is "rooted more heavily in Marxist theory", while members of the Parisian school explicitly discuss problems associated with aggregate demand formation (see, for example, Mazier, 1998) and even adopt Keynesian descriptions of the income generating process that would be immediately familiar to Post Keynesian economists. Examples include the Kaldorian process of cumulative causation found in Boyer and Petit (1991) and Petit (1999), and the analytical model in Boyer (2000), central to which are the demand-generating properties of wage formation and accelerator effects.[4]

In sum, the question as to whether long run growth is wage-led and demand-determined or profit-led and supply-determined is important, but need not (and should not) balkanize research in the RT and PKE traditions.

ii) The nature of long aggregate fluctuations

The critical issue here is whether the difference between long wave analysis and that based on Maddisonian "phases of economic growth" is, in fact, a difference of *degree* rather than one of *kind*? The answer is arguably in the affirmative. Hence note that

[4] See also Milberg's (2001) review of Mazier et al (1999), which compares the extensive and intensive accumulation regimes described in the latter to the exhilarationist/stagnationist dichotomy developed by Bhaduri and Marglin (1990), and also discusses the intellectual debt of the authors to Kaldor.

Of course, it is quite possible to couch the possibility of aggregate demand failures in Classical language, by distinguishing the process of surplus value *creation* from its *realization*, from which arises the possibility of *overproduction*. But the argument here is that the Parisian school of RT goes beyond this, openly embracing both the rhetoric and analytical structures of explicitly Keynesian models.

drawing on its Classical heritage, RT emphasizes that following a major crisis and the consequent breakdown of a previously prevailing mode of regulation, processes of *social conflict and struggle* are intrinsic to the forging of a new mode of regulation.[5] There is no reason to interpret such processes mechanistically. Indeed, conflict, interpreted as an open, non-deterministic process, can be seen as an important source of the fundamental uncertainty emphasized by PKE.

From this perspective, then, it can be argued that rather than having disparate visions of the long run, both RT and PKE share a common conception of capitalist growth as *unsteady* – i.e., subject to aggregate fluctuations. Hence the Classical heritage of RT leads inevitably to an emphasis on recurrent crises as a feature of the growth process. Meanwhile, although the use of steady-state equilibrium techniques sometimes masks this emphasis, the notion of unsteady growth and the potential for crises is evident in both key methodological (Kregel, 1976) and theoretical (Harrod, 1939; Minsky, 1978) contributions to PKE.

It is also worth noting that emphasis on unsteady growth is in some sense important for the analytical structure of RT and PKE (rather than just their correspondence to reality). Hence referring back to the previous sub-section, unsteady growth helps make sense of the "dual" economy growth regime, where $y \neq y_p$ and the first Harrod problem prevails. This is because only the labour-constrained or "Golden Age" growth regime is strictly consistent with long run steady-state equilibrium conditions.[6]

[5] This is true even for strict adherents of long wave analysis such as Gordon et al (1982).
[6] Essentially this is because the employment rate is bounded both above and below, so that the only rate of growth of the employment rate consistent with steady state equilibrium conditions is $\hat{\varepsilon} = 0$. However, as demonstrated in footnote 3 above, whenever the first Harrod problem prevails, we will observe $\hat{\varepsilon} \neq 0$.

iii) Emphasis on the institutional and historical contingency of capitalism

Finally, to the extent that a common emphasis on unsteady growth can be said to characterize RT and PKE, this points to a further point of comparison between these traditions. Specifically, the analysis of longer term aggregate fluctuations is qualitatively similar in both traditions, in the sense that it involves emphasis on the role of *institutions* in structuring the accumulation process.

