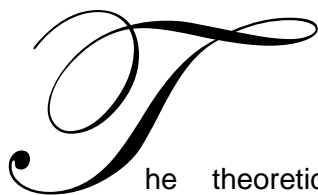


# Disequilibrium foundations of disequilibrium economics

Money, uncertainty and viability

Rémi Stellan<sup>ψ</sup>

*Equilibrium (...) became the central organizing category around which economic theory was to be constructed. It is no accident that the formal introduction of the concept into economics is associated with those very writers whose names are closely connected with the foundation of "economic science" (Milgate, 1988, p. 180)*



The theoretical frameworks elaborated by post-Keynesian economics (PK) and the monetary circuit approach (MCA) aim to be an alternative to mainstream economics. Notably, money is seen as the very first concept, but not as a mere technical device that facilitates exchanges. Similarly, particular attention is paid to (non-ergodic) uncertainty, whereas the future is no longer described by means of a set of mutually exclusive states with associated probabilities. We can also mention the principle of effective demand for the determination of long-run growth, whereas mainstream economics bring to the fore preferences, endowments and technology (Deleplace & Nell, 1996).

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Now, there remains a puzzling case, namely, *equilibrium*. PK and MCA often define equilibrium in the same way as mainstream economics, namely, *the equality between supply and demand on any market*. For instance, within the “benchmark” of stock-flow consistent models elaborated by Dos Santos & Zezza (2007), there is a “short period” equality between supply and demand on a goods market, as well as on a financial market. Likewise, Lavoie & Godley (2001-02) refer to both equalities<sup>1</sup>. The same also applies to Bossone (2003), when the latter suggests an “illustrative model” of the MCA. In the same vein, the equality between supply and demand is introduced by Dutt when the latter deals with the relations between technological change and growth (2005), and between income distribution, consumer debt and growth (2006). The increasing ability of shareholders to influence management decisions and its effect on investment and profit are studied by Stockhammer (2005-6) with a model which also makes the above equality enter the picture. Similarly, we can mention Hein, when the latter deals with the integration of interest payments and debt into a Kaleckian distribution and growth model (2006), or with the macroeconomic effects of the increasing role of financial markets with respect to the working of the economy (2009). This last investigation is also undertaken by Skott & Ryoo (2008), and, again, the equality between supply and demand enters the picture. Finally, the same also applies to Godley & Lavoie (2007), wherein this equality is, at least, achieved in the long run.

Accordingly, there are differences with respect to the process that leads to equilibrium: mainstream economics brings to the fore price variations, whereas PK and MCA rather put the emphasis on quantity adjustments<sup>2</sup> (*ibid.*). Similarly, supply and demand are elaborated according to different concepts. For instance, mainstream economics conceives supply as determined by the maximization of profit in accordance with endowments and technology, whereas PK and MCA see sales expectations as a crucial factor (Barrère, 1990). Nevertheless, whatever these differences, *equilibrium itself remains defined by PK and MCA as the equality between supply and demand, like mainstream economics*.

We should wonder if this is logically consistent with the fact that the theoretical frameworks elaborated by PK and MCA are *not* the same as mainstream economics. In other words, given the specific features of PK and MCA – money as the very first concept, uncertainty, and so on – one should wonder if they have their own definition to give to equilibrium.

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<sup>1</sup> Actually, Dos Santos & Zezza (2007) explicitly mention their reliance upon the work of Godley & Lavoie (2001-02).

<sup>2</sup> Notwithstanding, as put by Godley & Lavoie: “we believe that such a market clearing mechanism, based on price variations, is only appropriate in the case of financial markets. In the case of goods and services markets, and in the case of the so-called labour market, we believe that the hypothesis of market-clearing equilibrium prices is only counterfactual, inappropriate and misleading” (2007, p. 64).

*The first task of this is paper aims at providing an answer to this question. To this purpose, we bring to the fore a threefold argument:*

1. There is a definition of equilibrium that stems from the very definitional property of any market economy – the *decentralization* of decisions, as explained below – so that this definition is at the most fundamental level. Now, this definition does not refer to the equality between supply and demand. Before everything, equilibrium refers to the situation according to which *agents make decisions that are mutually compatible*.
2. Each theoretical framework suggests a “specific” interpretation of this “general” definition of equilibrium, in accordance with its constituting theoretical principles. Now, the equality between supply and demand is the specific interpretation by mainstream economics. This stems from the very starting point of mainstream economics, namely, *goods*.
3. On the contrary, the specific starting point of PK and MCA is *money*, and this leads to another interpretation of the equilibrium concept. Within PK and MCA, equilibrium refers to *the fulfilment of firms’ expectations with respect to monetary circulation*.

