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Article

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European Journal of Economics and Economic Policies: Intervention (EJEEP)

Provided in Cooperation with:

Edward Elgar Publishing

Suggested Citation: Hein, Eckhard (2017) : Post-Keynesian macroeconomics since the mid 1990s: main developments, European Journal of Economics and Economic Policies: Intervention (EJEEP), ISSN 2052-7772, Edward Elgar Publishing, Cheltenham, Vol. 14, Iss. 2, pp. 131-172,
<https://doi.org/10.4337/ejeep.2017.02.01>

This Version is available at:

<https://hdl.handle.net/10419/277385>

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Post-Keynesian macroeconomics since the mid 1990s: main developments

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In this paper the main developments in post-Keynesian macroeconomics since the mid 1990s will be reviewed. For this purpose the main differences between heterodox economics in general, including post-Keynesian economics, and orthodox economics will be reiterated and an overview of the strands of post-Keynesian economics, their commonalities and developments since the 1930s will be outlined. This will provide the grounds for touching upon three important areas of development and progress of post-Keynesian macroeconomics since the mid 1990s: first, the integration of distribution issues and distributional conflict into short- and long-run macroeconomics, both in theoretical and in empirical/applied works; second, the integrated analysis of money, finance and macroeconomics and its application to changing institutional and historical circumstances, such as the process of financialisation; and third, the development of full-blown macroeconomic models, providing alternatives to the mainstream 'New Consensus Model' (NCM), and allowing us to derive a full macroeconomic policy mix as a more convincing alternative to the one implied and proposed by the mainstream NCM, which has dramatically failed in the face of the recent crises.

Keywords: *post-Keynesian macroeconomics, heterodox vs orthodox economics, pluralism in economics, distribution, money, finance, macroeconomics, macroeconomic policies*

JEL codes: *B22, E12*

1 INTRODUCTION

The Research Network Macroeconomics and Macroeconomic Policies (FMM), now the Forum for Macroeconomics and Macroeconomic Policies (FMM), has been active for two decades, since the start of the network in 1996 and its first official workshop in 1997.¹ The annual conferences have become major international events for post-Keynesian economists, and they have become ever more attractive for economists looking for alternatives to mainstream New Consensus macroeconomics, which has so dramatically failed in the recent crisis. In what follows I will focus on some main lines of development of post-Keynesian macroeconomics since the mid 1990s and review some major contributions, several, but not all, having been presented at the FMM conferences. The selection of topics to be covered is somewhat subjective and biased, and I do not claim to be comprehensive in

* For helpful comments I would like to thank Giuseppe Fontana, Christian Jimenez, Marc Lavoie, Torsten Niechoj, Franz Prante, Engelbert Stockhammer and the participants in the 20th FMM conference in Berlin in October 2016. Remaining errors are mine, of course.

1. There was an initial workshop in October 1996, which, different from the following workshops, did not generate a publication of the papers presented, and probably therefore has not been counted as an official FMM workshop in the history of this network. See Hein/Priewe (2009) for a brief review of this history from 1996 until 2009, and for the more recent developments, see Gechert et al. (2017).

a broader sense. Readers who are interested in the current state of post-Keynesian economics in general and the broad range of topics and approaches covered by this research programme might want to take a look at the latest books by King (2015) and Lavoie (2014), as well as at the essays in Harcourt/Kriesler (2013), Hein/Stockhammer (2011a) and King (2012a), for example.

In this paper I will start by elaborating on post-Keynesian economics as an alternative to orthodox mainstream economics in Section 2. This requires briefly reiterating the main differences between heterodox economics in general, including post-Keynesian economics, and orthodox economics. In that section I will also provide an overview of the strands of post-Keynesian economics and their commonalities, which define a specific research programme within heterodox economics. Finally I will briefly survey the main stages of development of post-Keynesian economics. This will provide the grounds and set the scene for the main contribution of the paper in Section 3, in which I will touch upon three important areas of development and progress of post-Keynesian macroeconomics, at least from my perspective, from the mid 1990s until recently: first, the integration of distribution issues and distributional conflict into short- and long-run macroeconomics, both in theoretical and in empirical/applied works; second, the integrated analysis of money, finance and macroeconomics and its application to changing institutional and historical circumstances, like the process of financialisation; and third, the development of full-blown macroeconomic models, providing alternatives to the mainstream 'New Consensus Model' (NCM), and allowing us to derive a full macroeconomic policy mix as a more convincing alternative to the one implied and proposed by the mainstream NCM. In Section 4, I will then briefly comment on some omitted topics, open questions and areas for future research for post-Keynesian economics. I will finish by arguing that post-Keynesian economics, although consisting of quite diverse and pluralist strands, has nonetheless sufficient coherence to be seen as a specific school or research programme in heterodox economics, which has a lot to offer, in particular in the area of macroeconomics, for a broader and pluralist political economy research programme as an alternative to orthodox mainstream economics.

2 POST-KEYNESIAN ECONOMICS AS A PART OF HETERODOX ECONOMICS AND AN ALTERNATIVE TO ORTHODOX ECONOMICS²

2.1 Heterodox economics vs orthodox economics

Post-Keynesian economics is part of heterodox economics more generally, such as classical, Marxian, Old Institutional, Evolutionary Political Economy, Social, Feminist and Ecological economics, which provide alternatives to neoclassical or orthodox economics. Following Lavoie (2011a; 2014: ch. 1), several presuppositions can be singled out, which unite heterodox approaches against the orthodox/neoclassical mainstream and its modern macroeconomic incarnations, represented in the New Keynesian, the New Classical and the Real Business Cycle schools, as well as the synthesis in the NCM.³

- Regarding the epistemology and the ontology, that is, the science of learning and the basic categories of the scientific systems and their relationships, heterodox economics is based on 'realism'. The objective of economics is to tell relevant stories and to

2. This section partly draws on Hein (2014a) and Hein/Lavoie (2017).

3. For the 'New Neoclassical synthesis' or the 'New Consensus model' (NCM), see Clarida et al. (1999) and Goodfriend/King (1997).

explain the actual working of the economy in the real world starting from Kaldor-type 'stylised facts'. Orthodox economics, by contrast, is founded on 'instrumentalism', which means that an economic assumption is considered to be sound, irrespective of observed data or facts, if it leads to the calculation of equilibrium positions and is conducive to accurate predictions (Friedman 1953).

- Regarding the concept of rationality, heterodox economics assumes 'environment-consistent rationality' and 'satisficing agents'. It is acknowledged that individuals face severe limitations in their ability to acquire and process information, in particular because the latter may simply be non-existent and because there is no 'true' model to process available information, not to mention the fact that current decisions may change the set of possible future states. Thus, expectations are often based on irreducible or fundamental uncertainty. Following norms, conventions, customs and rules of thumb, as well as the establishment of institutions reducing uncertainty, are considered as rational or reasonable responses. Orthodox theory by contrast assumes 'model-consistent rationality' and 'optimising agents'. Individuals possess quasi-unlimited knowledge about present and future states of the economy, and they have the ability to calculate economic outcomes applying the 'true' model of the economy. In this sense they are assumed to possess 'perfect information' and have 'rational expectations'.
- With respect to the applied method, heterodox approaches follow 'organicism' and 'holism'. They consider individuals as social beings in the context of their environment, given by class, gender, culture, social norms, institutions and history. From this perspective, all sorts of micro–macro paradoxes can arise, which means that reasonable behaviour at the micro level may not generate the intended results at the macro level, when interrelationships between individual actions are taken into account ('paradox of thrift', 'paradox of costs', 'paradox of debt', 'paradox of liquidity', and so on). The orthodox method is based on 'methodological individualism' and 'atomicism', which means that the analysis has to start from the pre-social individual and his/her preferences. The behaviour of a representative agent as a utility and profit-maximiser under constraints provides the microfoundation of macroeconomics (and of institutions). Micro–macro paradoxes are ruled out by design.
- With respect to the economic core, heterodox schools focus on 'production' and 'growth'. Whereas the classical economists and Marx were preoccupied with the creation of resources by means of accumulation of (part of) the surplus and by technical progress, Kalecki and Keynes, starting in the early/mid 1930s, focused on the utilisation of resources, because monetary production economies usually operate below full employment. In this context, prices in heterodox schools are considered as (re-)production prices and are affected by income distribution, which itself is determined by socio-institutional factors. On the contrary, the starting point and the focus of orthodox theory are 'exchange', 'allocation' and 'scarcity'. According to this perspective, economics is about the efficient allocation of scarce resources. Prices are assumed to reflect scarcity, exchange is the starting point of economic analysis, and production and growth are only extensions to this basic perspective. Income distribution is determined by production technologies.
- Regarding the political core, heterodox schools at the minimum require 'regulated markets' and continuous state intervention into the economy. It is held that unfettered markets, irrespective of price flexibility or inflexibility, generate instabilities, unacceptable inequalities and inefficiencies. The notion of free markets is considered to be a myth, because there has always been an institutional framework for the market economy. Furthermore it is argued that unrestricted competition tends towards oligopoly

and monopoly, and thus towards undermining itself. Therefore, permanent market regulation and aggregate demand management by the state are required. This contradicts the orthodox view that ‘unfettered’ and free markets are generally stable and generate an optimal allocation at full employment levels of activity, at least in the long run. State interventions are said to generate inefficiencies, and hence for orthodox economists these are only acceptable when there are externalities and/or monopoly abuses.

2.2 Strands of post-Keynesian economics and broad commonalities

Based on the general presuppositions uniting heterodox economics, different strands of post-Keynesian economics can be distinguished in a ‘big tent’ approach. In an early paper, Hamouda/Harcourt (1988) have mentioned three strands, American post-Keynesians, neo-Ricardians and Kaleckians, but had difficulties in classifying outstanding individuals, such as Kaldor, Goodwin, Pasinetti and Godley. Therefore, Lavoie (2011a; 2014: ch. 1) distinguishes five strands of post-Keynesian economics with the respective representatives, which I present in revised order:

- The first strand is represented by the fundamentalist Keynesians, directly inspired by John Maynard Keynes, the older Joan Robinson, as well as Hyman Minsky, G.L.S. Shackle and Sydney Weintraub, with fundamental uncertainty, the features of a monetary production economy, financial instability and methodological issues as major themes.
- The Kaleckians are the second strand, drawing on the works of Michal Kalecki, Josef Steindl and the younger Joan Robinson, with cost-plus pricing, class conflict, effective demand, income distribution and growth as major themes.
- The third strand consists of the Kaldorians, basing their work on the contributions by Nicholas Kaldor, Roy F. Harrod, Richard Goodwin, John Cornwall and Wynne Godley. The major themes are economic growth, productivity regimes, open economy constraints to growth and the nexus between the economic and the financial system.
- The Sraffians or neo-Ricardians constitute the fourth strand, drawing on the work of Piero Sraffa and Pierangelo Garegnani, and focusing on issues such as relative prices in multi-sectoral production systems, choice of techniques, capital theory, and long-period positions of the economy.
- The fifth strand is the Institutionalists, relying on the work of Thorstein Veblen, Gardiner Means, P.W.S. Andrews, John Kenneth Galbraith, Abba Lerner and Alfred Eichner, and concentrating on themes such as pricing, the theory of the firm, monetary institutions, and behavioural and labour economics.

