Post-Keynesian Economics - Challenging the Neo-Classical Mainstream

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Abstract

This article takes an in-depth look at post-Keynesianism as a paradigmatic alternative to the dominant neoclassical mainstream. It quickly becomes clear that post-Keynesianism is not a unified school of thought, but rather an assortment of theoretical approaches that share certain methodological and epistemological similarities and characteristic postulates. The Article does not attempt to describe the full array of Kaleckian, Kaldorian and Sraffian variants of post-Keynesian theory but instead analysis the paradigmatic and formal structure of one particular form of post-Keynesianism, the monetary theory of production in order to reconstruct these characteristic postulates from the axiomatic core of post-Keynesianism. It then sets out the theory of market participation, an alternative theory of economic policy that builds on monetary production economics.

1. Introduction – is there any such thing as (the) post-Keynesianism?

The challenge of how to describe the body of thought generally known as post-Keynesianism can be approached in very different ways. You could point out that post-Keynesian work is not situated within any unifying paradigmatic framework; rather, there is a series of different approaches with different founding figures: John Maynard Keynes, Michał Kalecki, Nicholas Kaldor, Joan Robinson, Piero Sraffa and Hyman P. Minsky, to name just a few. And you could then attempt to describe these different approaches in a way that makes clear both the differences between them and the similarities that explain why they are grouped together under a single heading. This would make clear why the theoretical work is so diverse in nature, and possibly clarify certain internal disputes, but would fail to attain the epistemological depth and theoretical rigour needed to achieve acceptance in the highly formalised field of economics.[1] And you would probably still stand accused of the unforgivable slight of overlooking some subbranch of theory or other.

An alternative approach would be to give just a brief overview of the array of post-Keynesian approaches and then describe the paradigmatic[2] and formal structure not of *the* but rather *a* post-Keynesianism in a way that elucidates the postulates and principles shared by all post-Keynesianisms, as well as the ontological and epistemological opposition to the mainstream essential to post-Keynesianism's claims to heterodoxy (which originate in Keynes's self-professed rejection of orthodoxy in his *General Theory*[3]).

The present article is structured according to this latter approach. I begin in section 2 by presenting an (incomplete) overview of different strands of post-Keynesianism. Section 3 then describes the epistemological, methodological and ontological dimensions of post-Keynesian monetary production economics,[4] while section 4 constructs a formal model that I use to clarify certain general features of

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[1] All too often, this has prompted the conclusion that "post Keynesian economics remains an eclectic collection of ideas, not a systematic challenge to neoclassical theory" (Dornbusch and Fisher 1990: 220).

[2] The term "paradigm" is, undeniably, imprecise. It is used here in the sense of a description of a scientific research programme with epistemological, methodological and ontological dimensions (which the proponents of a paradigm are often not even aware of).

[3] In the preface to the French edition of the *General Theory*, Keynes wrote, "for a hundred years or longer English Political Economy has been dominated by an orthodoxy. … But I myself in writing it, and in other recent work which has led up to it, have felt myself to be breaking away from this orthodoxy, to be in strong reaction against it, to be escaping from something, to be gaining an emancipation" (Keynes 1936: xxxi). This passage flies in the face of attempts to reconcile Keynes's ideas with the "orthodoxy" (dynamic stochastic equilibrium modelling) under the heading of post-Keynesianism (see Farmer 2017).

[4] Early drafts of the manuscript for the *General Theory* bore the title "The Monetary Theory of Production"; see Keynes (1932: 49).

this form of post-Keynesianism. In section 5, the focus shifts to economic policy. As an alternative to the mainstream theory of *market failure*, I present a post-Keynesian theory of *market participation*. The article culminates in section 6 with a brief conclusion.

2. What do all the post-Keynesianisms have in common?

There is no one single post-Keynesianism, in the sense of a unified, coherent school of theory. On the one hand, this is because scholars following a "broad tent" strategy[5] explicitly use the term to group together various strands of theory that share the goal of criticising the Dynamic Stochastic General Equilibrium (DSGE) modelling that has dominated the field for decades and supplanting it as the mainstream view. Other scholars, meanwhile, follow a "narrow tent" strategy,[6] but none of their proposed approaches has yet succeeded in monopolising "post-Keynesianism" as the paradigmatic term for a clearly distinguishable alternative to DSGE modelling.

Generally speaking, three theoretical schools are grouped under the heading of post-Keynesianism (see table 1).[7] They are based, each in their own distinctive way, on the work of John Maynard Keynes (especially his magnum opus, the *General Theory*), Michał Kalecki and Nicholas Kaldor; whether Piero Sraffa's contribution to the critique of neoclassical theory can also be classified as "post-Keynesian" is, at the least, disputed (see Dunn 2000: 350ff.; Lavoie 2011). While Keynes's principle of effective demand provides the basis for an alternative macroeconomic approach to determining employment and output levels (in opposition to Say's law or its modern variant, Walras's law, which is a central plank of neoclassical exchange theory), Kalecki's and Kaldor's contributions concern aspects that play little or no role in Keynes's original theory: pricing processes in markets with imperfect competition, distribution issues and their effect on aggregate demand, dynamic growth processes and the endogenisation of the money supply.[8]

Table 1: prominent post-Keynesian strands

Strand	Major themes	Proponents
Monetary Keynesianism	• Fundamental uncertainty • Principle of effective demand	• John Maynard Keynes • Hyman P. Minsky • Sidney Weintraub • Paul Davidson

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[5] Proponents of this position include Marc Lavoie (2014: 42ff.) and John King (2012).