Notwithstanding, money as the very first concept is not the sole specific feature of PK and MCA. Therefore, *the second task of this paper it to put into relation the new definition of equilibrium with uncertainty*. Now, this leads to two far-reaching results:

4. Disequilibrium is the normal state of the economy, rather than equilibrium. In other words, because of uncertainty, firms’ expectations are never fulfilled, even in the long run. This is the reason why PK and MCA can be seen as *disequilibrium economics*.
5. Each disequilibrium is not necessarily compatible with economic stability. As a result, the crucial question is to find which disequilibrium configurations are not harmful to economic stability. “Viability” is the concept used to refer to economic stability along with disequilibrium (rather than with equilibrium).

To sum up, PK and MCA can be seen as disequilibrium economics, while viability invites to find the foundations of economic stability with respect to disequilibrium. Definitely, this is why we talk about the *disequilibrium foundations* of disequilibrium economics, given money, uncertainty, and viability.

The rest of the paper is organized as follows. Each of the first three sections deal with each of the three first points mentioned above. Then, the fourth section addresses the last two points. Finally, the fifth section concludes.

## **1. Equilibrium as a concept prior to any theoretical framework, referring to the mutual compatibility of decentralized decisions**

There is a definition of equilibrium that stems from the very definitional property of any market economy – which is introduced below – so that this definition is at the most fundamental level. Now, this definition does not refer to the equality between supply and demand. Before everything, equilibrium refers to the situation according to which *agents make decisions that are mutually compatible*. This section is devoted to explain this point. Then, the next section will show that the equality between supply and demand must be seen as the interpretation of the equilibrium concept by the specific theoretical framework of mainstream economics; thus, PK and MCA should not use the same interpretation. In other words, equilibrium is a “general” concept that is not specific to any theoretical framework, while the latter associates to this general concept a “specific” one, in accordance with its own constituting theoretical principles.

To this purpose, let us first recall the definitional property of a *market* economy, namely, the *decentralization* of (economic) decisions. This means that agents make their decisions separately, without prior coordination (De Vroey, 1987). Contrary to “primitive” and feudal economies, neither the state, nor religions nor customs/traditions are able to control (economic) decisions, whereas these factors used to introduce some coordination between decisions *before* the latter are made (Polanyi *et al.*, 1957; see also Marx, 1967-8 [1857-8]), As Hahn puts it, “in decentralized economies, a huge number of individuals make economic decisions which, in the light of the market and other sources of information, are seen as the most advantageous. They are not guided by the social good, nor is there an overall plan in the unfolding of which they have pre-assigned roles” (1984 [1981], p. 209).

Now, if decisions are decentralized, then agents do not know what the others’ decisions are when they make their own decisions. Consequently, nothing ensures that every decision will be compatible with each other, so that the working of the market economy may be impaired, not to say chaotic. However, this is not necessarily the case. As a matter of fact, a market economy is not permanently in crisis, so that decisions can be, at least partially, mutually compatible (De Vroey, 1987). Still according to Hahn, “millions of self-interest individuals (...) pursuing their own goals that the state cannot control, at least for the most part, this seems to be for the ‘common sense’ the best way to anarchy” (1984 [1981], p. 209; see also Arrow & Hahn, 1971, p. vii). We can also refer to Debreu: “Adam Smith had asked in *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776) why a large number of agents motivated by self-interest and making independent decisions do not create social chaos in a private ownership economy” (1988, p. 216).

Therefore, among the theoretical principles that underlie the understanding of the market economy, one of them must bring to the fore some process that makes decentralized decisions mutually compatible; and, according to Adam Smith, the “invisible hand” consists in such a process: decisions are well and truly mutually compatible, provided agents make their (decentralized) decisions in strict accordance with their self-interests. Now, *equilibrium is the name given to the situation according to which decentralized decisions are mutually compatible*. Since, at least, James Steuart, equilibrium is the formal expression of the idea according to which some process, more or less regular in their operation in different places and at different times, lead decentralized decisions to be, finally, mutually compatible (Milgate, 1988). Whether this mutual compatibility is assumed to be a long-run position or not, whether the process at issue makes some “natural laws” enter the picture or not, is of secondary importance. It remains that *equilibrium is first defined in relation with the definitional property of market economies*, whereas *neither supply nor demand nor the equality between these two variables enter the very first meaning of equilibrium*. Also, let us remark that, if agents make decisions that are mutually compatible, then the former are not conducted to adjust the latter. Such an absence of adjustment leads to see equilibrium also as a situation without endogenous tendency to change, as if there is a “balance of forces” or a “peaceful coexistence” (Machlup, 1970; see also Cartelier, 1991).