King (2015: ch. 9) lists the Sraffians and the Institutionalists (the latter together with Evolutionary economics) as distinct heterodox schools, however with some links, commonalities and overlaps with the post-Keynesian research programme, and would thus only include the first three strands in post-Keynesian economics. I hold that this is a matter of taste, and that Sraffians and Institutionalists can be included in post-Keynesian economics if we apply a broad tent approach. Modern post-Keynesian work has at least been inspired by these strands, too, and these strands share the five characteristics of post-Keynesian economics to be sketched below.

Starting with Eichner/Kregel (1975), several attempts have been made to single out what the different strands of post-Keynesianism have in common and what distinguishes post-Keynesian economics from orthodox economics and other strands of heterodox

economics. It can be argued that post-Keynesians adhere to the five presuppositions of heterodox economics in general, and that they can be distinguished from other heterodox economics by the following five characteristics, which might apply to the different strands to different degrees, but on which all five strands might agree:

- First, there is the focus on a monetary theory of production, in which money is non-neutral in the short and the long run, as Keynes (1933 [1987]) in his contribution to the Spiethoff Festschrift has famously claimed. Money and monetary variables are important for short- and long-run economic processes and the latter cannot be sensibly analysed without considering monetary and financial variables.
- Second, based on the notion of a monetary production economy, there is the dominance of the principle of effective demand in the short and long run. This is true for both Keynes, as explained in particular in the drafts leading to *The General Theory* (Keynes 1979), as well as for Kalecki (1939; 1954). In a monetary production economy investment creates its own saving, through changes in the level of economic activity and income or through changes in distribution, provided that the propensities to save out of different types of incomes differ. Post-Keynesians (Kaldor 1957; Robinson 1956; 1962; Steindl 1952) have moved this principle from short-run income and employment determination to medium- to long-run growth issues and have argued that growth and even productivity growth are largely demand-determined as well.
- Third, there is the importance of the notion of fundamental uncertainty, which is different from probabilistic risk. Future events are not known and there is thus no way to allocate probability values to them; or as Keynes (1937: 214) has put it, fundamental uncertainty means that '(w)e simply do not know'. Expectations cannot be based on a true model of the economy, and will themselves feed back on the outcome of economic processes.
- Fourth, based on the first three characteristics, post-Keynesians insist that economic processes take place in historical and irreversible time (Robinson 1962) – and are thus largely path-dependent. There is no predetermined equilibrium towards which the economy will or can adjust in historical time. On the contrary, the long period is just a succession of short periods, according to Kalecki (1971). This means that concepts such as an inflation barrier or a NAIRU (non-accelerating inflation rate of unemployment) or potential growth are endogenous to the actual time path of the economy driven by effective demand.
- Fifth, there is the importance of distributional issues and distribution conflict for economic outcomes. This is true both for income, employment and inflation, and for growth and technological progress. Different strands of post-Keynesian economics may focus on different aspects of distributional issues and may have different theories of distribution, but they all agree that distribution conflict and the institutions which moderate distribution conflict are important for the overall macroeconomic outcome, in the short and in the long run.

2.3 Stages of development of post-Keynesian economics

The development of what was to become 'post-Keynesian economics' has gone through different stages since the 1930s, as for example described by Fontana (2009a: ch. 2) and Lavoie (2014: ch. 1).⁴

4. See also the more extensive books on the history of post-Keynesian economics by Harcourt (2006), King (2002) and Pasinetti (2007).

- In the 1930s and 1940s the history of post-Keynesian economics started off with Keynes's (1936 [1973]) and Kalecki's (1939; 1971) revolution in macroeconomics, based on the introduction of the principle of effective demand. The focus in this period was clearly on the determination of output and employment, involuntary unemployment and the trade cycle.
- The 1950s and 1960s saw the extension of the principle of effective demand from the short to the long period, with the appearance of the post-Keynesian distribution and growth models of the first generation, associated with the works of Kaldor (1955/1956; 1957), Pasinetti (1962) and Robinson (1956; 1962). Furthermore, this was the period of the critique of aggregate neoclassical theory in the 'Cambridge controversies in the theory of capital'.
- The 1970s, a promising 'romantic age' according to Fontana (2009a: ch. 2), saw the attempts at defining the contours of a 'post-Keynesian' paradigm in economics, most prominently by Davidson (1972) and by Eichner/Kregel (1975). This was accompanied by the founding of the still most important journals for post-Keynesians, the *Cambridge Journal of Economics* (1977) and the *Journal of Post Keynesian Economics* (1978), and by important works on the theory of the firm and on pricing theory.
- The 1980s and 1990s were an 'age of uncertainty' (Fontana 2009a: ch. 2) for post-Keynesians, with a strong focus on methodology, the history of economic thought, and on 'what Keynes really meant'. However, it has also seen the publication of some textbook presentations of post-Keynesian economics, such as Arestis (1992), Davidson (1994), Lavoie (1992) and Palley (1996a), and the founding of new journals widely open for post-Keynesians, such as the *International Review of Applied Economics* and the *Review of Political Economy*. During this period, important contributions to the theory of endogenous money and the financial instability hypothesis were made. This was accompanied by the presentation of a second generation of post-Keynesian distribution and growth models, based on the works of Kalecki (1939; 1954) and Steindl (1952).
- The current period, starting in the late 1990s/early 2000s, has been characterised by the increasing relevance of applied and econometric work, in particular in the area of distribution and growth, macroeconomic policy analysis and the analysis of economic policy regimes. There has also been much research on financial instability, internationalisation and globalisation, and more recently on 'financialisation' as a new stage of development of modern capitalism. Some of this work has been carried through in an integrated analysis of money, finance, distribution conflict, effective demand, capital accumulation and growth in stock-flow consistent models, both analytically in small-scale models and by means of simulation in more realistic large-scale models. Further textbooks or textbook-like edited volumes have been published, such as Davidson (2011), Harcourt/Kriesler (2013), Hein (2014b), Hein/Stockhammer (2011a), Heine/Herr (2013), Holt/Pressman (2001), King (2012a; 2015) and Lavoie (2006a; 2014), as well as Rochon/Rossi (2016). And some new post-Keynesian Journals have entered the stage, like the *European Journal of Economics and Economic Policies: Intervention* and the *Review of Keynesian Economics*.⁵

5. For a more extensive review of the global post-Keynesian academic infrastructure, including textbooks, journals and graduate programmes, as well as conferences and summer schools, see Hein (2014a) and the information provided in the Heterodox Economics Directory (<http://heterodoxnews.com/hed/>).

3 WHAT HAS BEEN ACHIEVED IN POST-KEYNESIAN MACROECONOMICS SINCE THE MID 1990s?

Based on the five presuppositions of heterodox economics in general and the five characteristics of post-Keynesian economics in particular outlined in Section 2, I would claim that over the last eight decades or so, there has emerged a solid body of post-Keynesian theory and economic policy recommendations in the area of macroeconomics and macroeconomic policy. This is related to issues of employment and unemployment, distribution, growth and technical change, money, credit and finance, international money and finance, financialisation, financial instability and financial crisis, and European economics and economic policies, as well as to development and emerging market economics.

In what follows, I will focus and elaborate on three particularly important areas of post-Keynesian macroeconomics and macroeconomic modelling, which have flourished over the last two decades, integrating several core elements and contributions of post-Keynesian economics and providing more convincing alternatives to mainstream orthodox economics in these areas:

- First, there is the integration of distribution issues and distributional conflict into short- and long-run macroeconomics, both in theoretical and empirical/applied works. This means that post-Keynesians have been doing for decades what, after the recent global financial crisis and the Great Recession, has tended to become more relevant and fashionable in mainstream economics, too.
- Second, we have the integrated analysis of money, finance and macroeconomics and its application to changing institutional and historical circumstances, such as the process of financialisation. This is extremely important for the understanding of the recent financial and economic crises and the suggestion of alternative policies to deal with these crises.
- And third, there is the development of full-blown macroeconomic models, incorporating the features mentioned above, providing alternatives to the mainstream NCM, and allowing us to derive a full alternative macroeconomic policy mix to the one implied and proposed by the mainstream NCM, which has so dramatically failed in the face of the recent crises.

3.1 Integration of distributional issues into short- and long-run macroeconomics

The consideration of distributional issues is a distinguishing feature of post-Keynesian economics in general and of the Kaleckian, Kaldorian and Sraffian strands in particular. This is true for both the determination of short-run income, employment and inflation, as well as for medium- to long-run output and productivity growth. As is well known, Kalecki's (1939) principle of effective demand, as an earlier alternative to Keynes's (1936 [1973]) approach, has the profit share (or the wage share) as a determinant of the multiplier effect of short-run exogenous expenditures (investment, government expenditures or exports), together with the propensity to save out of profits, assuming that workers as a whole do not save in the simple version (Hein 2014b: ch. 5). This notion has been extended in the modern Kaleckian distribution and growth models, drawing also on the work of Steindl (1952). It started with Rowthorn (1981) and Dutt (1984; 1987), in particular, and the models were further developed by Bhaduri/Marglin (1990) and Kurz (1990). These Kaleckian models are based on the notion of active price setting of firms in oligopolistic or monopolistic markets, they assume that capitalist economies are faced with unemployment and excess capacities beyond the short run, and

they take the rate of capacity utilisation as an adjusting variable also in the medium to long run. These models have become an attractive alternative to the old post-Keynesian distribution and growth models inspired by the contributions of Kaldor (1955/1956; 1957), Pasinetti (1962) and Robinson (1956; 1962). In those models income shares are determined by capitalist expenditures, assuming the economy to operate at a normal rate of utilisation of (at least) the capital stock in the long run and prices in the goods market to be more flexible than nominal wages in the labour market, to allow for the necessary adjustment of income shares towards their equilibrium values (Hein 2014b: ch. 4).

