Disequilibrium as the Origin and Originality of Clower’s (1967) Microfoundations of Monetary Theory

Abstract:

Robert W. Clower’s article “A Reconsideration of the Microfoundations of Monetary Theory” (1967) was the fountainhead of the two most widely used approaches to monetary theory since the 1980s, namely the cash-in-advance models à la Robert J. Lucas and the search models à la Nobuhiro Kiyotaki and Randall Wright. Despite this influence, no scholar proposed to explain its origins. My paper aims to fill this gap. It is argued that initially, Clower was involved in the debates over monetary and value theory opened by Don Patinkin’s book *Money, Interest, and Prices* (1956). Like Patinkin, he considered that the understanding of actual money economies required the formulation of a microfounded and dynamic theory, able to account for the non-neutrality of money (in the adjustment processes) without abandoning the neutrality proposition associated to the quantitative theory. Yet, in the early sixties, he realized that the elaboration of such a theory entailed shaping alternative microfoundations. This resulted in the 1967 “Reconsideration”, centered on the role of money as a medium of exchange. Both this idea and the microfoundations that followed are presented as the side effects of his 1965 disequilibrium interpretation of the *General Theory*. Such an articulation between the 1965 and 1967 articles outlines an original project to model money economies that still remains relevant in light of the deadlocks in recent monetary economics.

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**Keywords:** integration of monetary and value theory, microfoundations of macroeconomics, disequilibrium, Clower, Patinkin.

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1 University of Lille, LEM-CNRS (UMR 9221): romain.plassard@ed.univ-lille1.fr
**Introduction:**

Robert W. Clower’s article “A Reconsideration of the Microfoundations of Monetary Theory” (1967) was the fountainhead of the two most widely used approaches to monetary theory since the 1980s, namely the cash-in-advance models à la Robert J. Lucas and the search models à la Nobuhiro Kiyotaki and Randall Wright (Vincent Bignon and al., 2002).\(^2\) Despite this influence, no scholar proposed to explain its origins. My paper aims to fill this gap. By doing so, I challenge two well-established views, namely that i) Clower’s (1967) contribution does not fit in the approach to monetary theory of John R. Hicks (1935) and Don Patinkin (1956); and ii) that his 1967 microfoundations of monetary theory and his 1965 disequilibrium interpretation of John M. Keynes’ *General Theory* (1936) addressed two logically distinct issues. Instead, it is argued that i) Clower (1967) really took part in the Hicks-Patinkin tradition; ii) that his 1967 reorientation, centered on the role of money as a medium of exchange, was prompted by his 1965 disequilibrium program of microfoundations of Keynesian macroeconomics; and iii) that such an articulation outlines an original project to model money economies that still remains relevant in light of the deadlocks in recent monetary economics.

In the 1965 and 1967 articles, Clower challenged the ability of the Walrasian macroeconomics of Hicks (1939), Oscar Lange (1944) and Patinkin (1956) to portray market economies. In “The Keynesian Counter-Revolution: A Theoretical Appraisal” (1965), emphasis was given to involuntary unemployment. According to Clower, there was no room for this Keynesian concept unless Walrasian microfoundations were rejected. He argued that

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\(^2\) Put simply, the search models were initially developed in order to endogenize the microeconomic constraint put forward by Clower (1967) and according to which the holding of money purchasing power was the precondition of exchanges. Rather than imposing the use of money in transactions, the goal consisted of explaining why this could happen as the result of individuals’ choices, in equilibrium. As regards the cash-in-advance models, in his seminal work, Lucas (1980) explicitly added Clower’s (1967) constraint to the standard budgetary one in order to ensure the use of money as a medium of exchange in a general equilibrium model.
under the tâtonnement hypothesis, exchanges took place only when all the markets were in
equilibrium and thus, only when all individuals satisfied their optimization programs. Yet,
like Keynes (1936), he considered involuntary unemployment as a situation in which workers
failed to realize their standard optimization programs because of labor market non-clearing.
To leave room for involuntary unemployment, Clower rejected the tâtonnement hypothesis
and formulated the “dual-decision” hypothesis. This assumption defined the process by which
workers recalculated their consumption plans when they were rationed in the labor market. In
“A Reconsideration of the Microfoundations of Monetary Theory” (1967), Clower focused on
the integration of monetary and Walrasian value theory. He argued that the standard budget
constraints did not exclude barter exchanges. Yet, in money economies, “money buys goods
and goods buy money; but goods do not buy goods” (1967: p. 86). To ensure that money was
the counterpart of exchanges, Clower dichotomized the Walrasian budget constraints into
separate “expenditure” and “income” branches. Individuals would be forced to get money to
consume and to receive money in return of their selling.

These two papers were widely commented because of their respective influences on
macroeconomics (the 1965 article spawned the literature on fix-price models, in the 1970s)
and monetary economics. Here, two views are considered because of the resulting conception
of Clower’s (1967) contribution to monetary theory. According to the first view, Clower
(1967) adopted an approach to monetary theory alternative to the one of Hicks (1935) and
Patinkin (1956), and that would have contained in embryo either the search models (Meier
Kohn, 1988; Joseph M. Ostroy and Ross M. Starr, 1990) or the cash-in-advance models
(Kohn, 1988; Peter Howitt, 1992; Mauro Boianovsky, 2002). This view rests on a basic
syllogism: in the approach to monetary theory of Hicks (1935) and Patinkin (1956), money
mattered as a store of value; yet, Clower (1967) criticized the microfoundations underlying
this approach and based his strategy to integrate monetary and value theory on the role of
money as a medium of exchange; therefore, his contribution was part of an alternative tradition in monetary theory that would have traced back to Karl Brunner (1951) and Sho Chieh Tsiang (1966), and in which money mattered in the formation of prices because of its role as a medium of exchanges. As a result, this tradition appears as the main intellectual background of the “Reconsideration” paper, and it is a short step to consider that Clower (1967) contemplated a monetary theory concerned with equilibrium situations as it is the case in recent monetary economics. The second view is that there is no coordination between the 1965 and 1967 articles. The argument, initially formulated by Antoine D’Autume (1985) and later repeated by Jérôme de Boyer des Roches (2003), was that the 1965 and 1967 articles rested on two logically distinct ideas: the “dual-decision” process and the circulation of money through the economy (1985: p. 99). The fact that no unified research program emerged from these two contributions could be viewed as a confirmation of their incompatibility. As a result, analytical and factual arguments challenge the intuitions put forward by Roy E. Weintraub (1979) and Ghislain Deleplace (1999). According to them, the 1967 article was the second step of a project formulated in the 1965 article and that consisted of providing the microfoundations of Keynes’ (1936) monetary-production theory.

The problem of most of these interpretations lies in the sole focus on the 1965 and 1967 articles. On this basis, it becomes almost impossible to establish that money played a role in Clower’s disequilibrium interpretation of the General Theory: in 1965, Clower outlined a disequilibrium theory without introducing money, and in 1967, he restricted his analysis to the behavior of an individual evolving in a market-clearing context. The present study enlarges the scope of investigations. It takes into account Clower’s contributions to monetary theory pre-dating the “Reconsideration” paper (Meyer L. Burstein and Clower, 1960; Clower, 1963), and the archival documents left by Clower at Duke University – in particular, his correspondence with Patinkin in the 1960s. It also takes into account
Introduction to Mathematical Economics, a book written with the mathematician Donald W. Bushaw in 1957, the record of the discussions held at the Royaumont Conference (where he first presented the “Counter-Revolution” paper), and Monetary Theory: Selecting Readings, a book gathering various contributions to monetary theory edited by Clower in 1969.