Also, within each theoretical framework, the “general” definition of equilibrium is associated with a specific one, in accordance with such a framework and its constituting theoretical principles. Now, the equality between supply and demand is the definition that is specific to mainstream economics, and not to PK and MCA. Let us make this point clear in the next section.

## **2. The interpretation of equilibrium by mainstream economics: the equality between supply and demand**

As previously suggested, equilibrium refers to the situation according to which decentralized decisions are mutually compatible. This section explains that mainstream economics gives a specific definition of this concept, in accordance with its theoretical principles. The equality between supply and demand is nothing but this specific definition, and thus should not be used by PK and MCA.

To this purpose, let us first bring to the fore the starting point of mainstream economics, namely, *goods* (with services regarded as immaterial goods). As a matter of fact, *the main theoretical principles of mainstream economics are elaborated on the basis of goods*. Consumers maximize their utility stemming from the consumption of goods. Producers maximize their profit according to production functions whose parameters are goods, more precisely inputs. Even labour is a good, which is an input that enters the production functions. Any transaction consists in the exchange of one good for another. Although goods are

traded for money, the latter is also a good, which makes exchanges less cumbersome because of its “saleableness”, namely, “the degree to which a commodity is found by experience to command a sale, at a given market, at any time, at prices corresponding to the economic situation” (Menger, 2005 [1892], p. 10); and a dematerialized money is simply an evolution, for exchanges to be even less cumbersome, as argued by Smith in his chapter “Of the origin and use of money” (chapter 4, book 1, 1979 [1776]). Finally, it is no accident that the very first task of Debreu (1959) is to perform a systematic explanation of what goods are, each of them being “completely specified physically, temporally and spatially”<sup>3</sup> (*ibid.*, p. 32). Moreover, all his analysis is carried out by means of a  $l$ -dimensional vector space – this allows the use of the related mathematical tools – while  $l$  is a finite number of goods, and while the  $i$ -th component of any vector of this space ( $i$  running from 1 to  $l$ ) corresponds to the quantity of the  $i$ -th good (see also Debreu, 1988; Arrow & Hahn, 1971). Definitely, in the categories of Schumpeter, mainstream economics can be characterized as *real analysis*, which “proceeds from the principle that all the essential phenomena of economic life are capable of being described in terms of goods and services, of decisions about them, and relations between them”<sup>4</sup> (1983 [1954], p. 389).

As a result, goods determine the framework within which decisions are made. Given such a framework, what about the (decentralized) decisions of agents? This question must be asked, because equilibrium is concerned with decisions and their mutual compatibility, and because we are inquiring into the interpretation of equilibrium by mainstream economics, in accordance with its constituting theoretical principles.

If goods thus determine the framework within which decisions are made, then this logically implies that agents may decide to consume goods, to produce goods, and to exchange them, so that *any decision is about the supply of goods or the demand for them*. This is argued by Debreu himself: any decision is “a specification for each commodity of the quantity that [any agent] will make available or that he [or she] will be made available to him [or her]” (1959, p. 32). This is the reason why, for such decisions to be mutually compatible (that is to say, for equilibrium to be achieved), *supply and demand must be equal*. If the supply of a given good is superior to its demand, then suppliers provide more than what is needed for consumption; the subsequent unsold stocks lead to see

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<sup>3</sup> The date of delivery is indeed needed for goods to be defined, as “wheat available now and wheat available in a week play entirely different economic roles for a flour mill which is to use them”. The same also applies to the location in space, as “wheat available in Minneapolis and wheat available in Chicago play also entirely different economic roles for a flour mill which is to use them” (Debreu, 1959, p. 29).