The notion of a *mode of regulation* – an institutional infrastructure that regulates or guides historically-specific regimes of accumulation – is, of course, a *sine qua non* of RT. And the rise and decline of modes of regulation in capitalist history is, in turn, associated with the existence of long swings in the pace of growth and accumulation. So much is well known. But what if any counterpart to this analysis exists in PKE? In the first instance, aggregate fluctuations in PKE are traditionally associated with variations in the "state of long run expectations" (confidence, animal spirits etc.) that are, in turn, associated with decision making under uncertainty. These, moreover, are traditionally viewed as business cycle phenomenon. But many PK economists identify relatively enduring (but ultimately transmutable) institutions as part-and-parcel of the behavioural response to uncertainty, and these institutions are increasingly seen as contributing to longer phases of growth and retardation. For example, Crotty (1994) argues that institutions provide a source of "conditional stability" in a capitalist economy, without which uncertainty – or more specifically, flighty behavioural responses to uncertainty on the part of decision makers – would render the economy kaleidic. The examples that Crotty provides of institutions that create (or have created) this conditional stability

include relatively long-lived arrangements, such as oligopolistic practices in product markets and the Bretton Woods system governing international finance. These examples are noteworthy because they are recognizable as two of the institutional structures that are found in RT accounts of the "Fordist" mode of regulation associated with the post-war Golden Age (1948-73) of capitalist development.

Elsewhere, Cornwall (1990), Cornwall and Cornwall (2001), and Cornwall and Setterfield (2002) appeal explicitly to the notion of an "institutional framework" to explain medium run "episodes" of macroeconomic performance during the twentieth century. Despite the objections of Cornwall and Cornwall (2001, chpt.5) noted earlier, the "institutional framework" is fundamentally similar to the idea of a mode of regulation, providing a sort of social "operating system" within the context of which basic economic functions (such as production and exchange) are undertaken. Meanwhile, Minsky's maxim that "stability breeds instability" is increasingly understood by PK economists as referring to longer-term (rather than business cycle) dynamics, connected to the emergence and subsequent atrophy of financial sector institutions. For example, Wray (2009) argues that New Deal legislation and the rise of "big government" in the US gave rise to the post-war Golden Age, but that the financial stability associated with the latter encouraged the steady erosion of precisely those financial institutions on which the Golden Age was (in part) based, creating increasingly frequent and severe financial crises over the past 30 years. This process – which Wray has labelled the "Minsky half century" – gave rise to the emergence of a financially fragile "money manager capitalism" akin to the "finance capitalism" that preceded the Great Depression, and primed to fail in the

manner witnessed in late 2008. Meanwhile, Palley (2009a) discusses a Minsky "super cycle" that

> works over a period of several business cycles and operates at the system level. The super cycle is a process of transforming business institutions, business conventions, and structures governing the market. These structures are critical for ensuring the stability of capitalist economies
>
> (Palley, 2009a, p.7)

Moreover, the period of these Minsky super cycles is linked explicitly to what the author identifies as "the long cycle thinking of economists such as Schumpeter ... and Kondratieff" (Palley, 2009a, p.2).

Finally, it can be argued that Institutionalist economists (implicitly) recognize the concept of institutions, as used in the "original" institutional economics associated with, *inter alia*, Thorsten Veblen, Clarence Ayres and John Dunlop, as an important "bridge" between RT and PKE. Hence while Hodgson (1989, 1999) discusses the links between institutionalism and PKE, the same author also acknowledges similarities between institutionalism and RT (see Labrousse and Vercueil, 2008).

Of course, RT calls attention not just to the role of institutions but also that of technology in shaping capitalism – specifically, the technical (as well as social) character of the point of production, and the contribution this makes to defining regimes of accumulation. There is no obvious counterpart to this in PKE, where the microfoundations of macro analysis tend to focus more on pricing rules (and the distribution of income) than technical relations of production. It should be noted, however, that there is a rich emphasis on the dynamics of technical change in the Kaldorian branch of PKE. This extends to emphasizing the importance of sectoral differences in the capacity of the economy to generate productivity growth (Cornwall,

1977; McCombie and Thirlwall, 1994, pp.164-6) – a theme that has also been explored in the RT tradition (see, for example, Petit 1986).