Drawing on this material, the perspective on the “Reconsideration” paper radically changes. Clower’s (1967) contribution appears as part of the program to integrate monetary and value theory expounded by Patinkin in Money, Interest, and Prices (1956). All along the sixties, Clower considered that Patinkin had identified the major gaps of “Classical” monetary economics and that his solution to integrate monetary and value theory was the proper way to understand the functioning of actual money economies. By the way, the 1967 microeconomic model rested on the two pillars of his theory, namely the introduction of money in utility functions and the “real-balance” effect. Yet, by putting his finger on the 1965 disequilibrium program of microfoundations, Clower found a way to challenge Patinkin’s monetary theory. He realized the need to place the role of money as a medium of exchange at the heart of the strategy to integrate monetary and value theory and he shaped alternative microfoundations in view of reproducing the logic of the “dual-decision” hypothesis.

1. Clower in Patinkin’s controversy

In the early sixties, Clower was involved in the debate over monetary and value theory initiated by George C. Archibald and Richard G. Lipsey’s (1958) criticism of Money, Interest, and Prices. On two occasions (1960, 1963), Clower proposed to demonstrate that the “Classical” monetary theory defended by Archibald and Lipsey and criticized by Patinkin was valid. In spite of this, and surprisingly enough, he really considered that Patinkin (1956) had identified the major gaps of “Classical” monetary economics and that his solution to integrate monetary and value theory was the proper way to understand the functioning of actual money
economies. To emphasize this proximity, I trace the roots of Patinkin’s controversy. The distinction between short-run and long-run analyses that Archibald and Lipsey (1958) formulated to criticize Patinkin (1956) allows clarifying Clower’s positions. Put simply, he considered that Patinkin’s approach was necessary to explain the dynamic process of formation of monetary prices (short-run) but was dispensable for the static analyses of the stationary equilibrium (long-run). Yet, arguing that the functioning of money economies could be captured only in a short-run framework, he inferred that the avenue opened by Patinkin was to be explored.

1.1 Short-run vs. long-run: a reading grid in Patinkin’s controversy

Before 1967, Clower took part in the debates over monetary and value theory initiated by Lange and Patinkin in the 1940s, and rekindled by Archibald and Lipsey in the late 1950s. The central issue was whether or not the “classical dichotomy” was a proper way for integrating money in the general equilibrium theory. This method, allegedly used in works as diverse as those of Léon Walras, Vilfredo Pareto, Irving Fisher or Knut Wicksell, consisted of separating the determination of relative prices from those of monetary prices. The relative prices were supposed to be set by the excess-demands for goods in the real sector of the economy while the monetary prices were supposed to be determined by an equation of transaction (e.g., the Cambridge equation), in the monetary sector of the economy. From the late 1940s, Patinkin relentlessly criticized this method whilst developing a solution to integrate consistently monetary and value theory. The microeconomics expounded in *Money, Interest, and Prices* (1956) was the outgrowth of this theoretical project. There, Patinkin maintained that the “Classical dichotomy” was “invalid” – i.e., it made the determination of

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3 The Cambridge equation is often expressed as follows: \[ M = KPT \] with \( M \) the quantity of money present in the economy, \( K \) the amount of income held in the form of money, \( P \) the level of monetary prices, and \( T \) the volume of transactions.
monetary prices impossible. The heart of the problem lay in the absence of market
mechanism to trigger an adjustment process of monetary prices and so, to account for their
determination. To make this point, Patinkin drew on the properties of homogeneity of degree
zero in monetary prices underlying the “Classical” excess-demands for goods as well as those
of Walras’ law. He assumed an equiproportionate variation of monetary prices so as to
generate a disequilibrium in the monetary sector of the economy. Because of the homogeneity
postulate, this did not affect the equilibrium in the real sector of the economy. Yet, by virtue
of Walras’ law, if all the markets but one cleared, then the last one was also in equilibrium.
Accordingly, there would have been no market adjustment to correct the disequilibrium in the
monetary sector of the economy. This meant that an infinite combination of monetary prices
was associated to a unique vector of relative prices. The level of monetary prices was
therefore undetermined. To fill this gap, Patinkin provided the missing market mechanism.
His proposal, the “real-balance effect”, ensured that changes in the monetary sector of the
economy would have had consequences in the real sector of the economy. The reason was
that individuals were supposed to plan the quantity of real-balance they needed in view of
their transactions during the market period, an interaction which ultimately explained the
formation of monetary prices.

In 1958, Archibald and Lipsey attempted to challenge Patinkin’s views on the
“Classical dichotomy”. To do so, they brought into the picture the distinction between short-
run and long-run analyses. The short-run analysis focused on the dynamic process of market
prices formation. The long-run analysis focused on the static properties of the stationary
equilibrium – i.e., a situation in which individuals were assumed to begin each market period

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4 In the strictest sense, the term “invalid” referred to the existence of inconsistencies between the assumptions
underlying the “Classical” monetary theory (see chapter VIII, section 3 of *Money, Interest and Prices*). For
example, Patinkin stressed the contradiction between the postulate of homogeneity of degree zero underlying
the “Classical” excess-demands functions, and Walras’ law. Here, the term “invalid” has a further meaning. It
refers to the incapacity to explain consistently the formation of monetary prices. This is the sense retained by
Clower, following Archibald and Lipsey.
with the exact amount of real-balance desired so that markets reopened with the same equilibrium prices. By focusing on the second kind of analysis, Archibald and Lipsey (1958) sought to rehabilitate the “Classical dichotomy”. They demonstrated that the “real-balance” effect was dispensable and that it was possible to determine consistently monetary prices in a model based on the homogeneity postulate and using the Cambridge equation.

These propositions were discussed in a symposium on monetary theory published in 1960 by the *Review of Economic Studies*. Clower was one of the participants of this symposium. With Burstein, he contributed to the rehabilitation of “Classical” monetary economics. They extended Archibald and Lipsey’s demonstration of the quantitative theory of money to a model in which individuals were supposed to hold not only money, but also bonds and capital assets. Later, in 1963, he reaffirmed this support, claiming that “the classical dichotomy [was] unreservedly valid” (1963: p. 27). This suggests an unconditional defense of the “classical” monetary theory. Yet, there was a condition. It was solely valid in the long-run, not in the short-run.

1.2 The “classical dichotomy”: invalidity in the short-run vs. validity in the long-run

The only short-run analysis of the “Classical dichotomy” proposed by Clower was in *Introduction to Mathematical Economics*. In this book written with the mathematician Bushaw, he was concerned with the analysis of the static and dynamic properties of ‘stock-flow’ market models – i.e., a theoretical framework which pictured price determination processes by taking into account current activities as well as the resulting consequences on the stock of commodities present in the economy. Bushaw and Clower aimed to know whether or

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5 In order of appearance in this special issue of the *Review of Economic Studies*, other participants were William J. Baumol (1960), Franck Hahn (1960), Ron J. Ball and Ronald Bodkin (1960), and Archibald and Lipsey (1960). In an editorial note, it is argued that Patinkin’s (1960) answer to Archibald and Lipsey (1958) was not included because of an “inability to agree on a suitable length” (1960: p. 29).

6 Note that in 1967, Clower was not concerned with the issue of the “invalid” dichotomy. He only sought to provide microfoundations to monetary theory, considering market prices as given.
not their ‘stock-flow’ price theory could be an adequate foundation for Keynesian macroeconomics.⁷ Of course, its ability to portray money economies was a criterion. Accordingly, they devoted a section (“General Equilibrium and the Theory of Money”) to the issue of the formation of monetary prices, in their market models. Bushaw and Clower pointed out that the ‘stock-flow’ price theory was dichotomous (1957: p. 174). Hence monetary prices remained undetermined:

If one takes into account the implications of our discussion of consumer and business behavior, however, this conclusion [the determination of monetary prices] is not correct. In fact, all individual excess flow demand and stock demand functions were shown earlier to be homogenous of order zero in all prices and income, implying that an equal proportionate change in all market prices \( P \) and in all income variables \( M \) will leave the equilibrium value of all variables \( x_{ij} \) [excess-flow demands] and \( x_{ij}' \) [excess stock-demands] unaffected; and this being the case, it can be shown that the system does not determinate absolute money prices […] The last expression is simply Say’s law; it asserts that the market excess demand for one commodity is determined as soon as the market excess demand for all other commodities (excluding money) is determined, and it asserts further (taken in conjunction with Walras’ law) that the demand for money is identically zero for every set of values of the price and income variables \( P \) and \( M \). Thus absolute prices are indeterminate in the [general equilibrium] system; only relative prices can be specified in terms of these models. And there is no way in which the absolute price level can be determined as a function of the quantity of money \( S_h \) since the market excess demand equation for money is always satisfied identically (1957: p. 175 underlined by the authors).