<sup>4</sup> As a matter of fact, that goods are the starting point of mainstream economics can be seen as the legacy of Adam Smith. When the latter sought to find some natural laws underlying the wealth of nations – assuming that wealth is the aim toward which is oriented the economic activity – he conceives wealth as “real”, defined as “the annual produce of the land and labour of the society” (Smith, 1979 [1776], p. 4), that is, goods. The emerging political economy thus starts with goods, and the next classical and neo-classical economists will do the same (Benetti & Cartelier, 1995).

supply decisions as incompatible with demand decisions. Thus, there is not equilibrium. In the same vein, if supply is inferior to demand, then suppliers provide less than what is needed for consumption; the subsequent unsatisfied needs lead to see supply decisions as incompatible with demand decisions likewise. Again there is not equilibrium. Definitely, for the latter to occur, supply must be neither superior nor inferior to demand; in sum, supply and demand must be equal. Definitely, we can refer to Arrow & Hahn: “market equilibrium is concerned with the compatibility of the decisions of the different firms and households, and therefore we are interested in the difference between the demand for a good and its total supply”<sup>5</sup> (1971, p. 19).

As a result, the equality between supply and demand is well and truly an interpretation of the equilibrium concept that is specific to mainstream economics. Thus, PK and MCA should not use the same interpretation. Because they have specific features, then their interpretation of equilibrium should also be specific, notably because their starting point is not goods, but *money*. Within the framework of a monetary economy – and not a *monetized* economy by means of the most saleable good – we suggest to define equilibrium as *the fulfilment of firms’ expectations with respect to monetary circulation*. Let us make this point clear in the next section.

### **3. A suggested interpretation of equilibrium by post-Keynesians economics and the monetary circuit approach: the fulfilment of firms’ expectations with respect to monetary circulation**

Contrary to mainstream economics, the starting point of PK and MCA is not goods, but *money*. To the best of our knowledge, this dividing line – goods *versus* money – is the most fundamental one. In other words, PK and MCA deal with a *monetary* economy, but not with a “real” economy whose workings rely on goods. In the categories of Schumpeter, PK and MCA can be characterized as *monetary analysis*, which “spells denial of the proposition that (...) the element of money is of secondary importance in the explanation of the economic process of reality” (1983 [1954], p. 390). Or, as Davidson puts it, “money matters in the long and short run, i.e. money is not neutral, it affects real decision-making” (1996, p. 49). This does not imply that goods are excluded from PK and MCA. However, contrary to mainstream economics, it is impossible to mention goods apart from money, which thus remains the starting point of PK and MCA. As a result, money cannot be defined as a mere good among others, which just makes pre-existent exchanges less cumbersome. Actually, PK and MCA often deal with money in different ways (see Rochon, 2003). Notwithstanding, to our opinion, there seems to be some *minimal* properties that define money, namely, properties that can be

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<sup>5</sup> We can also refer to Debreu: “the consumption of each consumer must be possible for him, the production of each producer must be possible for him, and the state must be a market equilibrium” (1959, p. 76).

found – at least implicitly – in every theory of money suggested by PK or MCA, while other properties are added to these minimal ones and just make further developments. From this point of view, money is defined as both *unit of account* and *means of payment*, or, in the light of the *Treatise of Money* (Keynes, 1971 [1930]; see also Graziani, 1996), “money of account” and “money proper”:

1. As *unit of account* – euro, peso, dollar, and so on – money allows economic magnitudes – prices, wages, taxes, and so on – to be expressed. There are not “real” magnitudes expressed in terms of utility (stemming from goods) or labour (needed to produce goods), and upon which a unit of account just adds “nominal” ones. There are only *monetary* magnitudes (Parguez, 1996). Notably, there is no room for a *numéraire*, namely, “an ordinary commodity serving as a benchmark to measure prices” (Schmitt, 1996, p. 110).
2. Thereafter, as *means of payment*, money consists in *debts* owed by *banks* and transferred between agents in order to execute the transactions involved by monetary magnitudes<sup>6</sup>. If a price amounts to £x, then the involved sale (and reciprocally, the purchase) is executed by the transfer of a £x bank debt (or several bank debts that amount to £x together) from the purchaser to the seller. If a wage amounts to £y, then the involved use of labour is executed by the transfer of a £y bank debt from the related firm to the related household. If a tax amounts to £z, then the taxpayer must transfer a £z bank debt to the state; and so on. These transfers are called *payments*, and bank debts, as the means through which payments are performed, are definitely called *means of payment*<sup>7</sup> (Parguez & Seccareccia, 2000).