The earlier 'neo-Kaleckian' models, in their basic closed-economy versions without a government, only generate wage-led demand and growth regimes. A higher profit share and hence a lower wage share will have a directly negative effect on consumption, and this will feed through to investment via lower capacity utilisation, which will reduce investment and hence capacity utilisation even further, and dampen capital accumulation, growth and the rate of profit. Only an open economy with strong redistribution effects on net exports could become profit-led, as shown by Blecker (1989). However, the later 'post-Kaleckian' versions by Bhaduri/Marglin (1990) and Kurz (1990) are able to generate different regimes and thus also profit-led demand or growth even for a closed economy.⁶ This is done by adding the profit share (or the wage share) as a direct determinant to the investment function and thus assuming away the 'strong accelerator' effect contained in the earlier 'neo-Kaleckian' models (see Hein 2014b: ch. 6). A strong direct positive effect of a rise in the profit share on investment may thus overcompensate the negative effect on consumption, and raise capacity utilisation as well as capital accumulation and growth.⁷

Since the mid 1990s, the development of the Kaleckian approach as a workhorse in post-Keynesian macroeconomics, both short- and medium- to long-run, has sparked considerable theoretical controversies on the one hand, and empirical research on the other. I would like to broadly distinguish the following areas of controversies – there may be more than these, of course.

3.1.1 Endogenous rate of capacity utilisation beyond the short run?

Both modern variants of the Kaleckian approach towards distribution and growth have been challenged because of their treatment of capacity utilisation as an endogenous variable beyond the short run and the potential deviation of the equilibrium rate of capacity utilisation from the normal rate or firms' target rate of utilisation when making investment decisions. Marxian and Harrodian authors, such as Duménil/Lévy (1999), Shaikh (2009) and Skott (2010; 2012), have argued that such a position should not be considered to be a long-run equilibrium, but would, rather, trigger further responses by firms. Thus 'Harrodian instability' would arise, in which equilibrium utilisation moves ever farther away from target or normal utilisation. This would then have to be contained by other mechanisms in the model (changes in distribution or animal spirits, or government and central-bank interventions). In these models, usually the paradox of saving, as well as the paradox of costs, and hence the possibility of wage-led growth, disappear in the long-run equilibrium. However, as discussed in detail in Hein et al. (2011), the mechanisms proposed

6. See Lavoie (2017) on the origins and evolution of the debate on wage-led and profit-led regimes.

7. We may also obtain an intermediate regime with wage-led demand but profit-led growth (Bhaduri/Marglin 1990; Hein 2014b: ch. 6).

by the critics in order to tame Harroldian instability and to bring back the economy to a normal rate of capacity utilisation are far from being convincing.⁸

Furthermore, as has been reviewed and discussed by Hein et al. (2012), Kaleckian and Steindlian authors have put forward different justifications for taking the rate of capacity utilisation as an adjusting and endogenous variable, probably within bounds, nonetheless: Normal or target rates of utilisation cannot be precisely determined in a world of fundamental uncertainty about future events and should thus, rather, be considered as a range, and within this range Harroldian instability disappears (Dutt 1990; 2005a; 2010a). Firms may have multiple goals and accept variations in capacity utilisation and hence deviations from the target or normal rate in the long-run equilibrium to come closer to meeting other targets, for instance dividend payments demanded by shareholders (Dallery/van Treeck 2011). Firms' assessment of trend growth and the normal rate of utilisation may endogenously adjust to actual experience (Lavoie 1995a; 1996a). And finally, the target or normal rate as a 'stable inflation rate of capacity utilisation' may itself be endogenous to inflation-targeting monetary policies when the interest cost and distribution channels of interest-rate policies are considered (Hein 2006a; 2008: ch. 17).

Finally, more recent models by Allain (2015) and Lavoie (2016a), introducing the notion of an exogenous/autonomous growth rate of a non-capacity-creating expenditure component into otherwise Kaleckian distribution and growth models, have shown that the main Kaleckian results can be sustained, even if an exogenous and unique normal or target rate of capacity utilisation is assumed. Under weak conditions, in such models Harroldian instability, generated by the deviation of the goods market equilibrium rate of capacity utilisation from the normal or the target rate of utilisation, will be tamed and the economy will converge towards a normal rate of capacity utilisation. Simultaneously, the model economy will maintain the main features of the neo-Kaleckian distribution and growth model, the paradox of saving and the paradox of costs, and hence wage-led growth. However, a lower propensity to save and a lower profit share will have positive effects only on the traverse towards the long-run equilibrium, and thus only on the long-run growth path, while the long-run equilibrium growth rate will be determined by the autonomous growth rate of the non-capacity-creating demand component.

3.1.2 What about the feedback of demand/growth on distribution?

As a simplifying device, several of the modern Kaleckian models, both in the basic versions and in the extensions towards areas like international trade, productivity growth, money and finance, have treated functional income distribution as an exogenous variable and have examined the effects of changes in distribution on the respective endogenous variables, the rates of utilisation, profit, accumulation and growth (see Hein 2014b: chs 6–10). However, this neither means that there is no Kaleckian theory of distribution nor that modern Kaleckians deny any feedback from economic activity on income distribution. As is well known, a major contribution by Kalecki has been his theory of distribution based on mark-up price setting of firms in incompletely competitive markets (see Hein 2014b: ch. 5). And, as has been recently reviewed by Dutt (2012), there are several ways in which economic activity may feed back on income distribution in a Kaleckian framework.

Dutt (2012) has discussed four potential feedback effects of aggregate demand and capital accumulation on the mark-up and on functional income distribution. First, he

8. See also Hein (2014b: ch. 11) and Lavoie (2014: ch. 6.5) for summaries of the debates.

considers that the mark-up in firms' pricing may positively depend on aggregate demand in the goods market and hence on the rate of capacity utilisation, because of less competitive pressures when demand is soaring. However, he also notices that this idea contradicts Kalecki's (1954: 17–18 and 39–41; 1971: 50–51 and 75–76) claim that the mark-up will tend to increase rather during a slump because of tacit agreements of firms in oligopolistic markets in the face of rising unit overhead costs, including overhead labour costs. Second, Dutt (2012) discusses that higher growth may reduce industrial concentration and hence the mark-up because of new entry into prospering markets. However, high growth may also be associated with more rapid technological change, higher minimum capital requirements and thus higher barriers to entry, as well as with product differentiation and higher marketing efforts as a tool of competition, which will each raise the mark-up. Third, Dutt (2012) explicitly considers the effect of aggregate demand and capital accumulation on overhead costs, and concludes that the effects on the mark-up are ambiguous. Without any change in technology or marketing efforts, unit overhead costs will fall with an increase in aggregate demand, but the stimulating effect of aggregate demand on capital accumulation and technological change might raise unit overhead costs because of higher R&D activity and higher sales efforts, for example. Finally, Dutt (2012) discusses the effect of improved capacity utilisation and growth on workers' bargaining power, and concludes that with employment growth exceeding the exogenous growth of the labour force and thus with falling unemployment the mark-up and the profit share might get squeezed. Summing up, there is no general and unique overall effect of economic activity and capital accumulation on income distribution, but the overall effect will depend on the relative importance of the single effects and thus on the specific historical and institutional conditions.

Whenever aggregate demand and growth have feedback effects on functional income distribution, the distinction between wage- and profit-led demand, relative speeds of adjustment of quantities and prices and hence distribution, and potential non-linearities in these relationships become important with respect to the determination of long-run growth and its stability. This has recently been analysed in different Kaleckian model frameworks, several of them containing the effects of distribution conflict on inflation, for example by Assous/Dutt (2013), Bhaduri (2008), Blecker (2011), Cassetti (2003; 2006; 2012), Dutt (2006a; 2010b; 2012), Hein/Stockhammer (2010; 2011b), Lavoie (2010; 2014: ch. 6), Naastepad/Storm (2010), Nikiforos/Foley (2012), Palley (2014a), Raghavendra (2006), Sasaki (2011), Sawyer (2012), Schütz (2012), Stockhammer (2004a; 2004b: ch. 2) and Storm/Naastepad (2012; 2013). Skott's (2016) recent claim that Kaleckians have not thought about feedbacks of demand and growth on income distribution is thus unwarranted. However, his observation that these feedbacks have not been systematically included when it comes to the discussion of wage- vs profit-led demand and growth is true for several empirical studies, as we will see below. One major reason for this is that Kaleckians interpret the wage-led/profit-led regime distinction as a medium- to long-run phenomenon applying to the effects of functional distribution on the goods market, with income shares being determined by more complex socio-institutional changes which are not necessarily and unambiguously related to changes in demand or in capital accumulation, as outlined above. This is different from the approach of several Marxian/Harrodian authors, like Barbosa-Filho/Taylor (2006), Diallo et al. (2011), Flaschel/Proano (2007), Kiefer/Rada (2015) and Nikiforos/Foley (2012), who, following Goodwin (1967), are interested in the cyclical relationship between income distribution and economic activity generating a long-run trend from these short-run fluctuations, as Stockhammer (2017a) has recently pointed out. This difference has also severe implications for empirical studies and results, as will be discussed below.

3.1.3 *Why do different studies show different results regarding wage- and profit-led regimes for the same country?*

Econometric estimations of demand and growth regimes based on the post-Kaleckian approach started with Bowles/Boyer (1995), who applied a single equations estimation approach which has by now become quite popular in the empirical research.⁹ Bowles/Boyer (1995) estimated separate equations for the three demand aggregates consumption (saving), investment and net exports, subject to changes in the profit share and a set of further control variables, in particular indicating economic activity. Summing up the partial effects of a change in distribution on consumption and investment, the effect on domestic demand is obtained, and adding the effect on net exports the effect on total demand can be calculated. Therefore, what Bowles/Boyer (1995) and the numerous other studies applying similar and more refined estimation techniques have been doing is estimating the demand regime (but not always the growth regimes) in the respective economies for the medium or long run, that is, for several decades. Alternatively to this ‘one-directional structural approach’, modern ‘Goodwinians’ have used a ‘bi-directional (or system) aggregative approach’ directly estimating the effects of distribution on economic activity, and vice versa, focusing on the cyclical relationship between these two variables.¹⁰

As recently reviewed by Blecker (2016a) and Stockhammer (2017a), the findings of these two types of empirical approaches seem to be highly inconsistent at first sight. The majority of studies applying the ‘one-directional structural approach’ have found that private domestic demand, that is, the sum of consumption and investment demand, in developed but also in emerging economies is usually wage-led, with only a few exceptions found in some of the earlier studies. If the effect of changes in income distribution on net exports is included, some small open economies might turn overall profit-led, if redistribution takes place in isolation. However, if redistribution occurs in step in the majority of countries, the net export effect is dampened and the economies more likely become wage-led again – the world economy is a closed economy (Onaran/Galanis 2014). In contrast, Goodwinian studies applying the ‘bi-directional (or system) aggregative approach’, mainly to the US, but recently also to European economies, find that aggregate demand is profit-led, without being able to clearly specify the channels. There may be several reasons for this systematic difference, some of them pointed out by Stockhammer (2017a): different time periods, aggregate vs structural data, different estimation techniques, in particular with respect to the use of control variables and lags, and finally the time horizons which have been examined.¹¹

9. See Ederer (2008), Ederer/Stockhammer (2007), Hartwig (2013; 2014), Hein/Vogel (2008; 2009), Naastepad (2006), Naastepad/Storm (2007), Onaran/Galanis (2014), Onaran/Obst (2016), Onaran et al. (2011), Stockhammer/Ederer (2008), Stockhammer et al. (2009; 2011) and Storm/Naastepad (2012). For a summary review of the studies from 1995 to 2013, see Hein (2014b: ch. 7).

