MONEY AS A MEDIUM OF EXCHANGE AND ITS EVOLUTION: AN ELABORATION ON MENGERIAN MONETARY ECONOMICS

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I
INTRODUCTION

Peláez Gramajo (2008) compares the analysis found in Iwai (1988) to that of Menger (1892b). While rectifying some of the issues surrounding Iwai's method, there are several additional areas that require brief comment. Iwai bases his analysis strongly on Menger's original work on the evolution of money, an approach which has led to theoretical problems in his more recent work. A clarification of some of these issues will be of interest to economists working within Menger's evolutionary framework, as well as followers of the bootstrap method to monetary emergence.

A look will be given to Iwai's assertion that, contra Menger, money is not a natural evolution but one which requires «a large symmetry-breaking disturbance to create it "in the beginning"» (Iwai 1988, 4). Peláez Gramajo (2008, 70) correctly notes that Iwai's approach need not rely on this initial assumption. However, we will see that the explanation for this rests in a much simpler place than provided. The heterogeneity of agents assures that not everyone needs to initially adopt the medium of exchange, only a sufficient amount to make the benefits of others doing so outweigh their search costs.

Second, a look at Menger's thoughts on money will be assessed. Much attention is provided to only one of the three articles that

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form the core of Menger's theorizing on monetary evolution. A general neglect for money as a store of value has led to several erroneous conclusions, which continue to manifest themselves to this day. By giving due attention to the store of value role of money, we will see that Menger's origin of money was incomplete at its own origin, and cannot be taken as the sole basis of future developments in this line of thought.

Last, we will take issue with Peláez Gramajo's preoccupation with Iwai's analysis, while ignoring the work of Kiyotaki and Wright (1989). Working from a Mengerian foundation, Kiyotaki and Wright develop a more comprehensive model of money's evolution than Iwai, at only a small loss of generality. This approach however, suffers the same faults as any other based solely on a faithful representation of Menger's original work.

II
THE ORIGIN OF MONEY

Iwai (2008) concludes that money can be shown to evolve á la Menger, however, it requires an initial disturbance for a commodity to be chosen as *the* generally accepted exchange medium. This is an historical fact, one best left to «the hands of historians, archaeologists and numismatists» (*ibid.*, 63). However, this focus on a singular event which alters the role of a commodity into money rests upon an erroneous assumption – a homogeneity of market actors.

In fact, one large event need not occur to disrupt the current state of direct exchange. Money's key function is as a *generally accepted medium of exchange*. Menger's evolutionary viewpoint saw this as not being an instantaneous feat to achieve, but rather one that historically occurred throughout the ages. In fact, the origin of this seemingly massive event —the adoption of money as generally accepted— is preceded by many smaller events with exchange media being *merely* accepted (not necessarily in a general way).

Consider a large economy with heterogeneous actors producing distinct goods. Each actor has only the fruit of their own labor

initially to offer other producers in trade. The opening situation will be that each agent may only make trades with others who are willing to accept their goods in exchange. It is foreseeable that eventually a case will occur whereby two actors will require each others' goods, but not wish to further trade their own produce for receipt of these goods. This initial situation may occur for one of two reasons: 1.- each actor values their own goods more than the goods to be exchanged from the other actor; or 2.- the exchange may occur, but as one of the parties desires the other's good less than their own, an undesirable exchange rate will occur. The reduction of this very bid-ask price spread was the root of Menger's focus on a third good coming to be traded between the two parties. As an example, suppose a butcher and a carpenter wish to trade their own respective goods: steaks and houses. If the carpenter wishes to have a steak, they may have to sacrifice a whole house to obtain it. This asymmetry is obviously disadvantageous for the relevant party.

Jevon's (1876) double incidence of wants problem does not turn direct exchange into indirect exchange in a moment for all market actors. Instead, over time there will be a general tendency for fewer commodities to become generally accepted in mediating exchanges. Initially our butcher and carpenter may agree on a commodity to be used as an intermediary, this need not be the same as what other market actors choose. In fact, this process could begin, and likely does begin, with a large amount of different indirect exchange commodities. However, over time a tendency exists for fewer and fewer of these to remain in use as knowledge asymmetries are reduced.