[6] The most important proponent is probably Paul Davidson (2003/2004; 2005).

[7] Almost all commentators name a trio of theoretical founding figures, though not always the same ones: while Hamouda and Harcourt (1989) name Keynes, Kalecki and Sraffa as the "progenitors" of post-Keynesianism, Arestis (1990) awards this honour to Keynes, Kalecki and Veblen.

[8] The fact that Kaleckian and Kaldorian ideas may be compatible in principle with those presented by Keynes in the *General Theory* does not, however, necessarily mean that the Kaleckian and Kaldorian frame of reference/ontological basis is compatible with Keynesian monetary production economics.

	• Involuntary unemployment • Monetary production economy • Financial instability	• Hajo Riese • Otto Steiger
Kaleckianism	• Income distribution • Effective demand • Class conflict • Mark-up pricing	• Michał Kalecki • Josef Steindl • Malcolm Sawyer • Kazimierz Łaski
Neo-Ricardianism	• Relative prices • Technical choice • Multisectoral production systems • Capital theory • Long-run positions	• Piero Sraffa • Krishna Bharadwaj • Pierangelo Garegnani • Luigi Pasinetti • Heinz Kurz
Kaldorianism	• Economic growth • Production regimes • Endogenous money	• Nicholas Kaldor • Wynne Godley • Richard Goodwin • Roy Harrod • Alois Oberhauser

Note: grey shading signifies uncertainty about whether this theoretical school can be classed as post-Keynesian.

The "negative" definition as a rejection of the DSGE mainstream is, however, not unique to post-Keynesianism, but is also shared with other heterodox but non-post-Keynesian approaches such as the (French) neo-Marxian regulation theory, the (American) Social Structure of Accumulation approach and microeconomic complexity and evolutionary approaches.[9] So there also need to be "positive" defining characteristics shared by the various schools of post-Keynesian theory. Proposals have been put forward by various authors. Thomas Palley (1996: 9) gives six "core propositions" (CP1–CP6) shared by all post-Keynesianisms:

- The importance of social conflict for income distribution (CP1)
- The centrality of aggregate demand in determining the level of economic activity (CP2)
- The inability of nominal wage adjustment to restore full Employment (CP3)
- The endogenous nature of the money supply (CP4)
- The importance of credit for macroeconomic processes (CP5)
- The fundamentally changeable nature of expectations about an uncertain future (CP6)

Fontana and Gerrard (2006) describe three "characteristic Keynesian propositions" (KP1–KP3) with which all Keynesian economists would agree:

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[9] As with Keynesianism, there exist both orthodox and heterodox variants of complexity and evolutionary economics (see e.g. Heise 2017). I am referring here to the heterodox variants of each school.

- the idea of involuntary unemployment that does not
  automatically reduce   (KP1)
- the principle of effective demand, which determines the level
  and adjustment path of output and employment   (KP2)
- the proposition that effective stabilisation policies exist under
  certain circumstances   (KP3)

Finally, Davidson (2009: 26ff.) formulates three axioms (A1–A3) that fundamentally distinguish the post-Keynesian paradigm from the neoclassical one:

- the non-neutral money axiom (as opposed to the neutral money
  axiom of the neoclassical paradigm; see Blanchard 1990: 828)   (A1)
- the non-substitutability axiom (as opposed to the gross
  substitution axiom as the basis of economic exchange;
  see Arrow and Hahn 1971: 15ff.)   (A2)
- the non-ergodic axiom (as opposed to the ergodic axiom
  as the basis for making forecasts about an uncertain future)   (A3).

While Palley and Fontana/Gerrard present mutually compatible/complementary postulates, Davidson goes further by describing the fundamental axiomatic structure of post-Keynesianism. He formulates the paradigm's alternative epistemological core, while also sketching an ontology that rejects the neoclassical emphasis on exchange and allocation as the core features of economic activity.

Detailed theoretical work would be needed to establish the link between the epistemological core and the postulates, though in the spirit of "horses for courses" differences in emphasis (focusing on markets with limited competition, long-term growth processes, short-term equilibrium or disequilibrium states, etc.) can yield different variants of post-Keynesianism.

The *Kaleckian variant* emphasises market imperfections, the mark-up pricing process and the importance of functional income distribution (i.e. division of income between "classes" of owners of production factors) for investment activity, the income formation process and the determination of employment by "effective demand".