Definitely, money determines the framework within which decisions are made. Given such a framework, what about the (decentralized) decisions of agents? This question must be asked, because equilibrium is concerned with decisions and their mutual compatibility, and because we are inquiring into the interpretation of equilibrium by PK and MCA, given their specific theoretical principles.

Accordingly, a given household may decide to consume, so that it “demands” goods. In the same vein, a given firm may decide to invest, so that it “demands”

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<sup>6</sup> This implies that bank debts are used as means of payment only if firms and households do not ask for their settlement, which entails the endorsement of bank debts by the state. See Parguez and Seccareccia (2000). Also, means of payment can be coined metal, but there should not be any confusion with orthodox thought, as suggested by Cartelier (1996).

<sup>7</sup> Let us remark that, within a monetary economy, neither goods are transferred in return for other goods, nor some kind of commodity-money or fiat-money makes these transfers more convenient. Goods are only transferred in return for means of payment. Reciprocally, payments are not restricted to goods. Indeed, outside orthodox thought, labour is no longer conceived as a good. Rather, it is conceived as a social relation, between firms and households, the latter accepting the use of their physical/cognitive abilities by the former during the production process. Therefore, payments also occur with respect to the “wage relationship” (Taouil, 1997).

(capital) goods likewise. And the same firm “supplies” its output, made of consumption goods, intermediary goods or capital ones. Nonetheless, there should not be any confusion with mainstream economics. Indeed, within a monetary economy, any decision to consume, to invest, to produce, and so on, are made effective by a payment (with a prior measure in terms of a unit of account). Said differently, *any decision consists in a payment, whatever the motive that initiates such a payment: to consume, to invest, to produce, and so on*. This contrasts with mainstream economics, according to which decisions are made with respect to goods themselves, and not with respect to payments. As already mentioned, goods cannot be mentioned apart from money, which sets the framework within which the economy works.

Thus, there remains to understand how decisions relative to payments can be mutually compatible. To this purpose, we focus on a given firm, knowing that, in a Schumpeterian perspective, firms are the core of the economic activity (Schumpeter, 1991a [1946]; see also Graziani, 1990). The latter produces in order to earn an expected profit – given some constraints imposed by some “finance frontier” and some “expansion frontier” (see Lavoie, 1992). The fact profit is first expected is not an accident; at the very moment the firm decides to produce, it cannot know if its production will be sold, as decisions are *decentralized*. Now, to produce needs intermediary goods, as well as capital goods and labour. Within a monetary economy, this means that the firm decides to perform payments for production to be achieved, while it expects to sell this production at the occasion of payments decided by the other agents (households in the case of consumption goods, other firms in the case of intermediary and capital goods); and the difference between the payments the firm expects to benefit from – their expected sales – and those they perform – their expenditures – gives rise to their expected profit.

As a result, for decisions to be mutually compatible, then households and the other firms logically have to decide their payments in such a way that the given firm can earn the very profit it first expected. Said differently, decisions are mutually compatible thanks to an adjustment between the expected monetary flows and the effective ones (Barrère, 1990). This is the reason why *the mutual compatibility of economic decisions needs the fulfilment of firms’ expectations with respect to the circulation of means of payment between agents, or, more briefly, with respect to monetary circulation*<sup>8</sup>. Reciprocally, disequilibrium implies that such a fulfilment does not apply to every firm; some of them make mistaking expectations (still with respect to monetary circulation), as agents decide of their payments in another way than expected. Clearly, this definition of equilibrium – and reciprocally of disequilibrium – contrasts with mainstream economics: equilibrium is no longer defined by the equality between supply and demand.

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<sup>8</sup> Further, Keynes’ effective demand can be interpreted in this perspective. See Barrère (1990, chapter 6).

Admittedly, one could say that the fulfilment of firms' expectations with respect to monetary circulation implies that the firm sells its "supplied" output up to the level "demanded" by agents (Dutt, 1991-2). However, this is misleading, for at least one reason, as explained in the next paragraph.

Actually, this new definition of equilibrium, in accordance with the "essentiality" of money (Parguez, 1996), cannot be dissociated from the banking system, as the latter creates means of payment at the occasion of the credits granted to agents (first of all firms). As a result, the credit policy of banks is a decisive factor of equilibrium: whether banks are more or less willing to endorse firms' expectations when the former grant credits to the latter for production to be achieved (Parguez, 1985), then more or less means of payment will be in circulation, thus leading to influence equilibrium. Also, the credit policy of banks cannot be dissociated from the monetary policy of central banks; whether the latter is more or less accommodative, then more or less credits are granted by banks, so that more or less means of payment will be in circulation, thus leading to influence equilibrium likewise (Ülgen, 1995; Deleplace, 1996). Definitely, money is not neutral, and *using the equality between supply and demand leads to set aside all these monetary factors in relation with equilibrium*, which is logically inconsistent with a monetary economy.