As actors become more knowledgeable of other commodities that are generally accepted in trade, they will begin demanding these as receipt in their own trades. As demand for these certain commodities increases, more actors will choose to demand and supply them in exchange situations.

Conversely, an actor with sufficient command over the economy may unilaterally be able to impose a commonly accepted medium of exchange. Assume a situation where there is no such medium in common usage, yet a state exists that provides services to its subjects and taxes them accordingly. If the state demands that all

tax payments now be made in a defined commodity, instead of paid in diverse kinds as per the production of the subjects, a large demand will suddenly appear for that one commodity. As every subject is assumed to pay taxes to the state, each will now be in a position to increase their own supply of this commodity, as they are certain to have an exchange use for it later. Hence, an actor with a large enough circle of influence will have the ability to unilaterally determine what one such medium of exchange will be.

Jones (1976) shows that by comparing relative costs of trade, a common medium of exchange will result. Direct trade may be more cost-efficient in some instances, for example, where two actors have goods that are mutually desired for exchange quid pro quo. However, although in some instances indirect exchange will always involve doubling the gross number of trades involved (i.e., from one to two), in many other instances it will lead to a reduction in total trades. The at times superfluous exchange of a good for money will lead to a reduction in total exchanges in a modern economy, diversified in production.

It becomes seen, then, that the original origin of money need not lie in a large disruptive occurrence whereby all actors use the same medium of exchange instantly. Instead, we find that many small shifts will occur leading to this result. Money is, after all, a generally accepted medium of exchange; this general acceptance need not be the result of an instantaneous shift in demands.[1]

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[1] See, for instance, Shostak (2000, 71) on this gradual shift. In fact, this gradual process has been best recognized and developed by Demostenov (1946, 18) whereby:

> *In the beginning, only some economic entities establish the advantages of indirect exchange*. However, when the other participants in the exchange notice good economic results achieved by this method applied by shrewder and more resourceful economic entities, they themselves turn to this practice, *as there is no better way of showing man his own interests than to show the success of other men who have applied the right methods for achieving some goals or other*. We need hardly speak of the significance of imitation, or custom, etc., which have a «mechanising effect» on men's behaviour.

III

MENGER ON MONEY

Followers of Menger on monetary matters typically build from his 1892 article in the *Economic Journal*, «On the origin of money.» However, that same year Menger authored two additional papers which have received little attention since their publication.[2] The result has been that some ideas in Menger (1892b) are developed with little heed to the ancillary information that is crucial to the full understanding of what he meant. Additionally, Menger's stress on money's role as a medium of exchange has brought neglect to two other roles —store of value and measure of value— which require comment on here.

   Menger (1892a) focuses attention on money's role as a measure of value. Menger aims to dispel the myths, then prevalent, surrounding money as a value measurement. First, that money's value in exchange can be represented as a «fixed *quantum*» which is inherent in every good. Second, that this *quantum* which is contained in every good can be compared to the value contained in the *quantum* of the monetary unit. Menger maintains that no such fixed value is inherent in money, and that as such, money cannot be viewed as an absolute measure of value. In fact, Menger demonstrates and refutes the dictum followed since the age of Aristotle that exchange is necessarily between goods of *equal* value. If one believed that to be true, then it could follow that money (acting as an intermediary between trades) had an inherent value that is measurable. However, by stressing the value *inequality* of exchange, Menger is able to clearly delineate the two sources of value within money

   Money's «inner value» deals with the effects of money on the prices of other goods. Price movements always depend on changes in value originating in both the money used, and the commodity in question. In order to ascertain which it is that has

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   [2] Menger (1892a) was originally published in French, and was not translated until recently to be made available to English speakers. For his other paper, we will use Menger (1909), a translation of his original article *Geld* which was also originally published in 1892, but considerably expanded upon 17 years later.

caused a price change, it is necessary to distinguish between the value of money, and the value of the other goods. The issue of the changes in the value of money is what Menger refers to as the inner value. «Outer money,» in distinction, refers to the monetary equivalents that are required to enact a trade.[3] This we can see is what makes up the component of value contained in the goods in exchange. Menger's stress that both these values —inner and outer— are variant, hence refuting the previous viewpoint of money as an absolute measure of value.[4]

Menger (1909) is a longer piece, originally written in 1892 and greatly expanded in 1909. In it, he elaborates many ideas concerning money's role as a medium of exchange, while simultaneously downplaying its role as a store of value.[5] This troubling point would have consequences for later authors following the Mengerian monetary tradition, as they too neglect this crucial role.