The *Kaldorian variant* was originally primarily concerned with assessing the stability of growth paths in different income distribution scenarios and their effect on aggregate demand. Later, Kaldor's work (Kaldor 1958; Kaldor and Trevithick 1981) inspired the emphasis on endogenous money in post-Keynesian models.

Finally, commentators often note methodological differences between post-Keynesianism and neoclassical economics. Example can be seen in the specific post-Keynesian variant of fallibilistic positivism, which as a form of critical real-

ism imposes special conditions on the validity of assumptions (see for instance Dow 1990; Arestis 1996: 115ff.; Lawson 1999). More generally, post-Keynesian theories explicitly note the limits of methodological individualism's concept of optimisation in view of information deficits, and take a holistic approach with a particular focus on conventional habits and routines, bounded rationality and alternative decision-making procedures ("satisficing" rather than "optimising"; see Simon 1956) (see Lavoie 2014: 16–17). However, these methodological commitments, whereby economies are conceived as "open systems" (see Dunn 2000), may not be enough to differentiate post-Keynesianism from other heterodox paradigms.

3. Monetary production economics as a post-Keynesian paradigm

As noted earlier, this article will not seek to describe how the various different approaches attempt to link the above-described epistemological core with the postulates. Rather, it will present a specific variant of post-Keynesianism. This variant was chosen based on its capacity to meet the condition that must be satisfied by a paradigmatic alternative (as opposed to a variant within a paradigm) to the dominant neoclassical paradigm: namely, it must have an ontology (pre-analytic vision) from which it is possible to derive a (positive and negative) heuristic[10] that is shared by all proponents of the paradigm.[11]

Monetary Keynesianism, which following Keynes[12] describes a "monetary production economy", differs from the ontology of intertemporal exchange ("barter economy", "real exchange economy" or "neutral economy" in Keynesian terminology; see Keynes 1933b) of the neoclassical mainstream (see table 2) in that it considers the basic constituent of capitalist, private-ownership-based economies to be relations of obligation denominated in monetary units (debtor–creditor relations; *credit relationship postulate – CP5*) ("money wage economy" or "entrepreneur economy" in Keynesian terminology). This clear shift of ontological perspective is evident in the rejection of characteristic elements of the neoclassical mainstream such as heuristics of self-regulation and the validity of Say's/Walras's law,[13] and is echoed at an epistemological level in the axiomatic core of the post-

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[10]"Positive heuristic" refers to the "pattern solutions or predictions" actively espoused by followers of a paradigm, while a "negative heuristic" refers to those "pattern solutions" that at least cannot be rejected (see e.g. Graf 1978; Homann 1988).

[11]By ascribing these capacities to the variant of post-Keynesianism presented here, I do not explicitly deny that other variants have them too; however, these other variants are less aware of their ontological underpinnings.

[12] See Keynes's contribution to the *Festschrift für Arthur Spiethoff,* "A Monetary Theory of Production"; Keynes (1933a).

[13] Attempts to refute Say's/Walras's law have long been associated with theorists intent on a radical (revolutionary) transformation of economic doctrine, e.g. Thomas Robert Malthus, Karl Marx and John Maynard Keynes; cf. Hansmeyer (1975: 490); Shoul (1957); Foley (1985); Clower (1965). Palley (1998) shows the central role that Walras's law plays in the exchange theory

Keynesian paradigm described by Davidson: the aim is to analyse an open (and thus emergent) economic system that does not merely progress unidirectionally through historical time, but whose utilisation and management of resources is dependent on demand decisions by boundedly rational economic actors in fundamentally uncertain environments (*non-ergodic axiom – A3; uncertainty postulate – CP6*). The core of the post-Keynesian paradigm thus concerns not, as in the neoclassical paradigm, the allocative *control of resources* by rational actors in risky but predictable situations, but rather the macroeconomic determination of factor input (especially employment) and output on the basis of relations of obligation denominated in monetary units (*management of resources*).[14]

Table 2: comparison of the post-Keynesian and neoclassical paradigms

Paradigm	Variant	Epistemological dimension (core axioms)	Methodological dimension	Ontological dimension
Post-Keynesianism	Monetary production economics	• Non-ergodic • Non-substitution-ality • Non-neutral money	• Fallibilistic positivism • Critical realism • Bounded rationality (holism)	• Economics of obligation • Open system • Rejection of Say's/Walras's law
Neoclassical economics (DSGE)	Standard and new Keynesianism; new classical macroeconomics	• Ergodic • Gross substitution • Neutral money	• Fallibilistic positivism • Methodological individualism	• Exchange economics • Closed system • Acceptance of Say's/Walras's law

In an economy of obligation, money plays a different role than in an exchange economy:[15] it serves primarily as a means of payment ("medium of deferred payments") rather than exchange. It is thus the most liquid asset in the economy, and in a fundamentally uncertain environment has a liquidity premium bestowed upon it. The asset owner is paid for temporarily giving up the asset (in the form of a loan); interest, as a pecuniary expression of the liquidity premium, is thus the price for giving up liquidity, not the price for waiting (i.e. for saving a portion of income and refraining from spending it), and is primarily a reflection of valuation uncertainties rather than, say, time preferences. For an asset to be able to play the function of money in a monetary production economy, it must possess certain properties, or is distinguished as a monetary good by certain properties: it must have *near-zero production/employment elasticity* and *near-zero substitution elasticity (non- substitutability axiom – A2)*. Money is thus naturally scarce; diverting demand to money instead of other consumer or investment goods does not create

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paragm, while Heise (2017) describes how Walras's law could be refuted within the post-Keynesian paradigm.