This demonstration of the invalid dichotomy nearly paraphrased Patinkin. Like him, Bushaw and Clower linked the properties of homogeneity of degree zero of their market functions with those of Walras’ law to explain the indetermination of money prices.

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⁷ For a detailed presentation of the related program of microfoundations, see Plassard (2015b).
What is true in the short-run is, however, not true in the long-run. Clower considered that the “Classical dichotomy” was valid at the stationary equilibrium. That was clearly expressed in “Classical Monetary Theory Revisited” (1963: p. 27). There, Clower made this point whilst challenging Archibald and Lipsey’s proposition that “the classical dichotomy [consisted] in building a model in which Walras’ law [did] not hold” (1958: p. 16). In their charge against Patinkin, the two authors claimed that the demonstration of the “invalid dichotomy” was rooted in the belief that Walras’ law was an identity. According to them, it was not. Therefore, monetary prices could be determined in a dichotomous model once Walras’ law was rejected. Nevertheless, since “every classical economists whose writings [Clower knew] clearly subscribed with full force and fervor to Walras’ law” (1963: p. 27), he proposed to demonstrate that a model based on the postulate of homogeneity, using a Cambridge equation, and accepting Walras’ law as an identity could be used to set consistently monetary prices (1963: p.27). By focusing only on the stationary equilibrium, Clower get around the problem raised by the absence of market adjustment process to explain the formation of monetary prices. That was simply not an issue in the “Classical” static model. By assumption, the general equilibrium was reached (1963: p. 32). Thus, the approach of considering an equiproportionate variation in monetary prices so as to generate a disequilibrium in the monetary sector (to emphasize inconsistencies) was outside the scope. Therefore, Patinkin’s argument was no longer relevant, Walras’ law was an identity, and the dichotomy remained valid.

8 Most of the participants to the 1960 symposium shared this view whilst expressing some reservations. It was claimed that this view was valid only under the very restrictive assumptions made by Archibald and Lipsey (Hahn, 1960: p.38; Ball and Bodkin, p. 48) and that in any event, the long-run analysis missed the point of Patinkin (Baumol, p. 30; Hahn, 1942: p. 42).

9 The term “identity” is borrowed from mathematics. It means that in a formal model, an expression is true whatever the values taken by the variables under consideration.

10 Patinkin never supported the “Classical dichotomy”. Yet, he reached a position closed to the one defended by Clower. In “Long-run and short-run equilibria”, the section added in reaction to the debate initiated by Archibald and Lipsey (1958), Patinkin ([1956] 1965) insisted on the need to adopt a dynamic approach to understand why the “Classical dichotomy” was invalid: “Thus, when we come to evaluate the significance of the real-balance effect for economic theory, the really important distinction that we must make is not between
Cambridge equation so that money balances ensured the smooth course of transactions, as determined by the equilibrium in the real sector of the economy (1963: p. 29).

1.3 Non-neutrality of money in the short-run vs. neutrality in the long-run

For Patinkin (1956) as well as for Archibald and Lipsey (1958), one of the major goals when integrating monetary and value theory was to demonstrate the quantitative proposition that a variation in the stock of money generated a proportional variation of monetary prices, without affecting the real sector of the economy. Because of that, the neutrality of money was a central issue. This was the first concern of Clower.

One of the reasons why the “Classical dichotomy” was criticized in Introduction to Mathematical Economics was that money had no effect on the decisions made by individuals in the real sector of the economy. Because of that, money did not play a role in the determination of market equilibrium. The issue of the neutrality of money was used by Bushaw and Clower as a criterion to distinguish a barter economy from a money economy:

The homogeneity properties which follow from our analysis of consumer and business behavior lead to a macroeconomic model of a barter economy, not to a model of money economy. Money does not influence the price determination process in any way whatever (1957: p. 175 underlined by the authors)

Money had to be non-neutral during the process of determination of market equilibrium to consider that the integration of monetary and value theory was successful.

Bushaw and Clower (1957) did not explain how to conciliate this non-neutrality of money with the demonstration of the neutrality proposition expounded in the quantitative theory. Yet, since Clower had in mind Patinkin’s contributions, he may have the same answer. Because of the “real-balance” effect, Patinkin (1956) considered that money was non-neutral short-run and long-run, but between being concerned with the stability of an equilibrium position and not being concerned” ([1956] 1965: p. 57). This suggests that the “real-balance” effect is dispensable in static analysis and so, that the “classical dichotomy” can be considered as valid in this theoretical context.
in the dynamic adjustment processes that led to market equilibrium. But once the equilibrium reached, the neutrality of money would have been restored and so, the quantitative proposition could be demonstrated.

Actually, Clower considered that money was neutral as far as the static properties of the stationary equilibrium were concerned. This position appeared clearly in his contribution to the 1960 symposium on monetary theory, and was related to Archibald and Lipsey’s (1958) attempt to demonstrate the quantitative theory of money. With Burstein, Clower wondered if Archibald and Lipsey’s proposition of the invariance of the real equilibrium against a variation in the stock of money could be extended to a model in which bonds and capital were introduced (1960: p. 32). Intuitively, the invariance proposition was questionable since individuals might decide to vary their real income by using the extra cash to buy or sell bonds and capital assets. Yet, according to Burstein and Clower this proposition remained valid, which meant that money was neutral:

More generally, if we consider an economy in which all commodities except money are produced, consumed and held in the form of assets, and if the relevant supply and demand functions of the system depend only on relative prices and other real variables, then it can shown that the equilibrium demand for commodities, for real bond income, for physical assets, and for real money balances are all invariant against a change in the nominal stock of money (1960: p. 36).

Burstein and Clower pointed out that the demand functions depended on real income and other real variables such as the “relative commodity prices, the rate of interest, the real bond income, and real money balances” (1960: p. 33). But, at the stationary equilibrium, individuals were supposed to start each market period with the exact quantity of bonds and money desired. Therefore, these two variables no longer appeared in individuals’ functions

\[11\] Note that in Patinkin’s monetary theory, money was neutral whatever the kind of equilibrium considered. On this, see his discussion of the possibility to obtain the “Classical” demand for money (rectangular hyperbola) by linking all the market equilibrium points associated to different quantities of money.
Once the analysis was focused on the determination of market prices, real income was the remaining variable (1960: p. 35). Because of that, real equilibrium was not affected by variations in the stock of money.

1.4 The need to use Patinkin’s approach to monetary theory

Whether for Patinkin, Archibald and Lipsey or for Clower, a model deserved to be used if it was internally consistent and provided a determinate solution for the economic variables under consideration. If not, the ability to portray actual economies would have been doubtful. Patinkin (1956) discarded the “Classical dichotomy” on this analytical ground. That was challenged by Archibald and Lipsey (1958) thanks to the distinction between short-run and long-run analyses. In the long-run, the “Classical dichotomy” remained valid. Thus, both for them and for Clower, the question of which method to be preferred for integrating monetary and value theory was no longer an analytical, but an empirical question.