10. See Barbosa-Filho/Taylor (2006), Carvalho/Rezai (2016), Diallo et al. (2011), Flaschel/Proano (2007), Kiefer/Rada (2015), Nikiforos/Foley (2012) and Rezai (2015). Such an approach had already been used by Stockhammer/Onaran (2004) and Onaran/Stockhammer (2005), who estimated two slightly different structural vector autoregression models (SVARs) for France, the United States and the United Kingdom on the one hand, and for Turkey and South Korea on the other. However, the channels through which distribution affects aggregate demand and capital accumulation are difficult to disentangle using this approach, and therefore the authors abandoned this kind of method in their later work.

11. Some authors, such as Blecker (2016a) and Skott (2016), have also mentioned the source of redistribution as a reason for diverging estimation results. Of course, the source of redistribution

The time horizon of the respective studies may be particularly important, as discussed by Blecker (2016a). The theoretical and empirical ‘bi-directional (or system) aggregative approaches’ have been focusing, explicitly or implicitly, on the short-run cyclical relationship between distribution and growth. In econometric research, variables are usually de-trended and the respective determinants of deviations from trend are then estimated. The ‘one-directional structural approaches’, however, have intended to look at the medium- to long-run effects of income distribution on demand (and capital accumulation). And Blecker (2016a) provides several arguments why the effect of distribution on the respective demand aggregates may show profit-led features in the short run, but will turn wage-led in the long run. This view has recently been supported by Bridji/Charpe (2016). Applying time frequency analysis, they show that profit-led demand and growth may dominate in the short run (4–16 years), whereas in the long run (beyond 32 years) countries turn increasingly wage-led – the United Kingdom from 1856–2010, France from 1896–2010 and the United States from 1898–2010 in their study.

But can profit-led demand be taken for granted for the short run? Stockhammer/Stehrer (2011) have presented severe doubts, applying a ‘one-directional structural approach’ to quarterly data of 12 OECD countries (1970Q1–2007Q2). They report more wage-led than profit-led results, and the profit-led regimes are driven by ‘perverse’ coefficients in the estimated consumption function, that is, a higher propensity to consume out of profits than out of wages, but not by the investment function, which hints at omitted variables. Using a model with target rate of return pricing and overhead costs, Lavoie (1995a; 2014: chs 5 and 6) has shown that, with a constant mark-up, the profit share will vary pro-cyclically. Rising demand and capacity utilisation will thus be associated with a rising profit share, as in a profit-led demand regime.¹² But the causality runs from demand to distribution and not the other way round, as implied by a profit-led regime. Empirical studies would thus have to take a careful look at causalities. Furthermore, issues of credit-financed demand and feedback effects of rising debt would have to be included, as for example proposed in the pseudo-Goodwin cycles in a Minsky model by Stockhammer/Michell (2017), in order to obtain a more comprehensive understanding of the interaction between distribution and demand in the short-run trade cycle.¹³

For the medium to long run, the econometric literature so far seems to confirm the results of the neo-Kaleckian model: Domestic demand and growth seem to be wage-led, because the direct effects of redistribution on consumption seem to be much stronger

matters for the demand effects, as discussed in Blecker (1989), Hein (2014b: ch. 7) and Hein/Vogel (2008) for the relationship between the profit share and net exports: a higher profit share triggered by a higher mark-up and a higher domestic price level will reduce net exports, if the Marshall–Lerner condition applies, whereas a higher profit share caused by nominal wage moderation or nominal depreciation of the domestic currency will boost net exports. However, I do not see why this should give rise to diverging estimation results for the same country in the same time period. Furthermore, I have some difficulties in following Skott’s (2016) argument, that Kaleckians, applying the ‘one-directional structural’ approach, have produced spurious regressions without any causal relationships between distribution and demand or growth. The application of proper time series (or panel) estimation techniques should have prevented this.

12. A similar effect could, of course, arise with lagged adjustments of nominal wages for direct labour to short-run fluctuations of inflation and productivity growth, which basically generates a short-run Kaldorian/Robinsonian distribution effect, that is, rising profit shares in an economic upswing and falling profit shares in a downswing.

13. See also Nishi (2013).

than on investment, if there can be found any effects on the latter at all.¹⁴ Profit-led demand and growth regimes may only arise through the net export channel, provided the economy is highly integrated into the world economy, the Marshall–Lerner condition can be assumed to hold, as Blecker (1989) had already shown, and that countries follow export-led mercantilist strategies in isolation, as Onaran/Galanis (2014) have found.

3.1.4 Are functional income distribution and the wage-led vs profit-led distinction still relevant in a period of rising personal income inequality and increasing potential for household debt?

The core of the theoretical and empirical debate on wage- or profit-led regimes has been about the relevance of the profit share in the investment function, taking the Kaleckian/Kaldorian consumption function and thus a partially depressing effect of a lower wage share on consumption for granted. However, the latter has recently been questioned based on the empirical observations in the US and other countries in the period before the global financial crisis and the Great Recession, in which falling wage shares and rising inequality in personal or household income distribution, but rising instead of falling private consumption, could be observed.¹⁵ This has induced Kaleckians, such as Dutt (2005b; 2006b), Hein (2012a), Nishi (2012a) and Vasudevan (2017), following Palley (1994a), to include debt into workers' household consumption function and to examine the related short-run demand and long-run financial stability effects. Bhaduri et al. (2006), and then Bhaduri (2011a; 2011b) and Bhaduri et al. (2015), have discussed the impact of wealth and the related increase of credit and debt on consumption, aggregate demand and growth. And finally, as a current fashion, authors like Belabed et al. (2013), Carvalho/Rezai (2016), Detzer (2016), Kapeller/Schütz (2014; 2015), Kim et al. (2014), Prante (2017), Setterfield/Kim (2016; 2017), Setterfield et al. (2016) and Zezza (2008) have focused on personal/household inequality and emulation effects in the consumption functions of their models, going back to Veblen's (1899) 'conspicuous consumption', Duesenberry's (1949) 'relative income hypothesis' and the 'expenditure cascades' proposed by Frank et al. (2014).

Macroeconometric estimations on the relative importance of wealth, credit supply, basic needs or relative income effects on consumption are still inconclusive, as reviewed by Prante (2017). Some studies, like Brown (2004) and Carvalho/Rezai (2016) for the US, find negative effects of rising inequality of personal/household incomes on consumption, and thus no indication for the relative income hypothesis. Darku (2014) for Canada, however, finds negative effects of rising inequality on saving rates of private households, in line with the relative income hypothesis. Behringer/van Treeck (2015) for a panel of 20 countries (1972–2007) find that, *ceteris paribus*, rising personal income inequality leads to a deterioration of the financial balances of the private household sector, which is interpreted as supporting the relative income hypothesis. A fall in the wage share is found to be associated with improved current-account balances, indicating the validity of the net export channel of redistribution. Stockhammer/Wildauer (2016), however, in a panel estimation for 18 OECD countries (1980–2013) fail to find an effect of personal

14. This empirical finding seems to support those Kaleckian critics of the post-Kaleckian investment function, who have argued, following Kalecki, that it is difficult to see how redistribution at the expense of labour should stimulate investment, if a lag between investment decision and investment spending is introduced into the model (Laski/Walther 2015; Osiatynski 2015).

15. See, for example, the case studies by Cynamon/Fazzari (2008; 2016), Guttman/Plihon (2010), van Treeck (2009a; 2014) and van Treeck/Sturm (2012).

income inequality on consumption, which is interpreted as contradicting the relative income hypothesis. The authors find positive effects of the wage share and of household debt; property and stock prices have no significant effect on consumption in their estimations. But there have been several studies which have found significant wealth effects on consumption for many countries, among them Onaran et al. (2011) for the US (1962–2007). Finally, Kim (2013; 2016) in two recent studies on the US has found that although new credit to households will boost aggregate demand and output in the short run, the effects of household debt variables on output and growth are negative in the long run. This indicates contradictory effects of the flow of new credit and the stock of debt on consumption.

Independently of the precise mechanism, what can be concluded from these theoretical and empirical contributions is that a falling wage share, and even rising personal income inequality if the relative income hypothesis prevails, may be associated with rising consumption demand, aggregate demand and growth, thus contradicting implications of a wage-led demand regime. But the downside of this development is rising household debt and, under certain conditions depending on the model specifications, rising debt–income ratios. In the long run, this means either depressed demand, when the negative stock of debt service and repayment effects dominate the positive flow of new credit effect, or rising debt–income ratios and hence financial fragility of the private household sector and the system as a whole. The latter might be exacerbated if financial deregulation and Minskyan features regarding falling margins of safety and rising appetite for risk in the credit generation process become effective, as already shown in the basic model by Palley (1994a).

Do the modifications related to personal distribution, relative income hypothesis, debt and wealth effects on consumption mean that the focus on functional income shares and the wage-led vs profit-led distinction in the basic model is useless? I don't think so. Rising consumption in the face of falling wage shares and rising income inequality, triggered by credit availability, wealth effects, basic consumption needs or relative income concerns, is difficult to sustain due to the associated indebtedness problems, as found in the models mentioned above. Therefore, at the end of the day, sustainable development has to rely on income-financed consumption demand, and here income shares matter again. In fact, the concern with functional income distribution mirrors a basic contradiction of the role of wages in a capitalist economy: wages are costs for the individual firm, but a main source of demand for the firm sector as a whole! However, as Palley (2017) has pointed out, it is not only income shares but also wage dispersion that matter here, if the average propensity to save rises with wage inequality, which can be assumed for the long run.¹⁶ This has an interesting policy implication: even if an economy is profit-led (via investment or net exports), reducing wage dispersion is a reliable and sustainable way of boosting aggregate demand and growth – and may also have long-run positive effects on productivity growth.