[14] For an analysis of differences between control and management of resources (*Ressourcenbeherrschung* vs *Ressourcenbewirtschaft*), see for instance Stadermann and Steiger (2001a: 21ff.)

[15] For a detailed account, see Heise (1991); Stadermann and Steiger (2001b).

employment, and an increase in the price of money (i.e. interest rate) does not result in substitution of money by other goods but is an expression of the specific demand for money.

Asset owners' unwillingness to part with money, which is expressed as a liquidity premium and in combination with the monetary policy of the central bank determines the endogenous money supply (and not, as in standard Keynesianism, money demand given a certain quantity of money;[16] *endogenous money supply postulate – CP4*), sets the limit to capital accumulation and thus the income formation process, thereby determining the management of resources (in particular of labour supply, which can be taken to be more or less fixed in the short term). Changes in unwillingness to part with money, i.e. changes in liquidity preference, have an effect on macroeconomic variables such as national income and employment level (*non-neutral money axiom – A1*). Of course, the thus-determined interest rate can reach a level sufficient to explain an accumulation rate (investment goods demand) and, using a multiplier analysis, an aggregate income level at which there is full employment, i.e. all those seeking work are employed at the endogenously determined real wage level (*principle of effective demand – CP2, KP2*). But this full employment equilibrium would not be more probable (and, at least in a mature economy with high capital stock, numerous saturation tendencies on consumer goods markets and other valuation uncertainties, probably far more improbable) than the many equilibriums on the commodity and money markets compatible with involuntary unemployment.[17]

However, even more critical than the proof of a temporary underemployment equilibrium – which by itself would refute Say's/Walras's law (cf. Heise 2017) – would be showing that there is no adjustment mechanism (the most commonly discussed example being to cut wages) that would automatically restore an underemployment equilibrium to a long-term full employment equilibrium (see e.g. Heise 1996: 130ff.; Davidson 1994: 175ff.; *impossibility of self-regulation postulate – CP3, KP1*). This is not due to (wage) rigidities, as argued on various grounds by standard and new Keynesianism (see Heise 1996: 57ff.), but to the fact that real wages are determined endogenously and simultaneously with the employment level, and consequently are resultants rather than determinants of the system.[18]

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[16] Keynes contributed to this confusion himself in the *General Theory* by assuming (in line with the tradition of the Cambridge cash-balance theory) a given money supply fully controlled by the central bank. Only in a few sparse remarks ("If the quantity of money is itself a function of the wage- and price-level …" Keynes 1936: 266) and in later works (Keynes 1937a; Keynes 1937b) did he move away from this assumption. It was left to post-Keynesianism to make endogenous money a central tenet of its theory (see e.g. Moore 1988; Wray 1990).

[17] On the definition of "involuntary employment", see Keynes (1936: 15).

[18] Observant readers will have noted that all the post-Keynesian axioms and postulates mentioned in section 2 are included in the monetary theory of production or could be derived from it, with the exception of the *distribution postulate – CP1* and the *stabilisation policies postulate – KP3*. We

4. A formal model of a monetary production economy

This section elaborates on the ideas presented in the previous section using a simple post-Keynesian static one-period model[19] based on Setterfield (2006), Heise (2008) and Pusch and Heise (2010). It comprises ten structural, behavioural and definitional equations. The structural equations represent the post-Keynesian core of the model, while the behavioural equations are based on empirically grounded descriptions of behaviour of macroeconomic actors such as the central bank, which may be subject to changes and, in any case, does not reflect the paradigmatic core.

We start with the demand equation:

$$D_t = \alpha(\bar{w}, I_t, \overline{m}, \overline{G}, L_t) \tag{1}$$

where D is the value of aggregate demand, which depends on (given) nominal wages $\bar{w}$, nominal (private) investment outlays I, the (given) investment multiplier $\overline{m}$, (given) governmental spending $\overline{G}$ and labour employed L.

The supply relation is:

$$Z_t = \beta(\bar{w}, \overline{T}, L_t). \tag{2}$$

Z is the value of aggregate supply and $\overline{T}$ denotes (given) technology.

The next equation is an equilibrium condition:

$$D_t \equiv Z_t. \tag{3}$$

The price level p depends on the nominal (given) wage rate $\bar{w}$, (given) technology and a (given) mark-up $\bar{\pi}$:

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will look at the latter in detail shortly, but the former does in fact play a fairly minor role in the monetary theory of production, by contrast with Kaleckian variants of post-Keynesianism. However, the distribution conflict can be straightforwardly modelled in this theory too if the determination of the nominal wage rate is endogenised; see e.g. Heise (2001: 62ff.); Heise (2008: 35ff.).