4. Anticipations of the current crisis

The thesis in this section is that there exist important commonalities as between RT and PKE anticipations of the current crisis in capitalist economies, and that these serve to exemplify the broad analytical similarities between the traditions identified in the previous section. Specifically, it is claimed that, while other accounts of contemporary conditions consistent with the basic strictures of either RT or PKE can certainly be entertained, a common theme in both traditions is that the current crisis represents the exhaustion of a financialized growth process. It is possible to show that, prior to the crisis, both: (a) the "financialized" and financially fragile character of the pre-2008 growth process is clearly identified in both PKE and RT; and (b) the importance of real wage stagnation in driving *household* debt accumulation – the "ground zero" of contemporary financial fragility – is clearly identified in both traditions.

i) A "financialized" growth regime subject to increasing financial fragility

The RT literature prior to the 2008 financial crisis is replete with contributions that identify the then-contemporary growth regime as "financialized" and/or financially fragile (and therefore ripe for financial crisis).[7] For example, Lippit (1997) identifies the institutional development of the US financial sector during the 1980s and 1990s –

[7] The term "financialization" is notoriously imprecise. It suffices for the purposes of this paper to appeal to Epstein's (2005, p.3) broad definition of the phenomenon, according to which "financialization means the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies".

including, but not limited to, financial sector deregulation and central bank policy rules – as enhancing an already well-developed venture capital industry, on which technology-intensive start-up firms are heavily dependent. This, he argues, is particularly advantageous at a time of rapid technological change, and should therefore be regarded as one of the institutional pillars associated with a nascent long-wave upswing in the US economy dating from the early 1990s. Boyer (2000), meanwhile, develops a theoretical model of a financialized growth regime as a precursor to evaluating the possibility that such a regime has replaced the Fordist regime of accumulation characteristic of the Golden Age. Confronting the model with a variety of statistical indicators, he concludes that the model is best suited to a description of Anglo-Saxon economies, noting that the spread of financialization is less evident in Europe and Japan. Finally, Aglietta and Breton (2001) identify the increased importance of financial markets (rather than just information technology) as a defining feature of the "new economy". They focus in particular on the prominence of the market for corporate control, arguing that this forces a norm of "shareholder value" on firms. As a result of this norm, firms must focus on distributing dividends at the expense of internally funding investment, the upshot being that their growth is retarded.

Other contributions to the RT tradition caution that financialization may de-stabilize the growth process. Hence Boyer and Juillard (1998) argue that financial liberalization helped de-synchronize the post-war institutional architecture of the Japanese economy, and was thus an important contributor to the "lost decade" in Japan. Meanwhile, O'Hara (2002) argues that a successful financial social structure of accumulation (FSSA) must generate financial stability, conflict resolution between

finance and industry, and sustainable productivity growth and profitability in the financial sector. He argues that the contemporary US FSSA generates none of these, and is therefore the Achilles heel of the growth process in the US. Both Aglietta (2000) and Boyer et al (2005) draw attention to the financial fragility inherent in a financialized growth regime. Finally, Guttmann (2007, p.2), writing at the very dawn of the crisis, anticipates that "what has transpired so far may well show this to have been the first systemic crisis of a new finance-led accumulation regime and as such an important stress test for an entire infrastructure of financial markets underpinning this regime". He goes on to question numerous features of this regime – including the combination of previously separate financial activities within single firms, and the suitability of the regulatory framework – before alluding to the propensity of long periods of stability to breed financial fragility (citing Minsky in the process). Not surprisingly, the theme of financial fragility has also been pursued in contributions to the RT literature that have appeared since the onset of the crisis (see, for example, Kotz, 2009; Guttmann and Plihon, 2010).