Let me finally point out in this section that functional income distribution and wage dispersion issues are not only important when it comes to the determination of aggregate demand and sustainable growth. In the short run, distribution conflict between capital and labour, but also among workers, provides the grounds for post-Keynesian cost-push theories of inflation, generated by inconsistent distributional claims of capital and labour on the one hand, and by relative wage concerns on the other (see Lavoie 2014: ch. 8 for an overview). And in the long run, functional income distribution and wage

16. For the inclusion of the wage structure, models with overhead labour, that is, the introduction of a manager class, are the usual starting points. See Dutt (2016), Kurz (1990), Lavoie (1995a; 1996b; 2009a), Palley (2005; 2014b; 2015a; 2017) and Rowthorn (1981), for example.

differentials provide a major explanation for endogenous productivity growth in post-Keynesian models. In these models, productivity growth is usually driven by demand growth (Verdoorn's law) and/or capital accumulation (Kaldor's technical progress function), as well as by Hicksian/Marxian wage-push components (Hein 2014b: ch. 7; Lavoie 2014: ch. 6.9).¹⁷

3.2 Integrated analysis of money, finance and macroeconomics

A second main area of development and progress in post-Keynesian macroeconomics since the mid 1990s has been the integrated analysis of money, finance and macroeconomics and its application to changing institutional and historical circumstances, like the process of financialisation in particular. This has provided a much richer understanding of the fundamental problems and contradictions underlying the recent global financial crisis and the Great Recession than those provided by the mainstream NCM. Since in this context distributional issues matter again, we will see some overlap with what has been discussed in Section 3.1.

The non-neutrality of money and the principle of effective demand are core characteristics of post-Keynesian economics, and post-Keynesians of different strands have reached a broad agreement that the volume of credit and the stock of money are endogenously determined by income (growth) and by payment conventions, and are thus not under the direct control of the monetary authorities: The supply of money and credit is demand-led. What central banks can control is the short-term rate of interest and the conditions under which they grant credit to commercial banks. To what extent central banks have control over the real long-term rate of interest, that is, the nominal long-term rate of interest corrected for inflation (expectations), has been a matter of debate, the infamous horizontalist–structuralist controversy,¹⁸ because liquidity and risk assessment of financial and non-financial agents may have an impact on the spread between short- and long-term rates. These assessments are difficult to manage by the central bank, and inflation (expectations) is not under perfect control by the central bank either. However, what most post-Keynesians would subscribe to nowadays is the view that the rate of interest, both short- and long-term, is a monetary phenomenon, whatever the precise determination, which is exogenous for the income generation and the growth process (Pasinetti 1974: 47). The latter might feed back on the short- and long-term interest rate through various channels (different types of monetary policy reactions, default, uncertainty and liquidity assessments of private agents, etc.), but the feedback process is time- and space-contingent and thus difficult or even impossible to generalise.¹⁹

Although, for the economy as a whole, money and credit are endogenous and saving is determined by investment, both in the short and in the long run, this does not imply that the individual firm will be able to finance whatever investment project it deems profitable. Already Kalecki (1936 [1982]) had criticised Keynes's (1936 [1973]) theory of investment, which determined a short-run equilibrium level of investment for the individual firm and for

17. See also the recent empirical work by Hartwig (2013), Hein/Tarassow (2010), Naastepad (2006), Rowthorn (1999), Storm/Naastepad (2011) and Vergeer/Kleinknecht (2010/2011; 2014).

18. On the discussion between 'horizontalists' and 'structuralists', see the surveys by Fontana (2003; 2004; 2009a), Hein (2008: ch. 6.5; 2012c), Lavoie (1996c; 2011b), Palley (1994b; 1996b; 2008a; 2013a) and Pollin (1991), for example.

19. I have spelt out my view on the horizontalist–structuralist debate in Hein (2008; 2012c; 2014b: ch. 9.2). For an overview of the current state of post-Keynesian monetary economics, see Lavoie (2014: ch. 4).

the economy as a whole by the comparison of the marginal efficiency of capital, that is, the expected rate of profit, and the given monetary interest rate. Elaborating on Kalecki's critique, Sardoní (2011) has shown that Keynes's theory of investment is convincing neither from the microeconomic nor from the macroeconomic perspective. The alternative is the integration of finance constraints into the investment function of the individual firm, as proposed by Kalecki's (1937) 'principle of increasing risk', arguing that in incompletely competitive credit and asset markets own capital or own means of financial resources become a co-determinant of investment, and thus of the size of the firm through the financing channel.²⁰ Wolfson's (1996) post-Keynesian theory of credit rationing in a world of fundamental uncertainty, asymmetric expectations and confidence is another way of approaching this issue. Following Kalecki's 'principle of increasing risk', Steindl (1952) has made use of a similar notion, introducing the 'gearing ratio' into the investment function of the firm. And also Minsky's (1975; 1986) theory of investment is based on the Kaleckian idea of integrating investment finance, making the important distinctions between different types of financing, hedge, speculative and Ponzi, as well as providing a theory of endogenous change of these different types ('stability breeds instability'), on which his 'financial instability hypothesis' is based. This paper is not the place to discuss the respective contributions in detail.²¹ What is important here is that this Kalecki–Steindl–Minsky connection has provided the foundations for the integration of interest, credit and finance into post-Keynesian macroeconomic models, and growth and distribution models in particular, since the mid 1990s. This has first been done through the investment function: Internal means of finance, cash flow or own capital are nowadays important elements of investment functions used in post-Keynesian models, together with expected sales or capacity utilisation. But as we have already seen in Section 3.1, in more recent models the indebtedness of the private household sector has become another channel of integration of financial issues into macroeconomic models.

When it comes to modelling financial and macroeconomic issues, basically two types of models have been used so far: (i) demand-driven small-scale analytical models, and (ii) large-scale, stock-flow consistent (SFC) models in the tradition of Godley (Cambridge) and Tobin (Yale) (Godley/Lavoie 2007).²² The first type of model allows for general analytical results regarding the distribution and growth effects of changes in parameters and behavioural coefficients. In the second type, these effects are usually obtained through numerical simulations. However, the advantage of the second type of model is that it can take into account the features of the financial and economic sectors and structures of the economy in a richer and more detailed way. Of course, both types are complementary and the results obtained should, in principle, not contradict each other. Small analytical models should be stock-flow consistent, too, and SFC models can be simplified such that analytical solutions can be computed.

We can now distinguish two stages of integration of financial variables into the distribution and growth models since the mid 1990s: In the first stage, we have seen the explicit integration of credit, interest and a rentier class into post-Keynesian distribution and growth models, and in the second stage, these models have been further developed in order to make macroeconomic sense of the increasing dominance of finance (financialisation). Let us review each stage in turn.

20. On a comparison of Kalecki's and Keynes's theories of investment, see also Lopez G. (2002) and Lopez G./Mott (1999).

21. See Nikolaidi (2017) for a review of the modelling attempts of Minsky's contributions.

22. See Caverzasi/Godin (2015a) for a survey of post-Keynesian SFC modelling.

3.2.1 *The integration of interest and credit into post-Keynesian distribution and growth models*²³

It was not until the late 1980s/early 1990s that post-Keynesians started to take Keynes's (1933 [1987]) research programme of a 'monetary theory of production' more seriously and introduced monetary variables into the Kaldor–Robinson and the Kalecki–Steindl variants of the distribution and growth models. Pasinetti's (1974: ch. 6) natural rate of growth model with assets held by capitalists and workers, in which the normal rate of profit is positively associated with the rate of interest as long as the latter is below the former, was an early exception from this general tendency of neglecting the relevance of monetary variables.²⁴ Since the late 1980s, however, several attempts have been presented at integrating monetary variables into different types of post-Keynesian distribution and growth models, as reviewed in Hein (2008; 2014b: ch. 9) and Lavoie (2009b; 2014: ch. 6.10–11).²⁵ Basically, we have three channels through which monetary and financial variables have a principal impact on distribution and growth in closed, private economy models, consisting of three classes: rentiers, managers/firms and workers. The exogenous monetary rate of interest and the stock of debt of firms affect income distribution between the three classes, they affect investment of firms through the internal means of finance channel, and there are effects on consumption through the income shares of the three groups. The models usually determine the overall effect of changes in monetary variables on the macroeconomic outcomes (capacity utilisation, capital stock and GDP growth) and examine the medium- to long-run financial stability, that is, the dynamics of debt–income or debt–capital ratios.

Let me now highlight a few important results of this kind of literature. Dutt (1995) has reformulated the possibility of Steindl's macroeconomic paradox of debt, that is, an inverse relationship between capacity utilisation, capital accumulation and growth, on the one hand, and the debt–capital ratio of the firm sector, on the other, which contradicts the Minskyan notion of a co-movement of economic activity and accumulation with the indebtedness indicator. Similarly, Taylor (2008: ch. 8.5) has distinguished between debt-led (Minskyian) and debt-burdened (Steindlian) regimes, in his analytical version of the SFC model by Lavoie/Godley (2001/2002).

The debt-led vs debt-burdened distinction is also immanent in a contribution by Lavoie (1995b), which has been further elaborated in Hein (2006b; 2007; 2008), including interest-elastic mark-ups and hence profit shares, among other things. In the basic model, taking into account that interest payments are costs to firms, which have a partially restrictive effect on investment, but are income to rentiers' households, which has a favourable impact on consumption, 'normal', 'intermediate' and 'puzzling' cases have been derived. In the normal case, a higher interest rate or higher indebtedness of firms has a negative effect on utilisation and capital accumulation, because the partial effect on investment dominates the effect on consumption; the economy is also debt-burdened. In the puzzling case, however, the expansionary effect on consumption dominates the contractionary effect on investment, such that we get rising utilisation and capital

23. This section partly draws on Hein (2014b: ch. 9).

24. Other exceptions have been Kaldor's (1966) neo-Pasinetti theorem, Skott's (1989) reformulation and extension of the neo-Pasinetti theorem, and early attempts at modelling Minskyan dynamics by Taylor/O'Connell (1985) and Franke/Semmler (1991).

25. These contributions include Dutt (1989; 1990/1991; 1992; 1995), Dutt/Amadeo (1993), Epstein (1992; 1994), Hein (2006a; 2006b; 2006c; 2007), Hein/Schoder (2011), Lavoie (1992: ch. 6.5; 1993; 1995b), Lavoie et al. (2004), Smithin (1997, 2003a: ch. 7; 2003b) and Taylor (1985; 2008: ch. 8.5), among others.

accumulation; the economy is also debt-led. In the intermediate case, utilisation gets stimulated by income redistribution from firms to rentiers; however, the effect of utilisation in the investment function is too weak to raise capital accumulation. Looking at the debt dynamics, it has been found that only the puzzling case and hence the overall debt-led regime is stable, whereas the other regimes generate unstable debt–capital ratios and hence unstable debt and capital accumulation dynamics (Hein 2014b: ch. 9).