For what is a store of value other than an intertemporal medium of exchange (Howden 2008b)? Actors must always choose between exchange in the impending moment, and at some future point (Böhm-Bawerk 1889, 260; Rothbard 1962, 767). As such, we can see that the store of value function is crucial to understanding the expectation that money will function as a medium of exchange, *at the point in time the actor wishes to use it*. As Wicksell (1911: 23) sums money's role:

> The money he acquires then remains in his hands both as ready money for anticipated future purchases or payments, and as a reserve for unforeseen liabilities. His money thus becomes his means of storing value (though usually only for a shorter period), his potential purchasing power, or future medium of exchange.

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[3] As Campagnolo (2005, 240) points out, outer money corresponds to today's concept of purchasing power.

[4] With this new dichotomy of value, economists could focus their attention on defining sources of value in money. Some sources are inherent in the money, a result of it being chosen in the first place. However, others are the creation of humans, as pointed out in Howden (2008a, 162).

[5] In fact, Menger would consistently take this position as far back as his *Principles* text, where he refers to the store of value function as merely being of an «accidental nature» (see 1871, 280).

> In other words, it becomes a pledge or guarantee —*de facto* not *de jure*— for the future performance of counter-services to which he is economically entitled by virtue of the services he has performed.

Menger's continued failure to acknowledge the crucialness of money's store of value function led to detrimental conclusions for both his own monetary work, and that of his followers.

By focusing solely on the exchange role, Menger arrived at the conclusion that money can be «perfected» by the state. Once money has already emerged as a market institution, the state, through legal tender laws, can improve upon its acceptance and hence increase the the demand for its use as a medium of exchange. This conclusion has led to two erroneous lines of thought. The first is that as money can be perfected through the state, the state can unilaterally establish money without heed to market forces. This has been critiqued by Herbener (2002, 6) where it is noted that states can only ratify existing medium of exchange, never successfully enact them on their own. Second is that future value considerations need not be of importance in theory concerning money as an emergent order. However, future purchasing power expectations remain central to individuals as they initially decide what good will be used as the accepted medium of exchange.

This state's role in money production remained an inconsistency uncorrected by Menger throughout his whole career. Menger (1871) condemns all monopolies, and demonstrates why monopoly prices are biased and have negative consequences for consumers. It is troubling then that Menger's monetary theory would leave room for a state enforced monopoly on money production, in an attempt to perfect its role as a medium of exchange.

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IV

TODAY'S MENGERIAN REPRESENTATIONS

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It is troubling that Peláez Gramajo (2008) would use Iwai (1988) as the model of Menger's endogenous evolution theory of money's emergence. In fact, while writing his 1988 article in question,

Iwai's University of Pennsylvania colleague Randall Wright would commence work on modeling the Mengerian monetary emergence that in many ways exceeds Iwai's own model.

Iwai (1988) uses a general equilibrium framework with fully rational expectations, whereby traders partake in simple trading patterns aimed at deterministic trading zones. Kiyotaki and Wright (1989) use a similar approach, however actors are able to employ sequential strategies and are matched randomly instead of being directed toward predetermined zones.[6] Kiyotaki and Wright loss some generality that is evident in Iwai's model, however, this one factor does not seem to be of concern. For instance, Kiyotaki and Wright model the exchange process with three market actors – the least number possible to enact indirect exchange. Extensions to include more explicit actors would complicate their analysis, but not lead to significant changes in the results, hence, the generality advantage of Iwai is questionable.