The PKE literature can justifiably claim to echo all of these same themes and concerns. This is perhaps not surprising, given the longstanding concern in PKE with the central roles of money and finance in the accumulation process. Hence Palley (1996, chpt.3) identifies endogenous money and finance as the "yin and yang" of accumulation and growth in PKE. While credit creation facilitates real expansion by relaxing the constraint on aggregate spending imposed by current income and previously accumulated wealth, the existence of liquid financial assets creates a potential "purchasing power

sink" that can cause aggregate demand deficiencies, while debt accumulation can generate financial fragility and crisis *a la* Minsky.

Against this backdrop, the period prior to the 2008 financial crisis witnessed a flourishing of PK models designed to investigate the impact of financialization on growth (see, for example, Stockhammer 2004, 2005-06; Lavoie, 2008; Skott and Ryoo 2008a, 2008b). An important theme that emerges from this literature is the potentially ambiguous effects of financialization on growth in steady-state PK models.

At the same time, the PKE literature produced numerous early warnings of growing financial fragility in the US and its potentially negative impact on macroeconomic performance. Perhaps the most celebrated of these are the *Strategic Analyses* produced by Wynne Godley and his various co-authors at the Levy Economics Institute of Bard College (of which Godley and Izurieta (2002) is an excellent example). These track external, public sector and private sector balances in the US which, for any given level of income, must conform to the identity:[8]

$$\textit{private sector deficit} \equiv \textit{public sector surplus} - \textit{trade surplus}$$

Particular attention is focused on the evolution of household balance sheets – more specifically, the failure of households to de-leverage during and after the 2000-2001 recession, and the mounting financial fragility of the US household sector thereafter. Similar warnings can be found in Palley (2002), who identifies household debt accumulation in the US as an unsustainable offset to a latent aggregate demand

[8] This identity follows from the national income accounting identity:

$$I + G + X \equiv S + T + M$$

where I denotes investment spending, G is government spending, X is exports, S denotes saving, T is total tax revenues and M is imports (in other words, total injections are identically equal to total leakages). Re-arranging this identity yields:

$$I - S \equiv (T - G) - (X - M)$$

which is the identity stated in the main body of the paper.

deficiency masking (but incapable of indefinitely forestalling) a severe crisis of demand in the US economy.

Again, it is not surprising to find that PKE analysis of the consequences of financialization and mounting financial fragility has continued in the wake of the financial crisis and subsequent Great Recession (see, for example, Hein and van Treeck (2010), and various of the papers published in the *Cambridge Journal of Economics'* (volume 33, number 4, July 2009) special issue on the global financial crisis).

ii) The demise of the Fordist wage labour nexus and household debt accumulation: the current crisis as a product of the previous crisis

The notion that the post-war Golden Age was predicated on (*inter alia*) a Fordist "wage labour nexus" or "capital-labour accord" is a central feature of RT. But a similar claim can also be found in PKE, especially in the work of Cornwall (1990) and Cornwall and Cornwall (2001), who stress the importance of post-war "social bargains" in industrial relations for Golden Age macroeconomic outcomes. Moreover, and for the purposes of this paper, more importantly, the notion that the atrophy or breakdown of these arrangements since1973 has, in at least one fundamental sense, given rise to the current crisis, can be found in both the RT and PKE traditions.

The basic argument with which we are concerned here can be traced back to Marglin and Schor's (1990) UNU-WIDER project.[9] In this book, Glyn et al (1990) – a

[9] Although this project is not formally identified with RT, the publishers description of the book reads like a treatise in the RT tradition. Hence according to Oxford University Press, "blending historical analysis with economic theory, this work presents essays that scrutinize the institutions that fostered ... growth and high employment [during the Golden Age] as well as the forces which later undermined the effectiveness of these institutions in the 1960s and 70s" (www.oup.com/us/catalog/general/subject/Economics/History/?view=usa&ci=9780198287414).