The question of dynamic stability of regimes has been further debated, and models have been presented with less restrictive results regarding instability, if dividends, capital gains, Tobin's q and other features are included (Hein 2013; Franke 2016; Sasaki/Fujita 2012). Furthermore, authors like Charles (2008a; 2008b; 2008c), Lima/Meirelles (2007), Meirelles/Lima (2006), Nikolaidi (2014), Nishi (2012b) and Ryoo (2013) have introduced Minsky's (1986) distinction between hedge, speculative and Ponzi financing into different variants of Kaleckian distribution and growth models, and they have provided richer models with several more regimes and sources of instability.

Only a few studies have provided empirical estimations for the models sketched above, making use of the 'one-directional structural approach' and taking interest rates or interest payments–capital ratios as exogenous variables.²⁶ Hein/Schoder (2011) have estimated the effects of net interest payments of the non-financial business sector (in relation to the nominal capital stock of this sector) on functional income distribution, saving and investment for Germany and the US (1960–2007), and they have found the 'normal case' for both countries. This result is confirmed by the Onaran et al. (2011) study which also obtains a negative effect of redistribution in favour of rentiers on aggregate demand for the US (1962–2007). And it also seems to be broadly in line with results by Argitis (2009) and Argitis/Michopoulou (2010). They present panel estimations using annual data for different sets of OECD countries (1981–2003) which show that the share of interest income of banks in GDP has a negative effect on aggregate demand growth whereas the wage share has a positive impact.

3.2.2 *Financialisation in post-Keynesian distribution and growth models*²⁷

Since the early/mid 2000s, post-Keynesians have increasingly applied their integrated distribution and growth models to the issues of 'financialisation', that is, 'the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies' (Epstein 2005a: 3). These contributions have been based on detailed empirical case studies of the development of financialisation by, for example, the contributions in Epstein (2005b), and by Palley (2008b; 2013b: ch. 2) for the US, by van Treeck (2009a) and van Treeck et al. (2007) for Germany as compared to the US, and by Stockhammer (2008a) for Europe.²⁸ Furthermore, the post-Keynesian 'macroeconomics of financialisation' can rely on some

26. Of course, there have been several estimations of single distribution, saving/consumption and investment equations including interest rates and debt variables, as reviewed by Hein (2014b: ch. 9), however, without including them in a full distribution and growth model and deriving the respective regimes.

27. This section partly draws on Hein (2014b: ch. 10) and Hein et al. (2015).

28. For more recent country studies, see the results of the large EU-funded research project on Financialisation, Economy, Society, Sustainable Development (FESSUD), in particular the FESSUD Studies in Financial Systems, to which several post-Keynesians researchers, among others, have contributed (www.fessud.eu). And on country studies on financialisation and the financial and economic crisis, see the same series and the contributions in Hein et al. (2016).

post-Keynesian ‘microeconomic’ contributions on the theory of the firm under the conditions of financialisation, by Crotty (1990), Dallery (2009) and Stockhammer (2005/2006), for example, and more recently on the effects of norms etc. (conspicuous consumption, ‘keeping up with the Joneses’) on household consumption behaviour, which I have referred to in Section 3.1.

As outlined in Hein (2012b: ch. 1) and Hein/van Treeck (2010a) from a post-Keynesian macroeconomic perspective, finance-dominated capitalism can be characterised by the following elements:

1. With regard to distribution, financialisation has been conducive to a rising gross profit share, including retained profits, dividends and interest payments, and thus a falling labour income share, on the one hand, and to increasing inequality of wages and top management salaries and thus of personal or household incomes, on the other hand. Hein (2015), reviewing the empirical literature on the determinants of functional income distribution against the background of the Kaleckian theory of income distribution, has argued that features of finance-dominated capitalism have contributed to falling labour income shares, to different degrees in different countries, through three main channels: the falling bargaining power of trade unions, the rising profit claims imposed in particular by increasingly powerful rentiers, and a change in the sectoral composition of the economy in favour of the financial corporate sector.²⁹ These channels have also contributed to rising personal/household-income inequality.
2. Regarding investment in the capital stock, financialisation has caused increasing shareholder power vis-à-vis firms and workers, the demand for an increasing rate of return on equity and bonds held by rentiers, and an alignment of management with shareholder interests through short-run performance-related pay schemes, as bonuses, stock option programmes, and so on. On the one hand, this has imposed short-termism on management and has caused decreasing management animal spirits with respect to real investment in capital stock and the long-run growth of the firm and an increasing preference for financial investment, generating high profits in the short run. On the other hand, it has drained internal means of finance available for real investment purposes from non-financial corporations, through increasing dividend payments and share buybacks in order to boost stock prices and thus shareholder value. These ‘preference’ and the ‘internal means of finance’ channels have had partially negative effects on firms’ real investment in the capital stock. Econometric evidence for these two channels has been supplied by Onaran et al. (2011), Orhangazi (2008), Stockhammer (2004c), Tori/Onaran (2016) and van Treeck (2008), in particular for the US and the UK but also for other countries, such as France.
3. Regarding consumption, financialisation has generated an increasing potential for wealth-based and debt-financed consumption, thus creating the potential to compensate for the depressing demand effects of financialisation, which were imposed on the economy via redistribution and the depressing impact of shareholder value orientation on real investment. Stock-market and housing-price booms have each increased notional wealth against which households were willing to borrow. Changing financial norms, new financial instruments (credit card debt, home equity lending) and deterioration of creditworthiness standards, triggered by securitisation of mortgage debt and ‘originate and distribute’ strategies of commercial banks, made increasing credit available to low-income, low-wealth households, in particular. This allowed for

29. For recent econometric studies partly going beyond these findings, see, for example, Dünhaupt (2017) and Stockhammer (2017b).

consumption to rise faster than median income and thus to stabilise aggregate demand. But it also generated increasing debt–income ratios of private households. Barba/Pivetti (2009), Cynamon/Fazzari (2008; 2016), Guttmann/Plihon (2010), van Treeck (2009a; 2014) and van Treeck/Sturn (2012) have presented extensive case studies on wealth-based and debt-financed consumption, with a focus on the US. However, the exact mechanism through which consumption has been pushed (wealth, credit availability, maintenance of basic needs, relative income hypothesis) is still a matter of debate, as I have discussed above.

4. The liberalisation of international capital markets and capital accounts has allowed for rising and persistent current-account imbalances at the global but also at the regional level, for example, within the euro area, as has been analysed by several authors, including Belabed et al. (2013), Dodig et al. (2016), Hein (2012b: ch. 6; 2013/2014; 2014b: ch. 10), Hein/Mundt (2012), Stockhammer (2010; 2012; 2015; 2017c) and van Treeck/Sturn (2012). Simultaneously, it also created the problems of foreign indebtedness of current-account deficit countries, speculative capital movements, exchange-rate volatilities and related currency crises (Bortz 2016; Herr 2011).

Based on these macroeconomic effects of financialisation, post-Keynesians have presented different small-scale analytical and large-scale SFC models examining the long-run growth and stability effects of financialisation, as reviewed in Hein (2012b: ch. 3; 2014b: ch. 10) and Hein/van Treeck (2010a), for example.³⁰ Depending on the values of the model parameters, ‘finance-led growth’ regimes, as suggested by Boyer (2000), ‘profits without investment’ regimes, as found by Cordonnier (2006), or ‘contractive’ regimes may emerge. Only in the ‘finance-led growth’ regime is increasing shareholder power overall expansive with respect to the rates of capacity utilisation, as an indicator for aggregate demand, profit and capital accumulation. In the ‘profits without investment’ regime, however, the effects on the rates of capacity utilisation and profit remain expansive but capital accumulation gets depressed, and in the ‘contractive’ regime there is a depressing effect on all three endogenous variables of the model. As shown in Hein (2012b: ch. 3), only the ‘finance-led growth’ regime yields long-run stability of the financial structure of the firm sector and of capital accumulation. This regime, however, requires a very special parameter constellation: weakly negative effects of increasing shareholder power on management’s animal spirits regarding real investment in the capital stock, a low rentiers’ propensity to save out of current income, a low profit share, a low elasticity of investment with respect to distributed profits and internal funds, and a high responsiveness with regard to capacity utilisation (and to Tobin’s q in some models). In particular, a long-run increase in the gross profit share associated with financialisation may turn the stable financial structure into an unstable one. More realistic parameter constellations, giving rise to ‘profits without investment’ or ‘contractive’ regimes, have turned out to yield unstable long-run results regarding the financial structure of the firm sector and the rate of capital accumulation.

‘Profits without investment’ regimes, as the regimes which empirically seem to have prevailed during the pre-2007 crisis financialisation period (Hein 2012b: ch. 6; Hein/Mundt 2012; van Treeck 2009a; 2009b; van Treeck/Sturn 2012), can be driven by flourishing consumption demand, by rising export surpluses or by government deficits, each compensating for low and falling investment in the capital stock. This is so because,

30. See also Caverzasi/Godin (2015b), Dutt (2016), Godley/Lavoie (2007: ch. 11), Hein (2010a; 2010b), Hein/van Treeck (2010b), Isaac/Kim (2013), Lavoie (2008; 2009a), Skott/Ryoo (2008a; 2008b) and van Treeck (2009b).

from a macroeconomic perspective, the following equation, derived from national income accounting, has to hold, as pointed out by Kalecki (1971: 82):

$$\begin{aligned} \text{Gross profits net of taxes} &= \text{Gross investment} + \text{Capitalists' consumption} \\ &+ \text{Government budget deficit} \\ &+ \text{Export surplus} - \text{Workers' saving.} \end{aligned} \quad (1)$$

The increasing dominance of finance, income redistribution at the expense of the wage share and low-income households, stagnating income-financed consumption and weak investment in the capital stock generated two opposite but mutually dependent types of demand and growth regimes before the global financial crisis and the Great Recession.

First, there was the ‘debt-led private demand boom’ type of development, with the ‘debt-led private consumption boom’ as an extreme case, making use of the increasing potential for debt-financed consumption generated by financialisation. This type of development has been found in countries such as the US, the UK, Spain, Ireland and Greece. As has been explained above in Section 3.1, several models have shown that increasing credit to (workers’) households may indeed be expansionary for consumption, aggregate demand (and hence profits) and growth in the short run, and that the system will thus be debt-led. However, in the long run, a rising stock of debt and hence rising interest payments, and therefore redistribution of income from debtor households with high propensities to consume to rentiers with low consumption propensities, have to be taken into account. Under certain conditions, these contractionary effects may overcompensate for the expansionary effect of higher credit, and the system may become debt-burdened in the long run. Furthermore, it has been shown that as soon as households’ debt–income ratios exceed some threshold values, this ratio itself and hence the system will become unstable.