In the late 1950s, monetary issues, in particular those raised by Archibald and Lipsey (1958), were at the heart of the correspondences between Clower and Patinkin. In this private context, Clower repeatedly criticized the long-run approach developed in “Classical” monetary economics. Though interesting from a logical point of view, he claimed that the study of the logical properties of the stationary equilibrium was of little interest to understand actual money economies. By contrast, a short-run framework of the kind formulated in *Money, Interest, and Prices* would have been ideally suited:

Surely, it is more effective to carry this out to its logical (an rather uninteresting) conclusion; admit that the invariance results of A-L [Archibald and Lipsey] are perfectly general [proposition of Burstein and Clower] and then go on to point out that the full equilibrium [stationary equilibrium] systems for which these results hold are completely uninteresting for dealing with short-term problems [of money economies], whereas your model is ideally suited to deal with these. It is nice to know what is implied
by full equilibrium, no doubt, but this is not the kind of comparative statics that I would use to inform my judgment concerning actual events.\footnote{Letter from Clower to Patinkin (11/12/1959). R.W. Clower Papers, Box 4, Rubenstein Rare Book and Manuscript Library.}

Clower considered that the empirical content of a dynamical analysis was higher than the one of a static analysis. This point was already made in Introduction to Mathematical Economics. According to Bushaw and Clower, “common sense and offhand observation would [have suggested] that in any fairly realistic model, the current state will seldom be an equilibrium state [yet] purely statical theory [had] nothing to say about such non-equilibrium states” (1957: p.54). Since Patinkin addressed the determination of monetary prices and the demonstration of the quantitative theory of money in the framework of the stability of the market equilibrium, Clower surely considered that he took the right direction to address monetary issues. Actually, in 1963, he praised the “real-balance” effect, arguing that this mechanism was the basic ingredient to formulate dynamic analyses and so, to develop a reliable monetary theory:

In singling out the real-balance effect as the \textit{sine qua non} of monetary theory, Patinkin has correctly identified a major gap in classical doctrine. Because it has lacked an explicit dynamical framework, the classical theory has long been regarded as little more than an intellectual exercise. Patinkin’s treatment of the real-balance effect is an important first step towards the development of a useful theory of monetary dynamics (1963: p. 33 underlined by Clower).

To conclude, in the early sixties, Clower really advocated for an approach to monetary theory \textit{à la} Patinkin (1956). According to him, the understanding of actual money economies required the formulation of a microfounded and dynamical theory able to articulate the non-neutrality of money in the short-run with the neutrality associated to the quantitative proposition in the long-run. In view of this, it is surprising that he only focused on the development of the “Classical” monetary theory without even trying to develop the model
formulated by Patinkin. One reason for this could simply be that Clower had nothing to say that had not already been said by Patinkin. Actually, this is what Clower suggested in a private discussion held with Patinkin on October 1960. At that time, Patinkin was working on a revised version of *Money, Interest, and Prices* (published in 1965) and asked Clower for comments. Clower confided that “[he could not] put [his] finger on any particular objections other than the minor ones mentioned in the present note”\(^\text{13}\). This attitude contrasts sharply with his 1967 charge against the monetary theory expounded in *Money, Interest, and Prices*. How does one explain that?

2. Disequilibrium microfoundations of monetary theory

There are strong grounds for believing that the 1967 “Reconsideration” is rooted in Clower’s (1965) disequilibrium program of microfoundations. A first reason is that the 1967 microfoundations of monetary theory were partly prompted by the idea that individuals are forced to revise their standard optimization plans when trades out of the equilibrium take place. A second, and more decisive reason, is that Clower’s disequilibrium interpretation of the *General Theory* is likely to explain the 1967 refocusing on the role of money as a medium of exchange.

2.1 Disequilibrium as part of the generation process of the 1967 microfoundations

Clower’s (1965) disequilibrium program was part of the elaboration process of the 1967 microfoundations of monetary theory. First, the criticisms expounded in the 1965 and 1967 papers were formulated almost simultaneously. Their traces go back to a same letter, sent by Clower to Patinkin, soon before the presentation of the “Counter-Revolution” paper, at the Royaumont conference (held from 03/28/1962 to 04/07/1962). This is not a coincidence in

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\(^{13}\) Letter from Clower to Patinkin (11/10/1960). Patinkin’s Papers: Box 25, Rubenstein Rare Book and Manuscript Library.
time. In this letter, Clower articulated his argument concerning the incompatibility between Walrasian microfoundations and Keynes’ income analysis with a criticism of Patinkin’s monetary theory. Basically, he argued that as long as the tâtonnement hypothesis was retained, the “real-balance” effect was of little interest to explain the transmission of disequilibria from the monetary sector to the real sector of the economy. Second, the integration of monetary and value theory was at the back of Clower’s contributions since the “Counter-Revolution” paper. This was claimed during the discussions held at the Royaumont conference and repeated in his review of Milton Friedman and Anna J. Schwartz’s Monetary History of the United States, in 1964. Last but not least, analytical arguments show that disequilibrium was in the background of the 1967 optimization program. The introduction of transactions money balances in utility functions made sense if the tâtonnement hypothesis was dropped, and the logic of the dual-decision hypothesis can be expressed thanks to the dichotomized budget constraints.

2.1.1 A twofold criticism

In the sixties, Clower had two irons in the fire: contribute in a critical and constructive way to the debate over monetary and value theory; and formulate a disequilibrium interpretation of the General Theory.14 Patinkin (1956) made decisive contributions in these two fields of research. That was why he became a preferred interlocutor during that period. In a letter sent in March 1962,15 Clower formulated two criticisms revealing gaps in each area. The interesting point here is that the two were liable to jeopardize Patinkin’s monetary theory.

The first criticism concerned the incompatibility between Walrasian microfoundations and Keynesian macroeconomics. That was the heart of the well-known “Counter-Revolution”

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14 On the genesis of Clower’s (1965) disequilibrium program of microfoundations of Keynesian economics, see Plassard (2015a).
15 Letter from Clower to Patinkin (03/03/1962). D. Patinkin Papers, Box 25, Rubenstein Rare Book and Manuscript Library.
paper. Clower reasoned starting from a situation of involuntary unemployment. The labor market did not clear. Workers failed to sell the quantity of labor planned and so earned an income lower than the one planned. This was supposed to act as an additional constraint on their consumption plans. In the letter, he signaled that Patinkin (1956) sought to formally account for such situations by integrating income as an independent variable in workers’ demand functions. Yet, such functions could not be deduced from Walrasian microeconomics. Income was assumed to be chosen by workers after a consumption-leisure trade-off, and their optimization plans were always satisfied because of the tâtonnement hypothesis. As a result, realized income could not act as an independent constraint in the demand for consumption goods. In the letter, Clower briefly exposed this position arguing that this could undermine Patinkin’s monetary theory:

We all have our hobby horses, to be sure, but this one [the utility theory foundations of monetary theory] does not really fit too well with some of your other ideas – particularly the ideas adumbrated in the second half of your book on disequilibrium systems. […] The very fact that you take initial money stocks as given, and income as given also, means that you are working with potential disequilibrium states for the consumer since, if you put factor services into the utility functions, and allow money balance to adjust over time, making balances a variable also, you immediately lose parameters and have to start dealing with more variables. But these variables are damned hard things to fit into general equilibrium models without getting classical conclusions (i.e., full equilibrium conclusion about full employment sales of factor services and full employment holdings of money balance). Then what can you say about the real balance effect? Note, in particular that you cannot legitimately put income into your demand functions in Part II of your book, if you suppose that individuals earn income from inside the system – for then income is not an independent variable.

The articulation between the 1965 argument and the criticism of Patinkin’s integration of monetary and Walrasian value theory is not easy to capture. Hence it is helpful to explain the quotation step-by-step. Clower accused Patinkin of focusing too much on the development of
his foundations of monetary theory since that would not have been in line with his
disequilibrium interpretation of the General Theory. To explain why, Clower stressed a
formal analogy between the integration of income and real balances as additional independent
variables in individuals’ demand functions. Clower probably considered that in situations of
disequilibrium, real balances would vary during the adjustment process. Thus, just as income,
real balances could act as constraints on workers’ consumption plans. But this is not possible
under the tâtonnement hypothesis. Without rejecting this assumption, the introduction of these
variables would have entailed accepting full equilibrium conclusions. Accordingly,
disequilibrium situations would not have really been addressed. And so, the “real-balance”
effect would not have properly accounted for the transmission of disequilibria from the money
market to the market for goods. One fundamental pillar of Patinkin’s theory was thus
considered as faltering.