chapter co-authored by Alain Lipietz, one of the founders of RT – argue that the success of the post-war Golden Age was based, in part, on real wage growth keeping pace with productivity growth during the period 1945-73.[10] This results in the roughly balanced growth of aggregate demand and "aggregate supply" (or more specifically, potential output), which is, in turn, necessary for the maintenance of a constant rate of employment and hence for the sustainability of a long run equilibrium rate of growth that is demand-determined. To see this, first note that, as was demonstrated earlier in footnote 3, in order for the employment rate to remain constant – which it must in the steady state – we need to observe:

$$y = y_p$$

Now consider the following simple static characterization of an economy in which output is demand-determined:

$$AD = C + A \qquad [19]$$

$$Y = AD \qquad [20]$$

$$Y_p = \frac{Y_p}{L} L \qquad [21]$$

where AD denotes aggregate demand, C and A denote consumption and non-consumption expenditures, respectively, Y and Y_p denote (respectively) actual and potential output, and L is the size of the labour force (all variables are in real terms). Substituting [19] into [20] and converting both the resulting equation and equation [21] into growth rates, we arrive at:

[10] Again, while the authors do not explicitly identify their contribution with the RT tradition, the connections are obvious. Hence in the introduction to their chapter, Glyn et al (1990, pp.39-41) describe theirs as a historical approach that identifies the Golden Age as a unique "economic regime" founded on a particular "macroeconomic structure" and "system of production" (by-words for the regime of accumulation) and "rules of co-ordination" (which correspond to the institutions typically emphasized in RT as constituents of the post-war mode of regulation).

$$y = \omega_c \hat{C} + (1 - \omega_c)\hat{A} \qquad [22]$$

and:

$$y_p = q + n \qquad [23]$$

Finally, equating y and y_p to reveal the conditions under which we will observe a constant rate of employment, we arrive at:

$$\omega_c \hat{C} + (1 - \omega_c)\hat{A} = q + n \qquad [24]$$

where ω_c is the share of consumption in total expenditures.

Now suppose that:

$$C = c_w wN + c_\pi \Pi + D$$

where w is the real wage, N is total employment, Π is total profit, D is debt-financed consumption spending by wage earners and c_w and c_π represent the (constant) propensities to consume of wage and profit earners, respectively. Assuming that $0 = c_\pi < c_w < 1$, this expression can be re-written as:

$$C = c_w w \frac{N}{L} L + D$$

where N/L denotes the employment rate. Assuming that N/L remains constant, it therefore follows that:

$$\hat{C} = \omega_Y (\hat{w} + n) + (1 - \omega_Y)\hat{D} \qquad [25]$$

where ω_Y denotes the share of total consumption spending that is funded by current income. Substituting [25] into [24] and re-arranging yields:

$$\omega_c[\omega_Y \hat{w} + (1 - \omega_Y)\hat{D}] + (1 - \omega_c)\hat{A} = q + (1 - \omega_c \omega_Y)n \qquad [26]$$

If we now assume that *D* grows at the same rate as wage income – which is necessary to keep the debt: income ratio of working households constant over time – we can write:

$$\hat{D} = \hat{w} + n$$

and substituting this expression into equation [22], we arrive at:

$$\omega_c \hat{w} + (1 - \omega_c)\hat{A} = q + (1 - \omega_c)n \qquad [27]$$

It is now obvious by inspection that as $\omega_c \to 1$, the expression in [23] reduces to:

$$\hat{w} = q \qquad [27a]$$

(Recall that, historically in the US, $\omega_c \approx 0.66$; currently, $\omega_c \approx 0.70$.)

Putting the pieces of this analysis together, we can now see that equality in the rates of growth of real wages and labour productivity will more or less suffice to keep total expenditures and potential output – or "aggregate demand and aggregate supply" – growing at the same rate, which, when the actual rate of growth is demand-determined, is necessary to keep the employment rate constant. In simple terms, the equality of real wage growth and labour productivity growth can be thought of as a "golden rule" for sustainable growth consistent with full (or even simply a constant rate of) employment.