More recently, Corbae, Temzelides and Wright (2003) have built from the Kiyotaki and Wright (1989) model and incorporated directed rather than random matching of actors. This addition significantly furthers the traditional search models, as randomness does not seem to be a significant factor in actors meeting for exchange in the real marketplace.

Both models (Iwai (1988) and Kiyotaki and Wright (1989)), however, suffer from the traditional bootstrap assumption that money is money because it is used as money. This leads to the infinite regress whereby no definite point can be found to cause a commodity to be used as a money in the first place. Mises (1912) provides the solution to this puzzle by demonstrating through his «regression theorem» that the regress is not infinite. A point in time occurs where money's exchange value derives from the use value contained in a commodity.[7] This use value is

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[6] Further elaborations of this basic model appear in Kiyotaki and Wright (1991; 1993).

[7] It is here that Menger's (1892b) original emphasis on the «saleability» aspect of money becomes so critical. Modern search theory techniques have formulated this Mengerian idea much more rigorously than Menger himself was originally able to achieve. However, many fall into the trap of thinking that the causal order can

common among market actors, and is what develops into a medium becoming generally accepted in exchange. Second, as a result of the endless regress assumed to occur in both models, fiat money holds the possibility of being introduced *ex novo*. The result is that equilibria are achieved whereby fiat money can be viewed as being the optimal monetary choice. That this disregards the original emergence of money through a commodity with commonly sought after use value needs no additional comment. However, it seems to be a consequence of the Mengerian tradition that by ignoring the store of value component of money, fiat can be seen as an optimal choice. In fact, the costs of production of using commodity monies are not a failing in comparison to fiat, but their main source of excellence (Mises 1949, 471). The supply-side restraint on money production ensures that long-term value, or purchasing power, is contained, and that the store of value function is not sacrificed.

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V

CONCLUSIONS

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This brief paper had two explicit goals. The first was to more fully expand upon Menger's original monetary theory, something which heretofore has not been done as a result of language barriers and the scarce availability of his ancillary writings. Second was a desire to clarify some misconceptions that have occurred surrounding Menger's monetary theory by authors using search theory or bootstrap methods to formalize it.

Menger (1892b) remains a monetary classic, and is still to be viewed as the authority on money's emergence as a social institution. However, Menger (1892a and 1907) remain very much unknown to most, with unfortunate consequences as they were written to

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be reversed. This leads many bootstrap models into the trap of viewing money as money solely due to the fact that it is used as money. Menger and Mises' original renditions irrevocably show that money emerges as money as it has a highly saleable use value, not because it will eventually have a highly saleable exchange value.

clarify specific points about his own thoughts. However, while correctly elaborating on the true source of value concerning money, as well as developing an early theory of purchasing power and exchange rate dynamics, Menger's failure to view money's store of value function as anything more than a accidental role has led followers of this tradition to err in their own analysis.

The store of value represents an intertemporal medium of exchange. As money will not be desired to be used in the immediate present, this temporal element manifested as the store of value, will always be instrumental to *what* becomes money at its emergence.

More recent models utilizing the bootstrap method have tried to endogenously assign a medium as money. This method is a great advancement over the more traditional methods used in monetary economics, however, they still suffer from several grave deficiencies.[8] First is the mistake of viewing money as money solely because it is generally used as money. The omission of Mises' (1912) regression theorem eliminates the concept of money gaining exchange value through a commodity's previous use value. As a result, fiat money is incorporated into these models with stable results. This is a direct consequence of the Mengerian absence of attention given to the store of value role of money. When money is viewed as a dual position in the market (that of medium of exchange, and that of a store of value) we find that endogenously emerging fiat money is precluded.

Further elaborations upon Mengerian monetary economics are welcome, however, the caveat should be raised that the heretofore neglected store of value function of money should be given a more prominent role than current endeavors allow for.

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8 The two most dominant frameworks in monetary economics today are the overlapping generation models (i.e., Wallace 1980) and the cash-in-advance models (i.e., Lucas 1980). Both these approaches assign money a medium of exchange role exogenously, and hence, ignore the emergence of money.

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