[19] It thus initially brackets off the dynamism that plagues our modern economies in the form of economic or financial crises and secular stagnation. This is intentional; my aim is to contrast the static Walrasian exchange model and equilibrium analysis with an alternative model whose "normal state" goes beyond Pareto optimality. Needless to say, this simple basic model would need to be expanded to take account of cyclical aspects, systematic instabilities, etc. A number of attempts to do so have been made on the basis of the work of Michał Kalecki, Roy Harrod and Hyman P. Minsky.

$$p_t = \gamma(\bar{w}, \bar{T}, \bar{\pi}).$$
(4)

The model also includes a relation for the output gap:

$$Y_t^{gap} = Y_t - Y_{Trend},$$
(5)

where Y is real income and Y_{Trend} is (given) trend income.

$$Y_t = \theta(\bar{K}, L_t, \bar{T})$$
(6)

Real income depends on production factors and (given) technology. L is the level of employment determined by equation (3), K is the (given) stock of real capital.

The next equation describes nominal (private) investment outlays,

$$I_t = \lambda(i_t, \bar{E})$$
(7)

which depend on a (given) schedule of expected profit rates $\bar{E}$ and the long-term interest rate i. The latter is determined as follows:

$$i_t = \mu(i_t^{CB}, \bar{L}P).$$
(8)

Here the central bank's instrumental variable i_t^{CB} comes in as well as the (given) schedule of liquidity preferences $\bar{L}P$.

Lastly, we give a behavioural equation for the central bank's (CB's) interest rate,

$$i_t^{CB} = \phi(p_t^{gap}, Y_t^{gap})$$
(9)

which depends on the price gap p^{gap} and the output gap. The price gap is defined by

$$p_t^{gap} = p_t - p^*,$$
(10)

where p stands for the actual price level and p^* is the (given) targeted price level.[20]

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[20] Typically, equations (4) and (10) are expressed as rates of change (specifically, inflation rates and rates of change in nominal wages). For the sake of simplicity, static price and wage levels are used here.

The model comprises an aggregate demand–aggregate supply section (equations 1–3) determining the equilibrium employment level, an ordinary production function (equation 6),[21] mark-up pricing (equation 4) and a (Taylor-rule) monetary reaction function (equations 9–10 and 5), which in combination with a Keynesian investment function (equation 7) represents the money and credit markets (or, together, the assets market; cf. Heine and Herr 1999: 331) and endogenously (and here only implicitly) determines the quantity of money.[22]

The model is distinctly post-Keynesian in nature, as activity and employment levels depend on the propensity to consume, the incentive to invest, the nature of long-term expectations and liquidity preference considerations (see Keynes 1936: 250), money is endogenously created and nominal investment outlays ("finance" in Keynesian terminology) generate the nominal obligations on which a monetary production economy is based.

As the model comprises ten unknowns and ten equations, it is strictly solvable. However, we need to realise that equilibrium employment L_t, determined in the aggregate demand–aggregate supply section, merely explains the aggregate employment demand by firms given their demand expectations are met.[23] In order to understand whether such equilibrium employment demand matches the supply of labour provided by households, we either have to assume a given amount of labour brought forward at the given nominal wage rate (irrespective of the endogenously determined real wage rate) or, as will be done here, assume a behavioural function of labour supply L_S dependent on the (given) nominal wage rate and an expected price level p_e (thus making reference to the real wage rate):

$$L_S = \lambda(p_e, \overline{w})$$

(11)

In order to satisfy the conditions of expectational equilibrium and the conditions of Walras's law, we need to extend the model by two more equations:

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[21]This assumption is criticised by post-Keynesians of a Sraffian ilk. However, they do accept the first basic postulate in Keynes's *General Theory* (Keynes 1936: 5ff.). Moreover, Sraffa's critique should be understood not as a wholesale rejection of a "well-behaved" production function, but as a theoretical proof that the specific properties of a "well-behaved" aggregate production function (i.e. continuously falling marginal productivities of production factors) are not necessarily valid in all conceivable cases. The empirical relevance of this theoretical possibility is, however, still disputed; see for example Hamermesh (1986) and Felipe and McCombie (2005). We should not overlook here that many post-Keynesians, and not just the Sraffians, have "felt uncomfortable" (Lavoie 2014: 45) with this "Marshallian" aspect of monetary production theory, despite being unable to present a constructive alternative.

[22] On the determination of money supply based on wealth owners' credit supply calculations and investors' credit demand calculations, see Heise (1992); Heise (2006: 340ff.).