Second, there was the ‘export-led mercantilist’ regime, driven by net exports and current-account surpluses based on nominal wage moderation and suppressed domestic demand. This type of development has been found in countries such as Austria, Belgium, Germany, the Netherlands, Sweden, Japan and China during the pre-2007 crisis financialisation period. Since the ‘debt-led private demand boom’ economies were running increasing current-account deficits, the ‘export-led mercantilist’ economies with increasing current-account surpluses were the necessary counterpart at the global level, and they had to rely on the willingness and the ability of the ‘debt-led private demand boom’ economies to go into debt, in particular the private household sectors in these economies. Therefore, the financial crisis, which was triggered by over-indebtedness problems of private households in the leading ‘debt-led private demand boom’ economy, the US, could quickly spread to the ‘export-led mercantilist’ economies through the foreign trade channel (collapse of exports), the financial contagion (devaluation of financial assets) and the expectations channel, in particular.

Based on these analyses of the long-run effects of financialisation on income distribution, capital accumulation, consumption and current-account imbalances, post-Keynesians have argued that these developments, together with the liberalisation and deregulation of national and international financial markets, should be considered to be the main causes of the global financial crisis and the Great Recession of 2007–2009 (Hein 2012b; Palley 2010; 2012; 2013c; Stockhammer 2010; 2012; 2015; 2017c).³¹ And since the crisis and its severity can be considered to reflect the contradictions and problems of

31. See also Blecker (2016b) and Lavoie (2016b), who review post-Keynesian views on the financial crisis, based on the works of Godley and Minsky, in particular. However, they do not explicitly link these views and contributions to financialisation.

finance-dominated capitalism and the two extreme types of development under financialisation, the debt-led private demand boom type and the export-led mercantilist type, some authors have argued that a sustainable recovery strategy should focus on a 'wage-led' or 'mass-income-led' type of development (Lavoie/Stockhammer 2013; Stockhammer/Onaran 2013). Since the demand effects of redistribution are rather small and redistribution is difficult to achieve in a stagnationary environment with high unemployment, Onaran (2016) has suggested complementing redistribution in favour of wages with rising public investment. Hein (2011; 2012b: ch. 7), Hein/Mundt (2012) and Hein/Truger (2011; 2012/2013) have suggested that a wage-led recovery strategy should be at the core of and embedded in a Global Keynesian New Deal, which more broadly would have to address the three main causes for the severity of the crisis: inefficient regulation of financial markets, increasing inequality in the distribution of income and rising imbalances at the global (and regional) levels. The three main pillars of the policy package of a Global Keynesian New Deal are the following: first, the re-regulation of the financial sector in order to prevent future financial excesses and financial crises and to contribute to a redistribution of income towards wages and low-income households; second, the reorientation of macroeconomic policies towards stimulating and stabilising domestic demand, in particular in the current-account surplus countries; and third, the reconstruction of international macroeconomic policy coordination and a new world financial order in order to prevent 'export-led mercantilist' and hence 'beggar thy neighbour' strategies.³² These policy conclusions have been based on and have referred to the post-Keynesian macroeconomic model(s) and the respective macroeconomic policy recommendations, which have been developed in the course of the early 2000s as a critique and alternative to the NCM. This is where I therefore turn to next.

3.3 Alternative macroeconomic models and policy mixes to the NCM³³

The NCM, based on the works of Clarida et al. (1999) and Goodfriend/King (1997), has been dominating mainstream macroeconomics and macroeconomic policy advice from the late 1990s/early 2000s until the crisis. And although the crisis has shown the limits of this model and the related policy implications, and we have seen some changes for example in monetary policies, the basic structure is still intact (Palley 2013c; Rogers 2014).

Post-Keynesians have criticised the NCM from the very start for various reasons and have presented amendments and alternatives.³⁴ Fundamentally, the post-Keynesian critique has been related to the assumption of a stable long-run equilibrium NAIRU determined exclusively by supply-side factors to which actual unemployment, determined by effective demand, can be adjusted by means of monetary policy interventions. The critique has focused on the assumption of the independence of this NAIRU from the development of actual unemployment, and hence from demand and monetary as well as fiscal policies. In short, what has been questioned has been the assumed long-run neutrality of

32. Palley (2012: ch. 9; 2013b: ch. 12) has made similar suggestions.

33. This section partly draws on Hein (2014a), Hein/Lavoie (2017) and Hein/Stockhammer (2010; 2011b).

34. For post-Keynesian assessments of the NCM and its main elements, the NAIRU and an inflation-targeting central bank, see, for example, Arestis (2009; 2011), Arestis/Sawyer (2004a), Davidson (2006), Dullien (2011), Fontana (2009b), Fontana/Palacio-Vera (2002), Gnos/Rochon (2007), Hein (2006c), Kriesler/Lavoie (2007), Lavoie (2006b), Palley (2007), Rochon/Rossi (2006), Sawyer (2002), Setterfield (2006; 2009a), Smithin (2007), Stockhammer (2008b) and Wray (2007).

money in the NCM. Furthermore, post-Keynesians have been critical of the sole reliance on central-bank interest-rate policies as the only macroeconomic policy tool in the NCM. On the basis of this critique the NCM policy framework and policy rules have been criticised and amendments have been put forth.

Basically, it has been argued that the 'hierarchy of markets' entailed by orthodox macroeconomics in general, and by the NCM in particular, has to be reversed. Whereas in orthodox macroeconomics the labour market is at the top of the hierarchy, dominating the other macroeconomic markets at least in the long run, in post-Keynesian macroeconomics it is the money, credit and financial markets which are at the top of the hierarchy, with the goods market following, and the labour market at the very bottom. In money, credit and financial markets, the central bank determines the base rate of interest in the money market and the interaction of the central bank, commercial banks, firms, households and the government determines the structure of interest rates in the credit and financial markets. This structure of interest rates is exogenous for the income-generating process, while the volumes of money and credit are endogenous. Changes in the relevant rate of interest have cost and distribution effects, and thus have an impact on aggregate demand in the goods market, with investment demand being the driving force, which then determines the level of output, income and employment. Therefore, the labour market has no direct effect on employment and unemployment. What is determined in the labour market is the nominal wage rate and hence nominal unit labour costs, which have a major impact on the price level and inflation, but which will also affect the real wage rate and income distribution in a realistic setting. Price and distribution effects of nominal wage setting might then feed back on aggregate demand in the goods market and on the interest rates set in the monetary/financial markets of the economy.³⁵

The specific alternative models post-Keynesians have proposed follow these broad characteristics, but differ in the details. With respect to the inflation generation process, some post-Keynesian authors have assumed away the existence of a short-run inflation barrier and hence the NAIRU completely (Atesoglu/Smithin 2006; Setterfield 2006, 2009a), whereas others have accepted that there is such a short-run inflation barrier, which, however, is endogenous in the medium to long run through different channels (Hein 2006c; Hein/Stockhammer 2010; 2011b; Lavoie 2006b; Stockhammer 2008b). With respect to the income generation process, some authors have accepted the interest rate inverse IS-curve from the NCM (Atesoglu/Smithin 2006; Lavoie 2006b; Rochon/Setterfield 2007; Setterfield 2006), whereas others have replaced it with a more elaborate approach to effective demand allowing for real debt and different distribution effects (Hein 2006c; Hein/Stockhammer 2010; 2011b; Setterfield 2009a; Stockhammer 2008b). From these models one can derive a consistent macroeconomic policy mix, as an alternative to the NCM, which is shown in Table 1, drawing on and extending the economic policy implications contained in Arestis (2013) and Hein/Stockhammer (2010; 2011b), for example.

In the orthodox NCM approach inflation-targeting monetary policies are recommended as the main stabilising economic policy tool. Central-bank policies applying the interest-rate tool have short-run real effects on unemployment, but in the long run only the inflation rate is affected. Fiscal policies are to support inflation-targeting monetary policies by balancing the public budget over the cycle. The labour market, together with the social security system, determines equilibrium unemployment, the NAIRU in the long run, and the speed of adjustment towards this rate in the short run. Regarding international economic policies,

35. See also the basic teaching versions of post-Keynesian macroeconomic models, as proposed by Fontana/Setterfield (2009), Hein/Stockhammer (2009) and Herr (2014), for example.

Table 1 Macroeconomic policy recommendations: New Consensus models (NCM) and post-Keynesian models (PKM) compared

	NCM	PKM
Monetary policy	Inflation targeting by means of interest-rate policies, which affects unemployment in the short run, but only inflation in the long run	Targets low interest rates which mainly affects distribution, and stabilises monetary, financial and real sectors by applying other instruments (lender of last resort, credit controls, etc.)
Fiscal policy	Supports monetary policy in achieving price stability by balancing the budget over the cycle	Real stabilisation in the short and in the long run with no autonomous deficit targets; affects distribution of disposable income
Labour market and wage/incomes policy	Determines the NAIRU in the long run and the speed of adjustment in the short run; focus should be on flexible nominal and real wages	Affects price level/inflation and distribution; focus should be on rigid nominal wages, steady nominal unit labour cost growth and compressed wage structure
International economic policies	Free trade, free capital flows and flexible exchange rates	Regulated capital flows, managed exchange rates, infant industry protection, regional and industrial policies
Coordination	Clear assignment in the long run; coordination at best only in the short run	No clear assignment; economic policy coordination required in the short and the long run, both nationally and internationally

Source: Based on Hein (2014a: 29).

mainstream economics would be in favour of free trade, free capital flows and flexible exchange rates, reaping the presumed benefits from comparative advantages and the related international division of labour. Since, at least in the long run, there is a clear division of labour between the different areas of economic policy making, *ex ante* coordination is not required – each area of policy-making would have to follow its tasks as outlined.

The macroeconomic policy mix based on post-Keynesian models advocates the coordination of economic policies between the different areas, both in the short and the long run, because there is no clear-cut assignment of policy-makers and their instruments to just one specific economic policy target, that is, full employment, stable inflation, equitable distribution of income and wealth, and financial stability.