Now, besides money as the starting point of PK and MCA, another feature deserves attention. Indeed, PK and MCA also focus on uncertainty. Taking the latter into account leads to two far-reaching results. First, we argue that uncertainty leads to see the (monetary) economy *always in disequilibrium*. In other words, the fulfilment of expectations with respect to monetary circulation can never be reached. Thereafter, we argue that each disequilibrium is not necessarily compatible with the stability of the economy system. Said differently, the working of the economy may be impeded as the result of some disequilibria. As a result, the crucial question is to find which disequilibrium configurations are not harmful to economic stability. "Viability" is the concept used to refer to economic stability along with disequilibrium (rather than with equilibrium). Let us make these two points – the persistence of disequilibrium and viability – clear in the next section.

#### **4. From uncertainty to disequilibrium and viability: the disequilibrium foundations of disequilibrium economics**

In the previous section, equilibrium has been defined as the fulfilment of firms' expectations with respect to monetary circulation, provided we deal with deal an economy whose workings rely on money. Now, such an essentiality of money is not the sole feature that PK and MCA bring to the fore. They also put the emphasis on *uncertainty*. Let us begin this section by a short presentation of this concept, in order to show that uncertainty leads to see the economy always in disequilibrium.

Uncertainty means that “we largely ignore the prospect of future changes about the actual character of which we know nothing” (Keynes, 1937, p. 214). Whereas mainstream economics used to describe the future by means of a finite number of mutually exclusive states with associated objective probabilities – or subjective perceptions of these probabilities – uncertainty entails that “there is no scientific basis on which to form any calculable probability whatever. *We simply do not know*” (*ibid.*, p. 214, emphasis added). Uncertainty can be seen as the refusal of the *ergodicity* hypothesis, namely, “to presume a universe of discoverable regularities which can be expected to continue into the future” (Davidson, 1991, p. 142). In other words, the economic process is not subject to some mechanistic determinism or to some immutable natural laws, but rather to an “evolutionary process” (Schumpeter, 1991b [1947]) or a “transformational growth”, as growth permanently alters consumption patterns, the organization of production, technology and even institutions (Nell, 1998). This is the reason why “no expenditure of current resources on analyzing past data or current market signals can provide reliable statistical or intuitive clues regarding future prospects”<sup>9</sup> (Davidson, 1991, p. 130).

Uncertainty thus leads to see disequilibrium as the normal state of the economy, rather than equilibrium: firms’ expectations are never fulfilled. From now on, let us make this point clear. To this purpose, let us first recall that decisions are decentralized. Thus, nothing ensures that agents will decide their payments in such a way that every firm will fulfil its expectations with respect to monetary circulation, thus leading to a *disequilibrium*. Thus, disequilibrium is seen as a necessary result, otherwise this would lead to deny decentralization though the latter is the definitional property of a market economy. In a nutshell, “because there is no prior coordination, failures are commonplace” (De Vroey, 1987, p. 788). It remains that, in accordance with the idea of “market forces”, the past experience of these failures is assumed to lead agents to adjust their decisions and/or to revise the level of their expected profit, so that firms’ expectations (with respect to monetary circulation) are finally fulfilled. As a result, adjustments no longer occur, so that, *from a disequilibrium situation, the economy might move to an equilibrium one*.

However, uncertainty implies that such a move to equilibrium is exceptional, not to say impossible. Indeed, if the economy is subject to permanent changes with respect to a “transformational growth”, then monetary circulation does not follow a uniform pattern through time. To the contrary, because of the evolutionary nature of the economic process, monetary circulation is permanently subject to “bifurcations” or “structural breaks”. Therefore, although firms can rely on their past experience of their involvement in monetary circulation, such a

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<sup>9</sup> At least, “for many routine decisions, assuming the uniformity and consistency of nature over time (that is, assuming ergodicity) may be a useful simplification for handling the problem at hand. For problems (...) where large unforeseeable changes over long periods of calendar time cannot be ruled out, the post-Keynesian uncertainty model is more applicable” (Davidson, 1991).