As previously noted, Glyn et al (1990) argue that this "golden rule" was actually observed during the post war Golden Age and, for the reasons outlined above, was instrumental in the macroeconomic success of this era. Hence:

> The balance between the growth of real wages and productivity allows consumption to grow roughly in line with production. Between 1952 and 1970 the private consumption of the ACCs [advanced capitalist countries] rose by 4.2 per cent p.a. whilst production rose by 4.5 per cent. A fundamentally new development of the post-war period was that the massive growth in production was counterbalanced by an equal growth of consumption ... extending to all sectors of the population but first and foremost to wage-earners.
>
> (Glyn et al, 1990, pp.49-50)

The analysis in Glyn et al (1990) ends in 1979, by which time, the authors argue, we had witnessed an end to "attempts to breathe life back into the golden age economic regime" (Glyn et al, 1990, p.40). But as a matter of logic, it follows from the preceding analysis that if real wages grow *slower* than productivity growth, the "golden rule" for sustainable growth consistent with a constant rate of employment is violated: other things being equal, the economy is primed for sluggish output growth and steadily rising unemployment. It is precisely this violation of the "golden rule" that Petit's (1999, pp.223-6) growth accounting identifies with the post-Fordist era (which he dates from the mid-1980s). Hence according to Petit, growth since the mid-1980s has been characterized by slow (but positive) productivity growth coupled with stagnant real wages, consistent with a declining wage share of income.[11] Kotz (2008, p.175), meanwhile, argues that the neoliberal era (which he dates to circa 1980) is characterized by "a contradiction between the conditions for creation of surplus value and those necessary for its realization" because "stagnating wages creates a potential problem of overproduction relative to

[11] Note that the wage share of income, ω_W, is given by:

$$\omega_W = \frac{wN}{Y}$$

which implies that:

$$\dot{\omega}_W = \omega_W(\hat{w} - q) < 0$$

if:

$$\hat{w} < q$$

(given $\omega_W >> 0$). In other words, the wage share will decline – as observed by Petit (1999) – if real wage growth falls short of productivity growth.

demand". He goes on to connect the failure of this problem to materialize to household debt accumulation, before warning that this latter process may have reached its limit.

Exactly the same arguments are prominent in PKE anticipations and analyses of the fundamental causes of the current crises. In simplified form, the PKE argument runs as follows. Since the late 1970s, real wages have grown at a slower pace than productivity in advanced capitalist economies, thus creating a latent aggregate demand deficiency. The latter did not immediately become manifest, however, because households seeking increases in their standard of living resorted to debt accumulation to finance increasing consumption expenditures that could not be funded by rising real income – thus filling the aggregate demand gap that would have otherwise resulted from real wage growth lagging productivity growth.[12] But the same process of household debt accumulation resulted in increasing household debt to income ratios and debt-servicing burdens. In other words, the process was ultimately unsustainable: growth based on the debt-financed expansion of consumption expenditures by households experiencing little or no growth in real incomes must eventually grind to a halt – and according to PKE, has since 2008.

The argument outlined above is exemplified by Palley (2002), who explicitly connects real wage stagnation and household debt accumulation, identifying the latter as a "temporary offset" to the aggregate demand problems caused by the former which (as

[12] Household debt accumulation can be seen as the "American solution" to the aggregate demand deficiency identified above. Other economies – most notably Germany and Japan amongst the advanced capitalist countries – pursued export-led growth to offset deficiencies in the size of their domestic markets. But the latter was facilitated to a substantial degree by the willingness of the US to act as a "consumer of last resort" for foreign goods – as reflected in the substantial size of the US trade deficit over the last thirty years. In short, the "American solution" turns out to have been a "global solution," thus justifying the focus on US household debt accumulation in the PKE analysis described above (although the preceding analysis does also call attention to the existence of important global imbalances associated with the resulting growth regime).

the label suggests) cannot be sustained.[13] Not surprisingly, the PKE literature has been replete with references to the real wage stagnation/unsustainable debt accumulation dynamic since the advent of the Great Recession (see, for example, Palley 2009b, 2010; Setterfield 2010b).