[23] Equilibrium should thus be understood here as expectation equilibrium, which like an equilibrium of supply and demand satisfies the equilibrium conditions formulated by Dixon (1990).

$$p_e = p_t \qquad\qquad (12)$$

and

$$L_S = L_t \qquad\qquad (13)$$

Now, our model consists of 12 unknowns and 13 equations, and is, hence, overdetermined. However, that means – assuming expectational equilibrium (i.e. the fulfilment of equations (7) and (12) as a stability criterion) – that Walras's law (equation (13)) cannot hold in an economy as represented by the above-described model.[24]

This simple model exhibits all the properties that a post-Keynesian model should possess: activity and employment levels are determined based on the principle of effective demand, which draws a connection between aggregate demand and aggregate supply; the two intersect at the "point of effective demand", but can otherwise come apart (contra Say's law). Expectations play a key role, though they cannot be formed "rationally" as per the rational expectations hypothesis since the required ergodicity cannot be assumed. The expectation equilibrium in the event of underemployment represents a stable situation in which unemployment can be taken to be involuntary. Liquidity preference, i.e. the (un)willingness to temporarily divest oneself of the most liquid asset in the economy, has a long-term impact on the real economy. And, finally, macroeconomic policy can likewise, subject to conditions such as *ceteris paribus* clauses, have a long-term impact on resource management in a monetary economy, but due to the fundamental uncertainty in an open system such state interventions can never have the hydraulic character of economic policy in, e.g. IS-LM Keynesianism.

Finally, let us briefly consider the question of whether the standard adjustment mechanism for tackling unemployment would work in this model: namely, cutting wages. In the neoclassical competition model, this always involves reducing real wages to their equilibrium level, since real factor income is causally related to factor input and labour market actors can also exert control on real factor income by setting nominal wages, because the price level (at equilibrium) is determined by the money supply controlled by the central bank. Institutional conditions (such as reservation wages determined by the social system or statutory minimum wages) and microeconomically justifiable but non-market-conforming behaviours (such as wage-setting in a union monopoly or firm monopsony model, or efficiency wages due to incomplete wage contracts) can explain long-term deviation from

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[24] It should be clear that equation (13) can be satisfied by chance if firms' profit expectations and employees' price expectations happen to be such that the expectation equilibrium L_t and labour supply L_s come out as identical. However, this identity would not be a necessary condition of our model.

market clearing (i.e. unemployment) if nominal and real wage rigidities are described as market errors.

In the theory of monetary production set out here, by contrast, the real wage rate cannot be set or negotiated by the labour market actors as a policy variable, but emerges endogenously after the nominal wage rate and levels of activity and employment have been determined by effective demand. Thus, there is a question of whether there is a causal link between the nominal wage rate, activity and employment levels and, consequently, the real wage rate. Keynes addresses this question in chapter 19 of the *General Theory*:

> whilst no one would wish to deny the proposition that a reduction in money-wages *accompanied by the same aggregate effective demand as before* will be associated with an increase in employment, the precise question at issue is whether the reduction in money-wages will or will not be accompanied by the same aggregate effective demand as before measured in money, or, at any rate, by an aggregate effective demand which is not reduced in full proportion to the reduction in money-wages (…) (Keynes 1936: 259–260, italics in original).

Following a thorough analysis, he concludes,

> It follows, therefore, that if labour were to respond to conditions of gradually diminishing employment by offering its services at a gradually diminishing money-wage, this would not, as a rule, have the effect of reducing real wages and might even have the effect of increasing them, through its adverse influence on the volume of output. (…) To suppose that a flexible wage policy is a right and proper adjunct of a system which on the whole is one of *laissez-faire*, is the opposite of the truth (Keynes 1936: 269; italics in original).

This is a central result for Keynes and post-Keynesianism, and can be understood in the above-described model if we recognise that the nominal wage rate w is a location parameter of both the aggregate demand and aggregate supply functions (equations 1 and 2), so that, *ceteris paribus*, these functions will shift in proportion to each other. Consequently, employment level L will initially remain unchanged while there will be a reduction in realised proceeds (pY). Since the nominal wage rate w also co-determines price level p (equation 4), the result thus implies that real income Y and the employment level L will remain unchanged while the price level p will fall – in turn implying that the real wage rate w/p will be constant. Only if the *ceteris paribus* assumption is abandoned can this result be revised, but to do so it must be shown why a fall in nominal wage and price levels would lead to an increase in propensity to consume or invest, a fall in liquidity preference, an improvement in expected profits or a change in technical choice

aimed at increasing labour intensity. Although none of these developments can be ruled out in principle in an open, non-deterministic system (and Keynes discusses all cases in detail in chapter 19 of the *General Theory*), the diametrically opposed developments are also possible and, from a psychological perspective, perhaps even more likely.