The second criticism stressed the possibility of barter exchanges in Patinkin’s
monetary economics. That was mentioned in 1963 and constituted the heart of the
“Reconsideration” paper. Clower referred to his 1963 article (already submitted for
publication) in the letter. He confided to Patinkin that he was able to elaborate “a classical
theory that [combined] Walras’ law, Says’ law, homogeneity property in money prices alone,
an integrally defined quantity equation to determine absolute money prices in a consistent
fashion and, of course, the Classical dichotomy”. In parallel with the development of this
model, Clower (1963) mentioned (in a footnote) his decisive criticism of the
contemporaneous monetary theory: 16

A note of protest might be entered here against the practice [reference to Lange and Patinkin] of
opposing a money to a barter economy. From a logical point of view, there is no objection to supposing

16 In 1967, Clower used the label “contemporaneous monetary theory” to refer “specifically to O. Lange, Price
Flexibility and Employment and Don Patinkin, Money, Interest, and Prices; but also to certain portions of Hicks’s
Value and Capital and Samuelson’s Foundations” (1967: p. 81).
that commodity transactions are conducted by direct barter even in an economy where money is the only possible store of value. Such an economy would appear to have all the properties usually associated with a money system, yet it would be a barter economy in the literal sense (1963: p. 31).

The explanation was expressed along similar lines to the 1967 paper. Clower stressed that money was not necessarily the counterpart of exchanges. All the goods of the equations system could be directly exchanged between them. Yet, a model in which “goods are indistinguishable from money as sources of effective demand” (1967: p. 83) would characterize barter economies, not money economies.

2.1.2 From the twofold criticism to the 1967 microfoundations of monetary theory

The two preceding criticisms served as a compass to reconsider the microfoundations of monetary theory:

The omission of these restrictions [the introduction of transaction money balances in the utility function and the dichotomized budget constraint] from contemporary monetary theory is a natural consequence of the tacit presupposition appropriate in a world of tâtonnement or recontract that money is just one of many commodities that may be bartered directly for other commodities (1967: p. 88).

This is particularly apparent as regards the second criticism. Clower (1967) claimed to have shaped the dichotomized budget constraint to ensure that money was the only medium of exchange:

This restriction [money is the only source of effective demand] is – or ought to be – the central them of the theory of a money economy. The task of reformulating microeconomic analysis to accommodate those aspects of experience that are commonly supposed to distinguish a money from a barter economy consists, indeed of little more than an elaboration of the application of this restriction. Our aphorism automatically rules out the standard budget constraints of neo-Walrasian equilibrium analysis as accurate descriptions of planning alternatives open to transactors in a money economy. […] Analytically, what this entails is a clear separation between goods demanded for purchase (offers to sell money) and goods offered for sale (offers to buy money). This condition may be met most easily by
dichotomizing the budget constraint into two branches, the first representing a constraint on money expenditure, the second representing a constraint on money income.” (1967:p. 87)

Individuals’ budget constraints were split into two branches: the “expenditure constraint” (1) and the “income constraint” (2). They were formally expressed as follow (1967: p. 87), with $M_j$, the amount of money that individuals hold at the beginning of the market period, $M_j$ the quantity of money that individuals planned to use to finance their expenditures during the market period, $m_j$ the quantity of money received during the market period, and $d_{ij}$ and $s_{ij}$ the quantities that individuals planned to demand and sell during the market period:

\[
\sum_{i=1}^{n} p_i x_{ij} + M_j - M_j = 0, x_{ij} = d_{ij} - s_{ij} \geq 0
\] (1)

And,

\[
\sum_{i=1}^{n} p_i x_{ij} + m_j = 0, x_{ij} = d_{ij} - s_{ij} < 0
\] (2)

The “expenditure constraint” asserted that when individuals were buyers, the total money value of their expenditures could not exceed the difference between the quantity of money initially held and the quantity desired. Their expenditures were therefore constrained by the quantity of money held. Without money, individuals could not consume (1967: p. 87). The “income constraint” asserted that when individuals sold goods, they received money in return. The dichotomized budget constraint therefore ensured that money was the counterparty of exchanges (1967: p. 87).

As regards the disequilibrium features underlying the 1967 microfoundations, this is not so evident. The main reason is that Clower (1967) stuck to an equilibrium analysis.
Individuals were assumed to exchange only at equilibrium prices as evidenced by the respect of a proposition similar to Walras’ law:

As in established theory, the money value of the sum of all excess demands, including the excess demand for reservation balances and for money income, is identically zero; hence a proposition analogous to what has come to be known as Walras’ law applies to transactors in a money as well as to transactors in a barter economy (1967: p. 88).

Yet, there are strong grounds for believing that the 1965 interpretation of the *General Theory* was determinant in the shaping of the 1967 microfoundations. First of all, the integration of monetar and value theory was at the back of Clower’s contributions since the “Counter-Revolution” paper. An analysis of the discussions held during the Royaumont conference shows that Clower considered that his disequilibrium model was monetary in nature. Nonetheless, he decided not to introduce money explicitly in order to facilitate the exposition both of the “dual-decision” hypothesis and of its implications. The introduction of money as a new variable would have been a second step in his disequilibrium program of microfoundations. According to Clower, such a strategy was also adopted by Keynes (1936):

The essential character of the dual-decision process would come out more clearly if one did on get into asset-holding problems at the outset. Naturally, one must get into this kind of things in order to make sense of the complete Keynesian system […] A model that included money without including income as an independent variable would hardly qualify as a Keynesian model, whereas a model with income and without money could be called Keynesian (as Keynes’ argument in chapter 2 of the *General Theory* so clearly indicated (1965a: p. 305).

In 1964, in a review of Friedman and Schwartz’s (1963) *Monetary History of the United States 1867-1960*, Clower repeated the need to shape disequilibrium foundations of monetary theory. That would have been a way to account for the kind of correlations between the stock of money and money income described in this work (1964: p. 65). In that respect he
regretted that Friedman and Schwartz did not try to sketch the analytical framework underlying their statistical study:

But alas, except that Friedman and Schwartz display a moderate antipathy to Keynesian economics and nowhere worry seriously about possible direct effects on current market transactions on current demand and supply conditions, this line of argument cannot be sustained either – except by gross prejudice. The shading of the argument is in the direction claimed, but the substance is not (1964: p. 76 underlined by Clower).

Then and most importantly, analytical arguments can be raised to emphasize the disequilibrium features of the 1967 microfoundations. The first one concerns the introduction of “transaction money balances” \( (m/P) \) in utility functions. That procedure was not justified by Clower (1967). Yet, he probably considered that it was a logical implication of the rejection of the tâtonnement hypothesis. On the one hand, Clower (1967) suggested that the key to ensure the use of money in exchanges was to free from this assumption: “it is appropriate in a world of tâtonnement or recontract, that money is just one of many commodities that may be bartered directly for other commodities” (1967: p. 88). Clower pointed out that the operations of buying and selling were “rigidly synchronized” in tâtonnement economics.\(^{17}\) He might have inferred that the realization of transactions was facilitated so that individuals did not need to use money. On the other hand, the introduction of “transaction money balances” makes sense if the economic system is assumed to work without a tâtonnement hypothesis. If there are trades out of the equilibrium, then the operations of selling and buying are potentially subject to the quantitative constraints suffered by individuals. They have to sell before buying. In order to free up (at least partly) from such constraints, individuals seek to hold money to realize transactions.\(^{18}\) This constitutes a

\(^{17}\) In 1967, he stressed that Patinkin (1956) dealt “with an economy in which trading is rigidly synchronized within each of a series of discrete market periods” (1967: p. 81).