If – as both the RT and PKE literatures suggests – the violation of the "golden rule" since the late 1970s marks both a departure from the conditions prevalent during the Golden Age and a fundamental cause of the current crisis, then why did this transition occur? On this theme, the RT and PKE literatures again speak with one voice, suggesting that the breakdown of the industrial relations described at the start of this section were primarily responsible.[14] Hence Glyn et al (1990, p.58) argue that the "golden rule" was "embedded in the particular institutions of the wage-determination process" (p.58) during the Golden Age, including collective bargaining with unionized workers and minimum wage regulations, which together assisted the spread of wage norms established in unionized sectors to non-unionized sectors of the workforce. They then emphasize the breakdown of these institutions amid the strike and wage explosions of late 1960s/early 1970s as resulting in the initial violation of the "golden rule", resulting in real wage growth that exceeded productivity growth (and hence precipitated the onset of a profit squeeze). Kotz (2008), meanwhile, associates the subsequent (post 1980) neoliberal growth regime – in which productivity growth exceeded real wage growth – as resulting from the demise of the "regulationist" institutional structure characteristic of the golden

[13] See also Godley and Izurieta (2002) and Cynamon and Fazzari (2008) on the links between US household debt accumulation and consumption expenditure, and the unsustainability of the former.

In addition to household debt accumulation, Palley (2002) identifies a number of other "temporary offsets" – including, but not limited to, wealth and expectational effects associated with asset price bubbles – responsible for keeping US aggregate demand buoyant during thirty years of real wage stagnation.

[14] The breakdown of these arrangements is a theme that is well rehearsed in the RT literature. But it is also prominent in certain branches of PKE analysis. See, for example, Cornwall (1990), Cornwall and Cornwall (2001) and Setterfield (2006, 2007).

age and its replacement by neoliberal institutions that (*inter alia*) weakened the bargaining power of labour. In very much the same vein, Palley (2002) identifies "business dominated labour markets" as one of the causes of America's unsustainable growth path since 1980, arguing that "remedying this calls for rebuilding the institutions that gird the labor market, including the minimum wage and union density" (p.30). And once again, these themes have been echoed in post-crisis PKE analysis (see, for example, Setterfield 2010b).

In short, it is possible to identify contributions to both the RT and PKE traditions that anticipate the current crisis as arising from essentially the same source: an imbalance in the aggregate demand generating process associated, in the first instance, with the failure of real wage growth to keep pace with that of productivity, and explained ultimately by the atrophy of a system of industrial relations specific to the post-war Golden Age. The fact that RT and PKE are capable of furnishing such compatible accounts of the events of the last six decades only enhances the claims made in the previous section regarding their broad analytical congruity.

5. Conclusions

It is often remarked that beauty lies in the eye of the beholder. Much the same may ultimately be said about one's sense as to whether there are more similarities than differences between RT and PKE. But the argument that has been advanced in this paper is that, certain genuine differences between these traditions notwithstanding, there are real and important analytical similarities between RT and PKE. Furthermore, it has been shown that anticipations of the current crisis in both RT and PKE bear out the thesis that there is much in common between these traditions. There are branches of both literatures

that identify the same structural flaw in the post-1980 growth regime (productivity growth in excess of real wage growth) as the ultimate progenitor of the crisis, and which explain the emergence of this flaw in similar fashion (institutional change that upset a previously existing balance in the dynamics of aggregate wage formation). Ultimately, then, it seems fitting to close by quoting Foley and Michl (2010, p.56), whose final appraisal of the Classical and Keynesian traditions in growth theory serves as an equally fitting assessment of the relationship between RT and PKE:

> *it is tempting to conclude that the disagreements that remain chart a common research program rather than a gulf of irreconcilable scientific differences.*

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