The only systematic influence that Keynes apparently neglected (see Presley 1986) is the Pigou or real balance effect. Where money supply is constant but the price level falls, real balances will rise, which in turn will result in an increase in consumption demand or a fall in the interest rate due to restructuring of the desired portfolio of money, consumer goods or bonds, and consequently in rising investment demand. This would explain why effective demand and thus activity and employment levels would rise. In the *General Theory*, Keynes assumes a given money supply controlled by the central bank and indirectly conceded the real balance effect, and his rejection of the positive employment effect seems weak and unconvincing: "Just as a moderate increase in the quantity of money may exert an inadequate influence over the long-term rate of interest, whilst an immoderate increase may offset its other advantages by its disturbing effect on confidence; so a moderate reduction in money-wages may prove inadequate, whilst an immoderate reduction might shatter confidence even if it were practicable" (Keynes 1936: 266–267). However, he did clearly state the assumption on which the positive real balance effect, which would undermine his rejection of the thesis that a monetary economy can self-regulate,[25] is based: it must be possible for the money supply to be controlled and kept constant by the central bank. However, post-Keynesianism denies that central banks have this power. The nominal money supply is endogenously determined through the interactions between wealth owners and the central bank. If nominal wages and the price level fall, so too – *ceteris paribus* – will the nominal money supply, thus keeping the real money supply constant. The central bank reaction formulated in equation 9 serves merely to keep the real interest rate constant. Due to the negative distribution effects of deflation[26] on the debtor–creditor relationships underpinning a monetary production economy, falls in real wages (at least if they are substantial) are actually more likely to have negative effects on real money supply (negative real balance or Pigou effect). Post-Keynesianism has thus elaborated on an idea that Keynes himself at least toyed with:

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[25] An "underemployment equilibrium" would still be demonstrated, but this would not amount to a stable description of a state.

[26] In the event of (unexpected) inflation, the real burden of a nominal debt is reduced: the debtor profits at the detriment of the creditor. In the event of (unexpected) deflation, the real burden of a nominal debt is increased: the creditor profits at the detriment of the debtor. However, if the debtor can no longer manage the increased debt burden, this is detrimental not just to the debtor but also the creditor whose outstanding asset position cannot be repaid.

There is, therefore, no ground for the belief that a flexible wage policy
is capable of maintaining a state of continuous full employment; …
The economic system cannot be made self-adjusting along these lines.
(Keynes 1936: 267).

5. The post-Keynesian theory of market participation as an alternative theory of economic policy

Welfare economics, which is based on neoclassical (exchange theoretic) assumptions, proves that the effect of economic interactions on "perfect markets" is always Pareto-optimal; economic policy interventions cannot be formulated under these conditions. Or to put it another way: the basis for economic policy interventions by an external actor, the state, must always be sought in imperfect real markets. "Market errors" and "market failures" occur only if the (heroic) assumptions about information availability and processing, substitutability, mobility and competition required for "perfect markets" are not satisfied or, as in the case of purely public goods, no markets form in the first place. On this conception, the state as the agent of economic policy becomes a *repair company*, responsible for ensuring that the real markets approximate the vision of the "perfect market" as closely as possible through its structural regulatory function. There is thus a primacy of allocation-focused, structural policy (*Ordnungspolitik*), with quantitative interventions (*Prozesspolitik*) at best providing supplementary stabilisation measures and (purely) public goods; given information deficits and time lags in coordinating economic policy, these stabilisation measures at least are always viewed with great scepticism (Donges and Freytag 2001: 225ff.).

Unsurprisingly, economic policy not only has a different status in post-Keynesianism but requires a different theoretical foundation (cf. Heise 2009): the neoclassical theory of market failure which underpins welfare economics assumes *control* of resources as its frame of reference, while the post-Keynesian theory of monetary production centres on the *management* of resources and, given the normality of the underemployment equilibrium, does not need to assume a market failure that stands in need of correction;[27] instead, it casts the state actor as a market participant that seeks to influence the market in a predetermined manner through *Ordnungspolitik* and *Prozesspolitik*-based measures (see Riese 1998), with goals that come not out of the markets' functional logic, but out of democratic deliberation.

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[27]Since post-Keynesianism also assumes market-mediated economic activities, the market errors described by neoclassical theories can trigger distribution, stability and allocation problems at any time. The post-Keynesian theory of market participation, however, describes a problem prior to these that escapes the attention of the neoclassical theories: namely, state activity that goes beyond restoring markets' functionality.

If economies are understood as open, non-deterministic systems, individual market participants – even quantitatively significant ones like the state – cannot pursue macroeconomic market outcomes within the framework of a teleological means–ends approach. This is because market actors are unable to clearly discriminate between desired and undesired effects of their behaviour on prices and quantities, but must ultimately accept them as market outcomes. This aporia is a necessary result of the interdependency of the actors' actions and the strategic uncertainties this entails.[28]

Economic policy can thus only pursue goals such as full employment and price stability if it is able, based on the motivations of private market participants (which we shall assume are to maximise utility and profit), to generate a market constellation that is in conformity with these goals. Market constellations are to be understood here as configurations of formal and informal institutions (such as central bank constitutions, collective agreement systems, etc.), historical market conditions (such as market saturation tendencies or multilateral agreements not controllable by national actors, e.g. currency systems) and other economic and political factors (such as collective moods or social memories) with a certain durability. Post-Keynesian economic policy based on the theory of market participation is thus a departure from both the *teleology of traditional demand-side discretionary policy* and the *nomocracy of traditional supply-side ordoliberal policy*; instead, it establishes a *restrictive policy control*[29] whereby *Prozess-* and *Ordnungspolitik*-based interventions are used to bring private and public market actors, within the framework of a market constellation conducive to the goals, to generate the desired macroeconomic output.[30]