knowledge is of little help for fulfilling their expectations. As a final result, *from a disequilibrium situation, the economy necessarily moves to another disequilibrium situation, but not to an equilibrium one*. This is the reason why disequilibrium is the normal state of the economy, rather than equilibrium<sup>10</sup>. Disequilibrium cannot be seen as a transitory situation which is followed by an equilibrium. *PK and MCA can thus be seen as disequilibrium economics, but no longer as equilibrium economics. Any model built by PK/MCA and based on equilibrium is thus misleading, as the economy cannot be understood apart from a disequilibrium dynamics*<sup>11</sup>. As Deleplace & Nell put it, “neither equilibrium nor conventional stability concepts are very helpful understanding how the economy works” (1996, pp. 16-17; see also Nell, 1998).

Also, let us recall that monetary circulation is based upon the banking system: means of payment are created at the occasion of credits granted by banks. Now, the fact that a bank lends means of payment to a firm implies that the former endorses the validity of the expectations made by the latter (Parguez, 1985). If these expectations are not fulfilled, then the firm benefits from less payments than expected, and this disequilibrium may entail the inability of the firm to reimburse its loan. Thus, the bank is less willing to lend means of payment – the creditworthiness of the firm being eroded, unless the latter pledges more assets as collaterals. If this applies to a single firm, then the related disequilibrium does not necessarily undermine monetary circulation. However, this could be the case if this applies to a “large” number of firms, so that the economy is in crisis. As a final result, *there remains to understand which conditions allow disequilibrium to be compatible with economic stability*. “Viability” is the concept that can be used to refer to stability along with disequilibrium (see Cartelier, 1996, 1998), and *this field of research remains largely unexplored, as the disequilibrium dynamics of the economy remains largely unexplored likewise*.

Definitely, PK and MCA can be seen as disequilibrium economics, while viability invites to find the foundations of economic stability with respect to disequilibrium. This is the reason why we talk about *the disequilibrium foundations* of disequilibrium economics.

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<sup>10</sup> And, contrary to the *DIS* model of Godley & Lavoie (2007) – *DIS* for disequilibrium – the economy does not move toward a steady-state, wherein firms’ expectations are fulfilled, and thus does not move toward an equilibrium situation. Actually, for expectations to be unfulfilled, the latter have to be assumed as exogenous (at a constant level). However, this is logically inconsistent, as firms are assumed to adjust their expectations with respect to disequilibrium.

<sup>11</sup> Also, the fact that the expectations of any firm are unfulfilled will lead the latter to adjust its expectations and decisions. Thus, the disequilibrium of any period may influence the disequilibrium of the next period, so that disequilibrium dynamics is perfectly compatible with the idea of path-dependency (see Deleplace & Nell, 1996).

## 5. Conclusion

Our paper starts with the following question: should post-Keynesian economics (PK) and the monetary circuit approach (MCA) use the same definition of equilibrium as mainstream economics, namely, the equality between supply and demand?

We first show that equilibrium is before everything defined as the mutual compatibility of decentralized decisions, and thus does not refer to the previous equality. Rather, the latter should be seen as the interpretation of this mutual compatibility by mainstream economics, because of its specific starting point, namely, goods. As PK and MCA starts with money, this leads to another interpretation of equilibrium, which corresponds to the fulfilment of firms' expectations with respect to monetary circulation.

Thereafter, this paper pursues its investigation by putting into relation this new definition of equilibrium with a specific feature of PK and MCA, namely, uncertainty. This leads to see disequilibrium as the normal state of the economy – rather than equilibrium – and thus to see PK and MCA as disequilibrium economics. This also leads to open a new field of research, namely, highlighting the viability of the economy, namely, highlighting the foundations of economic stability along with disequilibrium.

Finally, the economics suggested by PK and MCA can be seen as disequilibrium economics, while viability invites to find the foundations of economic stability with respect to disequilibrium. This is why we talk about *the disequilibrium foundations of disequilibrium economics*. Let us remark that this title intentionally echoes the one of Franklin Fisher's (1983) book, *Disequilibrium Foundations of Equilibrium Economics*, which argues that mainstream economics unfortunately precludes disequilibrium, although the latter is assumed to lead to equilibrium in accordance with the idea of "market forces" (See also De Vroey, 1998, 2001, 2002). Definitely, this stands in sharp contrast with PK and MCA, which precisely focus on disequilibrium. This may help PK and MCA to provide a clear-cut alternative to mainstream economics.

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