Generally, it is acknowledged that central-bank interest-rate policies have real effects, both in the short and the long run. Central banks should thus target low long-term real interest rates using its short-term monetary interest-rate tool and contribute to stabilising the monetary, financial and real sectors of the economy using other instruments than the interest rate: credit controls, (asset-based) reserve requirements, etc. Above all, central banks have to act as lender of last resort for the banking sector and the government. The latter has been and is still an important lesson to learn in order to overcome the euro crisis and the underlying design failure of the eurozone, that is, the lack of a convincing lender of last resort for the member countries' governments and a guarantee of public debt (Arestis/Sawyer 2011; Goodhart 1998; Hein 2013/2014; Hein/Detzer 2015; Wray 2012: ch. 5.7). The exact monetary

policy strategy with respect to the interest rate, ‘activist’ or ‘parking it’, has been a matter of debate (Rochon/Setterfield 2007). Whereas some authors have been in favour of central banks using the interest-rate tool for real stabilisation purposes (Fontana/Palacio-Vera 2007; Palley 2007; Setterfield 2006), others have rejected any fine-tuning by means of interest-rate policies and have instead been in favour of targeting a short-term or long-term rate of interest at growth- and employment-conducive levels (Gnos/Rochon 2007; Hein/Stockhammer 2010; 2011b; Lavoie 1996d; Rochon/Setterfield 2007; Setterfield 2009a; Smithin 2007; Wray 2007). However, irrespective of the precise view on interest-rate policies, there is broad agreement among post-Keynesians that quantitative easing policies, as the current response towards the crisis in the face of the failure of inflation-targeting policies by means of interest-rate setting, as recommended by the NCM, will at best have only limited effects. Only to the extent that long-term interest rates are reduced, capital gains are generated and balance sheets of commercial banks are improved, and that the domestic currency gets depreciated, might we see positive effects on aggregate demand (Lavoie 2016b). But these effects are considered to be too small and thus ineffective in terms of overcoming the crisis and the stagnation tendencies, unless they are supported by active and expansionary fiscal policies.

In a post-Keynesian macroeconomic policy mix, fiscal policies have a major impact on economic activity and the distribution of disposable income, and should thus actively take care of real stabilisation of the economy in the short and the long run, using government expenditures and taxation as tools without any autonomous government deficit targets. It thus means to follow a functional finance approach in the tradition of Lerner (1943) (Arestis/Sawyer 2003; 2004b; Setterfield 2009b). Potential limits to government debt in this kind of approach are a matter of controversy between those sympathetic to neo-chartalism and functional finance – what is now called ‘modern money theory’ (MMT) (Wray 2012) – and the critics of such an approach (Palley 2015b). The relevance of government debt limits will depend on the precise institutional link between the government and the central bank, the international acceptance of the national currency, whether private and public debt is denominated in the domestic currency, and so on (Lavoie 2013). In particular, if central banks act as a lender of last resort for the government and guarantee government debt, and private agents thus do not have to fear the illiquidity or insolvency of the government, the level of government debt or government debt–income ratios should be of minor concern, as has been pointed out by the proponents of MMT.

Wage and incomes policies should mainly focus on nominal stabilisation, which means stable unit labour cost growth at the target rate of inflation (Arestis 1996; 2013; Davidson 2006; Hein/Stockhammer 2010; 2011b; Setterfield 2006). To what extent wage policies can and should contribute to redistribution in favour of the labour income share with an aim to stimulate aggregate demand and growth, is controversial among post-Keynesians. The effect of rising nominal wages and unit labour costs on functional income distribution and aggregate demand will depend on the concrete and specific circumstances in the country or region under consideration, in particular on the degree of international competition and the nature of the demand regime (Hein 2014b: chs 5–7). However, to the extent that wage and incomes policies manage to reduce wage dispersion and wage inequality, the demand effects seem to be favourable at any rate, as shown by Palley (2017).

Finally, regarding international economic policies, post-Keynesians hold that absolute advantage may be more important than comparative advantage due to the underutilisation of productive resources, static and dynamic economies of scale, and endogenous potential growth. Following Kaldor’s (1970) export-led growth model, countries may enter into a virtuous (or a vicious) circle of export demand driving output and productivity growth which will then feed back on exports. And Thirlwall’s law (1979), introducing a

balance-of-payments constraint into the model, has shown that the growth rate consistent with a balanced current account is determined in the long run by the growth of external income and the income elasticities of demand for exports and imports.³⁶ In order to improve the balance-of-payments-constrained growth rate, countries would thus have to increase the income elasticity of demand for their exports and to reduce their income elasticity of demand for imports, hence their non-price competitiveness, by appropriate industrial and regional policies, including infant industry protection. For this purpose regulated capital flows and thus capital controls are important. This also provides the conditions for international economic policy coordination and managed exchange rates, which should contribute to international financial stability. Several post-Keynesians would thus be in favour of a return to a cooperative world financial order and a system with fixed but adjustable exchange rates, symmetric adjustment obligations for current-account deficit and surplus countries, and regulated international capital flows in order to avoid the imbalances that have contributed to the recent financial and economic crisis and to preclude export-led mercantilist policies by major economies. Keynes's (1942 [1980]) proposal for an International Clearing Union is an obvious blueprint to be further developed for this purpose (Davidson 2009; 2011: ch. 17). Few others, including Wray (2012: 185–186), would be unwilling to give up the presumed national sovereignty and policy space which, in their views, seems to be preserved by floating exchange rates. However, this seems to apply only to countries that are able to issue the key currency in the world economy, that is, the US.

4 FINAL THOUGHTS ON OPEN QUESTIONS, AREAS FOR FUTURE RESEARCH – AND PLURALISM

This review has focused on post-Keynesian macroeconomics since the mid 1990s and has not explicitly addressed the micro dimension. However, this does not imply that post-Keynesians have nothing to say about microeconomics. On the contrary, in Lavoie's *Post-Keynesian Economics: New Foundations* (2014) we find two chapters on micro: chapter 2 on 'Theory of choice' and chapter 3 on 'Theory of the firm'. And in King's *Advanced Introduction to Post Keynesian Economics* (2015), chapter 5 is devoted to 'Post Keynesian microeconomics'. According to King (2015: ch. 5), and fully in line with our basic characteristics of post-Keynesian economics outlined in Section 2, post-Keynesian microeconomics are based on the following principles. First, in a capitalist economy, decisions of firms are the driving force. Second, markets are imperfect, dominated by oligopolistic or monopolistic competition, and firms are thus price-setters and quantity-takers. And third, fundamental uncertainty prevents precise maximisation strategies from being applied by firms or households; satisficing rather than maximising behaviour dominates the scene.

What about the relationship between micro and macro? Obviously, post-Keynesians reject the orthodox/mainstream requirement of the 'micro-foundation of macroeconomics', which, according to King (2009; 2012b; 2015: ch. 5), should be viewed as a micro-reduction strategy: macroeconomics is reduced to the microeconomics of representative, utility-maximising agents with rational expectations acting in efficient markets. There are no fallacies of composition, no downward causations such that individuals are affected by their environment, and no emerging properties of the economic and social systems, which are external to individual choices. However, the rejection of the orthodox

36. For recent reviews and discussion on Thirlwall's law, see Blecker (2013; 2016c), McCombie (2011), Setterfield (2011) and Thirlwall (2011; 2013).

'micro-foundations of macroeconomics' should not imply their replacement by some heterodox 'macro-foundations of microeconomics'. I would again side with King (2015: 45), who argues: 'As Kalecki maintained, macroeconomics and microeconomics should be thought of as existing side by side, closely related to and influencing each other but also relatively autonomous and neither constituting the foundations of the other'.

My current review has contained several examples for the inclusion of features and changes of the micro conditions and behaviours into post-Keynesian macroeconomic models. From the theory of the firm we have included in the macroeconomic models of financialisation the shift from manager-dominated firms and a coalition of managers and workers against shareholders towards a shareholder/manager coalition against workers, or a shift from 'retain and invest' towards 'downsize and distribute' strategies (Lazonick/O'Sullivan 2000). In the same context, several macroeconomic models of financialisation have entertained the notion of an interest- and dividend-elastic mark-up and included the respective distributional effects at the aggregate level. And with respect to the household and consumer theory we have observed the revival of the relative income hypothesis and the inclusion of wealth and credit availability effects into the consumption functions of the macroeconomic models. In this context, post-Keynesians have drawn on the results of other schools of thought in economics, that is, old institutionalism, experimental and behavioural economics and evolutionary political economy, as well as of other disciplines, that is, political science, sociology and psychology. I think this is also the way to go for the future, in which post-Keynesian economics can provide the macroeconomics of a broader political economy research programme, which would include other heterodox approaches in economics and benefit from the research in other social sciences.

Currently, I see three areas of research which should have more pronounced inclusion in post-Keynesian macroeconomics and in which post-Keynesians can benefit from the research output of other heterodox economics and social sciences. First, there is the further integration of ecological constraints and more general ecological and environmental issues into post-Keynesian macroeconomics. Dafermos et al. (2017), Fontana/Sawyer (2013; 2016), Kronenberg (2010), Rezai/Stagl (2016), Rezai et al. (2013) and Taylor et al. (2016) have provided some conceptual considerations and modelling approaches in this area. Second, there is the inclusion of further lines of social stratification beyond class into post-Keynesian macroeconomic approaches, like gender and race, as for example found in the works of Braunstein/Heintz (2008), Elson/Cagatay (2000), Seguino (2010a; 2010b), Seguino/Heintz (2012) and van Staveren (2010). And third, post-Keynesians should refocus on the political economy dimension and the social embeddedness of economic processes and economic policies, which have been part of the tradition of Kalecki (1943), Steindl (1979), Bhaduri/Steindl (1985), Smithin (1996), Cornwall/Cornwall (2001) and others.³⁷

Let me finish with some thoughts on coherence and pluralism, regarding post-Keynesian economics in particular and a broader political economy research programme in general. King (2015: 39–40) has put forward several arguments in favour of pluralism: the complexity of the social and economic world, the historical and social specificity of economic and social theory, the presumption that evolution and progress require selection from diversity, and the observation that economists believe in the benefits of competition and should allow for it in their own discipline. I would broadly agree with these arguments. From my review it should have become clear that post-Keynesianism in itself has been a pluralist research programme, and I have tried to argue that it can provide in particular the macroeconomics for a broader and pluralist political economy research

37. For recent attempts, see also Hein et al. (2015) and Hein (2016).

programme. However, this should not mean that ‘anything goes’ – either within post-Keynesian economics or within a broader political economy research programme. The five presuppositions of heterodox economics, plus the five characteristics of post-Keynesian economics outlined in Section 2 provide a framework and a minimum degree of coherence, both for heterodoxy in general and post-Keynesian economics in particular. Within this framework, pluralism and controversies regarding research focus, methods, results and economic policy implications are necessary and indeed required for scientific progress, and they should be handled in an open-minded atmosphere and in a constructive and solidary way.

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