\(^{18}\) This explanation is close to that put forward by Benassy (1975). He explained that the utility of money was explained by the expectations formed by individuals on future quantitative constraints.
purchasing power immediately available. Money is the medium of exchange *par excellence* in disequilibrium.\(^{19}\)

The second analytical argument concerns the dichotomized budget constraint. It was shaped to open the possibility that individuals hold money balances different from the ones planned and so, be forced to reduce their consumption demand. Assume that some individuals fail to sell the quantity of goods planned at the prevailing market prices. The monetary income received within the period \((m_j)\) would be lower than the one planned. Because of that, the balances that individuals sought to hold in order to finance their expenditures \((M_j)\) would be also lower than the ones planned – reminder: \(m_j\) was supposed to fund \(M_j\) (1967: p. 87). Individuals would be therefore forced to recalculate new consumption plans, on the basis of their realized money income. This is consistent with the dual-decision process expounded in the “Counter-Revolution” paper. The only difference is that income constraints would appear after a delay depending on the quantity of money initially held by individuals \((M_j)\).\(^{20}\)

2.2 Disequilibrium or why Clower focused on the role of money as a medium of exchange

The heart of the 1967 “Reconsideration” lies in the attention paid to the role of money as a medium of exchange. The reasons why Clower came to believe that it was the key to reconsider the microfoundation of monetary theory are mysterious. Yet, part of the mystery can be removed in light of the intellectual context and of Clower’s (1965) disequilibrium program of microfoundations. First, unlike Lange (1942) and Patinkin (1956), Clower could not accept that Walras’ law was the key theoretical marker of money economies. His

\(^{19}\)Viewed this way, the featuring of pure money economies and the study of disequilibrium systems combined perfectly. See 2.2.2 for a deeper analysis of this combination.

\(^{20}\)Clower supported this view in the course of the discussions held at the Royaumont Conference: “But if one had assets, the dual decision hypothesis would be relevant since, unless one supposed that assets somehow got replenished without getting purchased, a chronic gap between desired and actual factor sales would sooner or later force all assets to the zero level unless the gap was reflected instead in reduced demand for commodity flows” (1965a: p. 308).
disequilibrium interpretation of the *General Theory* required rejecting this law. Since it was the role of money as a store of value which was stressed by Lange and Patinkin through Walras’ law, Clower probably considered that its role as a medium of exchange had to be used instead, to distinguish barter from money economies. Second, unlike Lange (1944), Clower did not consider that market economies might stick to depression states because individuals sought to store money. In the 1965 scenario of persisting unemployment, money became naturally central because of its function of validation of purchase decisions. By the way, it seems that Clower sought to use money as an institution to replace the Walrasian clearing house. This places its role as a medium of exchange at the heart of the strategy to integrate monetary and value theory.

2.2.1 Another way to distinguish barter from money economies

Clower’s (1967) refocusing on the role of money as a medium of exchange can be rationalized by a basic syllogism: Lange (1942) and Patinkin (1956) drew on the distinction between Says’ law and Walras’ law to distinguish barter from money economies. Yet, Clower (1965) considered that the rejection of Walras’ law was the *sine qua non* of Keynesian macroeconomics. Therefore, he had to find another way to distinguish barter from money economies. By elimination, since that was the role of money as a store of value which was stressed through Walras’ law, its role as a medium of exchange probably appeared as the better option.21

Following Lange (1942), Patinkin (1956) associated Says’ law to the statement that, regardless of market prices, individuals always planned to use entirely the proceeds earned from their sales of goods and bonds, to buy goods and bonds.22 By virtue of Say’s law,

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21 The role of money as accounting unit is clearly not sufficient to distinguish barter from money economies in general equilibrium models. Arbitrarily, the theorist can used any prices of any commodities as accounting unit.

22 “Following Lange, we define Say’s identity as stating that – regardless of the prices and interest with which [individuals] are confronted – individuals always plan to use all of their proceeds from the sale of commodities...”
individuals were thus not supposed to make decisions regarding the quantity of money to be held. Therefore, money did not enter in the theoretical picture. By contrast, Walras’ law would have left room for the choices concerning the quantity of real balances that individuals sought to transfer from one market period to another. Accordingly, any models based on Say’s law pictured barter economies and any models based on Walras’ law pictured money economies.

Following in Keynes’s (1936) footsteps, Clower (1965) sought to leave room for involuntary unemployment in a general equilibrium framework and to explain why an economy might stick in such a depression state. The rejection of Walras’ law was considered as the precondition to do so:

Either Walras’ law is incompatible with Keynesian economics, or Keynes had nothing fundamentally new to add to orthodox economic theory (1965: p. 41).

Clower interpreted involuntary unemployment as a disequilibrium situation, or in other words, as labor market non-clearing. Yet, by virtue of Walras’ law, a disequilibrium in one market was necessarily counterbalanced by a disequilibrium of opposite sign and same amount in another market. Accordingly, if only labor and consumer goods entered in the theoretical picture (as is the case in the 1965 article), then it would have been impossible to consider the scenario expounded by Keynes in chapter 2 of the General Theory – i.e., an excess-supply in the labor market without counterparty in the market for goods. Walras’ law thus had to be rejected. Clower (1965) sought he had found a way to invalidate this law thanks to the “dual-decision” hypothesis. The substitution of the “effective” demands (deduced from constrained optimization programs) to the “notional” demands (deduced from standard optimization programs), turned Walras’ equality into an inequality in case of involuntary unemployment.

and bonds for the purpose of purchasing other commodities and bonds. In other words, they never plan to change the amount of money they hold: its amount of excess demand is identically zero.” ([1956] 1965, p. 193)
That was the starting point to account for a scenario of persisting unemployment. The explanation was given via the famous example of the economic consultant, in situation of involuntary unemployment. By assumption, he would like to sell more of his services to consume more champagne. If that desire was satisfied, both the consultant and the seller of champagne would have benefited from the unblocking of the situation. The problem was that by virtue of the “dual-decision hypothesis”, the economic consultant could not express the demand associated to the quantity of work desired. The signal sent to the market was an “effective” demand, not a “notional” one (1965: pp. 49-50). If this demand satisfied the offer of champagne, the situation of involuntary unemployment would remain blocked: in the absence of an excess demand in the champagne market, the price would not go up and so, there would be no stimulation of the supply.

Clower (1965) suggested that Walras’ law could not be used as the theoretical marker of money economies. In section V, “Say’s Principle and Walras’ law”, he traced a line between the two concepts expressed in the title without even mentioning money. Say’s law was considered as a principle of economics, “a fundamental convention [that one needed to] presuppose to build an account of individual decision processes” (1965: p. 47). The principle stated that, regardless of the market situation, no individual planed “to purchase units of any commodity without at the same time planning to finance the purchase either from profits receipts or from the sale of units of some commodities” (1965: p. 47). By contrast, Walras’ law was viewed as a “market principle”, raised as an identity in contemporaneous general equilibrium models because of a “tacit assumption that market prices are independent of individual purchases and sales” (1965: p. 47). This distinction is important, not for its content, but because of the resulting message. The message (probably sent to Lange and Patinkin) was that it was time to distinguish barter economies from money economies otherwise than by drawing on the distinction between Say’s law and Walras’ law.
2.2.2 Money as an institution to replace the clearing house

In many ways, Clower (1965) dissociated himself from the generation of Keynesian economists which, before him, tried to root the *General Theory* in the Walrasian general equilibrium theory. The reason often invoked is that Clower (1965) required breaking with Walrasian microfoundations. But the role he attributed to money is also a distinctive mark. This is obvious when he is compared with Lange (1944). The two economists shared the ambition to explain why the economy might stick to a depression state in a general equilibrium framework. To do so, Lange (1944) insisted on the role of money as a store of value. Individuals would seek to store money during the depression, which would lengthen its duration. By contrast, Clower sought to insist on the role of money as a medium of exchange. The reason was that his scenario of persisting unemployment ultimately resulted from a problem of validation of purchase decisions.