In the theory of market participation, one key factor for economic policy is institutions that reduce market actors' uncertainty, thus making it easier to anticipate their actions. These institutions could be systems of fixed exchange rates and collective agreements that reduce valuation volatilities, but what is needed above all are institutions that promote cooperation in order to resolve barriers resulting from action interdependencies. For instance, a finance policy geared towards expansive intervention could be blocked by a restrictive monetary policy if the central bank

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[28] Game theory has identified various cooperative and uncooperative strategies and leadership models; see for instance Pusch (2009). In chapter 21 of the *General Theory*, Keynes shows by reference to monetary policy and using an elasticity analysis the many price and quantity effects that increasing effective demand can have.

[29] See on this topic Heise (2006: 343ff.)

[30] For specific applications of the concepts of market constellations and policy regimes, see for instance Heise (2011) and Herr and Kazandziska (2011). Post-Keynesian research into market constellations can be seen as the macroeconomic supplement to new Keynesian research into "varieties of capitalism" (see for instance Hall and Soskice 2001; Hancké, Rhodes and Thatcher 2007) that some scholars have called for in recent years (see Baccaro and Pontusson 2016).

expects the finance policy to have inflationary side effects.[31] There are many examples of such institutions within the economic institutional framework; for instance, the "concerted action" of the German Stability and Growth Act and the first Schröder government's "Alliance for Jobs" in Germany, the Social and Economic Council in the Netherlands, the Advisory Council for Economic and Social Affairs in Austria or the Macro-Economic Dialogue in the Eurozone. There has been little research into their functioning and effectiveness at producing welfare-promoting market constellations. Those studies that have been conducted (e.g. Heise 2001; Heise 2002; Engels 2016) frequently note the inadequate institutionalisation of cooperation, which may be attributable to an inadequate theoretical foundation or dwindling political support.

The post-Keynesian economic policy of market participation should thus be understood as cooperative or integrative in character, combining traditional Keynesian *Prozesspolitik* (i.e. expansive fiscal and monetary policy) with an *Ordnungspolitik* that, by means of institutionalisation, enables coordination between macroeconomic policy agents with the goal of creating market constellations that promote welfare.

6. Conclusion

There is no denying that economics finds itself in difficult waters after the recent global financial crisis. This can be seen both in the criticisms being heaped on the discipline from all sides and in the many initiatives calling for or (purportedly) initiating a transformation of economics under the banner of New Economic Thinking. The numerous attempts that have been made to defend the "old orthodoxy" also point in this direction. Whether those who wish to transform economics seek to establish a new mainstream or merely a paradigmatic pluralisation (see Heise 2018), they almost always name post-Keynesianism as a possible candidate to replace or at least supplement the neoclassical DSGE models.

I have attempted to show that post-Keynesianism broadly understood does indeed conceive of itself as an alternative to neoclassical economics in all its diverse variations. And (at least for the variant analysed here in depth, namely monetary production economics) I have developed a sufficiently detailed account of the ontological and axiomatic structure of post-Keynesianism to be able to reconstruct its characteristic postulates and rebut the common claim that it lacks theoretical coherence (see e.g. Felderer and Homburg 2005: 101).

The increasing marginalisation of post-Keynesianism has certainly contributed to the lack of theoretical work on its foundations (for instance, despite the crucial

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[31] Fritz W. Scharpf saw this as the strategic dilemma for social democratic economic policy; see Scharpf (1987).

importance of expectations given the fact of fundamental uncertainty, there is still no post-Keynesian theory of expectation formation to rival the monetarists' rational expectations hypothesis) and the lack of attention paid to expanding monetary production economics to include the monetary theory of financial capitalism that is needed given the increasing importance of financial markets.[32] All this would be achievable and expectable, and of inestimable scholarly (and probably also social) utility, if the "market for social economic ideas" were even remotely fit for purpose (see Heise 2016).

Finally, despite downright discouraging past results such as the failure to integrate post-Keynesian monetary employment theory and Sraffian real value and distribution theory (see e.g. Spahn 1986: 136ff.; Mongiovi 2012) further attempts should be made to promote cross-fertilisation of different paradigms such as post-Keynesianism and complexity economics or institutionalism and behavioural economics (see e.g. Rosser 2006; Jefferson and King 2010; Davidson 2010; Olesen 2013).

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[32] Although post-Keynesian authors do discuss the growth of financial markets and the increasing importance of financial investment for non-financial firms under the heading of "financialisation" (see e.g. van Treeck 2012; Michell and Toporowski 2013), previous studies have primarily concentrated on empirically documenting the phenomenon and its effects on distribution; serious attempts to integrate these issues into post-Keynesian models are only just getting underway.

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