Implicitly, Clower (1965) addressed this problem whilst having Lange’s (1944) argumentation in mind. At the end of the paper, he maintained that the explicit introduction of money in his theoretical picture was not liable to jeopardize his demonstration of the invalidity of Walras’ law:

> It is vacuously true, of course, that a proposition similar to Walras’ law holds even in Keynesian economics if we *define* the difference between desired sales and realized sales as an excess demand for ‘money income’. But the proposition then becomes an empirically meaningless tautology. In conventional value theory, the total value of commodities (goods and money) offered for sale is always equal to the total value of commodities (goods and money) demanded for purchase because all purchase orders are presumed to be effective regardless of prevailing demand and supply conditions. But in the present discussion, purchase orders are not validated automatically, sales order thus do not necessarily

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23 See G. Rubin (2015) for a systematic presentation of Lange’s attempt to offer Walrasian foundations to Keynesian macroeconomics.
generate effective demand for other commodities (effective demands are constrained by purchase orders executed, not purchase orders placed) (1965: p. 56 underlined by Clower).

In Lange’s (1944) perspective, depression was viewed as a long tâtonnement process during which both the labor market and the market for goods would have been in a situation of excess-supply because of an excess-demand in the money market. In Clower’s (1965) disequilibrium model, this would not happen. If the tâtonnement hypothesis is rejected, then it is necessary to distinguish “effective” demands from “notional” demands. Basically, for a purchase decision to be effective, individuals must have sold before. They need to have a purchasing power. Thus, workers cannot even express a demand for money if they do not have sold their labor before. In the “Counter-Revolution” article, this requirement was based on an institutional assumption:

Here and elsewhere in the argument, it may be helpful if the reader imagines that a central market authority is responsible for setting all prices (using the nth commodity as an accounting unit), and that this authority maintains continual surveillance over all sale and purchase orders communicated to it by individual transactors to ensure that no purchase order is validated unless it is offset by a sale order that has already been executed (i.e., purchase orders are simply cancelled unless the transactor has a positive balance of book credit with the market authority sufficient to cover the entire value of the purchase order). It must be assumed that the market authority communicates continuously with each transactor to inform it of the precise level of its current credit balance, and further informs each transactor of the precise rate at which previously validated purchase orders currently are being executed. Sale orders are validated automatically, but the rate at which such orders are executed is governed by prevailing demand conditions. It is implicit in this entire line of argument that, at some initial state in the evolution of market trading arrangements, the market authority advances a nominal quantity of book credit to one or more transactor to set the trading process in motion (without such initial advances, no sale order could ever be executed since no purchase order would ever be validated (1965: p. 51).

Clower assumed the existence of a central market authority acting both as an auctioneer and as a clearing house. In addition to setting prices, the central market authority was charged to
control the effectiveness of purchase orders. Without counterparty, they would be cancelled. Then, the market authority had to inform each individual of the realization of their sales order. Though validated automatically, their execution depended on the capacity of other agents to buy goods. Lastly, the market authority was supposed to make funding available to some individuals to start trading. This resulted from the assumption that the realization of sales orders depended on the validation of purchase orders, a validation impossible if individuals had not already sold.

The 1967 microfoundations seem to map out a way to escape from the use of the clearing house. First of all, trading would start without assuming that in each market period, some individuals received credits from heaven. In 1967, individuals were supposed to transfer purchasing power from periods to periods via their demand for “precautionary balances” \( (M_j) \). Then, there is no need to assume that a market authority confirms the effectiveness of the sales orders and informs individuals on their validation. Individuals were directly constrained by the quantity of cash initially held \( (M_j) \) and obtained thanks to their sales during the market period, and they directly had information on the results of transactions by looking at the quantity of money received in return \( (m_j) \).

In view of this, two conclusions can be drawn. First, the conceptual distinction between “precautionary” money balances and “transaction” money balances can be viewed as the logical consequence of the attempt to introduce money to replace the clearing house. Second, Clower’s (1967) refocusing on the role of money as a medium of exchange can be viewed as the logical consequence of considering money as an instrument to validate purchase orders. To shore up this last point, let us consider the following quotation from the 1967 paper whilst keeping in mind the scenario of persisting unemployment expounded in the 1965 article:
Our definition of choice alternatives thereby captures the essential meaning of the traditional (but curiously non-modern) contention that demand in a money economy is effective only if it involves a combination of desire with money purchasing power (1967: p. 87 emphasis added).

Without holding “transaction balances”, the economic consultant could not express the demand for champagne associated to his notional quantity of labor. He would like to do so. But he could not since he did not have the purchasing power. A situation of involuntary unemployment would therefore remain blocked following the same scheme as in 1965 precisely because of the function of money to validate purchase orders and, by extension, because of its role as a medium of exchange.

3. The 1967 microfoundations as a reorientation in Patinkin’s program to integrate monetary and value theory

Since Clower (1967) violently criticized the monetary theory formulated in Money, Interest, and Prices and paved the way for alternative class of models, it is often considered that he took part in an approach to monetary theory different to the one of Patinkin. Yet, this is doubtful. On the one hand because even in the book edited by Clower (1969) and in which he gathered what he considered as the most influential contributions to monetary theory, he never referred to this alternative tradition allegedly embodied by Brunner (1951) or Tsiang (1966). On the other hand and more importantly, analytical arguments show that the 1967 microfoundations of monetary theory characterized a reorientation in Patinkin’s program rather than a break with it.

First of all, Clower (1967) retained the two very pillars of Patinkin’s monetary theory – i.e., the introduction of money in utility functions and the “real-balance” effect. As regards the first pillar, Clower only insisted on distinguishing “precautionary money balances \([M_f]\)” and “transaction money balances \([m_f]\)” (1967: p. 87):
As a reminder, precautionary balances characterized the amount of money that individuals sought to transfer from one period to another. Transaction balances characterized the amount of money that individuals sought to hold in order to finance their transactions during the market period (1967: p. 87). As regards the “real-balance” effect, Clower only signaled that “the response of market prices and quantities traded to changes in the aggregate stock of money will differ qualitatively from findings associated with established doctrines” (1967: p. 89). The qualitative differences would have been due to the dichotomization of the Walrasian budget constraint into separate “expenditure” and “income” branches.\(^{24}\)

Secondly, Clower (1969) inserted the “Reconsideration” paper in the section devoted to the program opened by Patinkin (1956), labeled “Contemporary Theory: Neo-Walrasian Equilibrium Analysis”:

The selections of Part two sketch the story of this [Classical] dichotomy from its very origins to very recent times. The end – or apparent end – of the story is unfolded in the selections appearing in part three [in which both an extract from *Money, Interest, and Prices* and the 1967 paper are presented] and part four [titled “Monetary Theory and Keynesian economics” in which the 1965 paper is presented]” (1969: p. 19)

Clower (1969) suggested that the reason why *Money, Interest, and Prices* and the “Reconsideration” paper took part in the same tradition was that the same kind of monetary theory was searched:

Looking at the problem of price behavior from a theoretical point of view, however, one finds it difficult to see how any significant role can be assigned to money in the long-run unless money is also assumed to play an important role in short-run events; and if money is assigned an important role in

\(^{24}\) Clower (1967) stuck to a static analysis. In the absence of description of the effects of monetary disequilibria, it is not possible to explain the nature of these “qualitative differences”. 

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short-run economic analysis, then a separate long-run theory of money should not be necessary. Long-run conclusion should follow from short-run assumptions. However that may be, the fact is that until the appearance in 1936 of John Maynard Keynes’ *General Theory of Employment, Interest, and Money*, most professional economists took it for granted that all economic problems of any practical importance could be adequately handled using established techniques of demand-and-supply analysis, thereby presupposing that money was as such a ‘veil’ in the short-run as it was in the long-run – for at no stage in pre-Keynesian economics was any serious attempt made to build peculiarly monetary assumptions into the micro-foundations of economic analysis (1969: p. 19).

Following in Keynes’ footsteps, the goal would have been to formulate a non-dichotomous model, built from microeconomic behaviors, and able to explain the dynamic of actual money economies so as to articulate the non-neutrality of money without abandoning the neutrality proposition in the long-run.

Last but not least, although money was viewed as an institution in Clower’s project to integrate monetary and value theory, there was no break with Patinkin’s program. Indeed, in *Money, Interest, and Prices*, the monetary nature of the economy was also not considered as the pure result of individuals’ choices. Patinkin’s random payment process was an institutional apparatus aiming to force individuals to use money. It was as if, by assumption, individuals preferred addressing the de-synchronization between expenditures and receipts via money instead of another manner. Thus, neither Patinkin nor Clower really dealt with the issue of why money might generate utility. The two dodged the difficulty. The sole difference was that it was a problem for Patinkin while it was not for Clower. One considered that it was important to explain why individuals sought to use money in equilibrium, and the other did not. According to Clower, the theorist had to focus on the functioning of money economies rather than on the reasons why market economies are of a monetary nature.
4. Conclusion: originality and relevance of Clower’s project to integrate monetary and value theory

My paper aimed at explaining the genesis of the 1967 microfoundations of monetary theory. That was a difficult task since it was as if the “Reconsideration” paper came out of the blue. It was preceded by very few contributions to monetary theory, and in none of them did Clower address the foundations of this subject. To cope with this difficulty, my solution was to systematically characterize the intellectual context from which his contributions emerged, and to formulate rational reconstructions on the basis of arguments found not only in published papers but also in archival documents, and in the record of discussion held at the Royaumont Conference.

The genetic approach adopted here demonstrated that Clower’s (1967) reconsideration of the integration of monetary and value theory was part of the research program opened by Patinkin in *Money, Interest, and Prices*. Initially, Clower was involved in the debate over the “Classical dichotomy” rekindled by Archibald and Lipsey (1958) in reaction to the views defended by Patinkin (1956). Behind his repeated defense of the “Classical dichotomy” (1960, 1963), Clower really considered that Patinkin had identified the major gaps of “Classical” monetary economics and that his solution to integrate monetary and value theory was the proper way to understand the functioning of actual money economies. At that time, in a way, he had nothing really important to say about monetary economics that had not already been said by Patinkin (1956). Yet, by putting his finger on the 1965 disequilibrium program of microfoundations, Clower found a way to challenge the monetary theory expounded in *Money, Interest, and Prices*. The need to reject Walras’ law and the substitution of money for the clearing house revealed a new strategy to integrate monetary and value theory, based on the role of money as a medium of exchange. In parallel, the “dual-decision” hypothesis and
Clower’s (1965) attempt to feature a scenario of persisting involuntary unemployment served as a compass to reconsider the microfoundations of monetary theory. This resulted both in the introduction of transaction money balances in utility functions and in the dichotomized budget constraints. In spite of Clower’s (1967) charge against the monetary theory developed in *Money, Interest, and Prices*, these two proposals need to be considered as a reorientation in Patinkin’s program rather than as a break with it. Following in Patinkin’s (1956) footsteps, the monetary theory contemplated by Clower (1967) was non-dichotomous, microfounded, dynamical (“real-balance effect”), and would have had to articulate the non-neutrality of money in the short-run with the neutrality associated to the quantitative proposition, in the long-run.

These results outline an original project to integrate monetary and value theory. Two traditions are often distinguished in the history of attempts to address the monetary nature of market economies: the balance approach, embodied by Hicks (1935) or Patinkin (1956), and the transaction approach, recently rekindled in search models. In the first tradition, emphasis is mainly given to the role of money as a store of value. Frictions are introduced in general equilibrium models in order to ensure that in equilibrium, individuals want to hold money. In the second tradition, emphasis is mainly given to the role of money as a medium of exchange. In search models, the use of money in transactions is explained as the result of choices made by individuals who are supposed to compare different costs of transactions, associated to different strategies of exchange (barter, money, mix). Contrary to the accepted view, Clower (1967) must be disengaged from the second tradition. The 1967 project must be viewed as a continuation of the first tradition. Its originality lies in the formulation of a twofold reorientation. The first and most obvious one was to put the stress on the role of money as a medium of exchange instead of the one of store of value. The second reorientation was a change in focal point. Clower (1967) considered money as an institution, just like
parametrical prices and the law of supply and demand in general equilibrium theory. Accordingly, rather than focusing on why individuals sought to use money in equilibrium, Clower (1967) sought to account for the behaviors of individuals in an economy which, by assumption, was monetary.

The relevance of Clower’s (1967) project to integrate monetary and value theory must be considered from this two-fold reorientation. This raises two issues. First, are the 1967 microfoundations a relevant description of choices in money economies? In the afterword of Money and Markets (1984), Clower claimed that they were not, which may explain why he did not further develop the model expounded in 1967:

Specifically, the model implied that the choice alternatives confronting households were more restrictive in a money than in a barter economy, which meant that monetary exchange is less efficient than barter exchange, contrary to both common sense and two hundred years of conventional wisdom. Something obviously was wrong (1984: p. 267)

In the 1967 microeconomic model, individuals were unable to consume without having money. This necessarily imposed restrictions on their capacity to exchange. Yet, at least since Adam Smith, money was considered as a lubricant rather than as a brake to exchanges – money would allow overcoming the problem of the double coincidence of wants generally associated to barter systems. Accordingly, the 1967 microfoundations could hardly be used to describe choices in pure money economies.25

The second issue concerns the very idea to focus on the functioning of money economies rather than on the reasons why market economies are of a monetary nature. To what extent is this relevant given that Clower (1967) ultimately sought to formulate a monetary disequilibrium theory? To answer this question, it is helpful to have in mind recent developments in search models. This monetary theory allows resolving the two problems

often mentioned to explain why the Hicks-Patinkin tradition petered out. The first one refers to the impossibility to explain why individuals want to hold money when other assets in the economy ensure better returns. This problem, associated to Hicks (1935), was notably resolved by Shouyong Shi (1996). The second problem refers to the non-existence of a monetary equilibrium (i.e., with a positive demand for money). This problem, formulated by Hahn (1965) to criticize Patinkin (1956), was resolved by Katsuhito Iwai (1996) as well as by Nobuhiro Kiyotaki and Randall Wright (1991, 1993). Viewed this way, search models can be considered as the most advanced and satisfactory monetary theory ever formulated within the general equilibrium framework. Yet, as stressed by Jean Cartelier (2001), whilst improving the description of the functioning of market economies, the search models revealed deadlocks in the methodology used in the general equilibrium theory. According to him, there are profound limitations in trying to explain monetary phenomena as the result of individuals’ choices, in equilibrium. For example, the issue of the coordination of economic agents would be left opened in search models since the selection of the monetary equilibrium required an exogenous explanation. Moreover, by focusing only on equilibrium situations, the search models downplayed the role of money in transactions and so, in the determination of prices. According to Cartelier (2001), the use of money would really make sense in disequilibrium since it would thus be the most natural way to undertake transactions. In view of Cartelier’s assertions, Clower’s (1967) reorientation has the advantage i) to avoid the deadlocks in the equilibrium approach to monetary theory, and ii) to suggest a way to develop a monetary theory able to fully account for the significance of money in transactions and so, in price determination processes.

26 The search models à la Kiyotaki and Wright (1993) or Iwai (1996) featured three possible equilibria (money, barter, mix), with different levels of welfare. This raises issues of coordination failures, and so, of selection between equilibria. Cartelier (2001) stressed that the selection of, for example, the monetary equilibrium, could only be realized thanks to modifications of the parameters of the model. As evidenced of that, it is striking that in Iwai’s model, such a selection depended on the probability of acceptance of money by agents.
References


