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Against Monetary Disequilibrium Theory and Fractional Reserve Free Banking

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ABSTRACT: The theory of monetary disequilibrium, as espoused by Selgin (1988), White (1989), Horwitz (2000), and others, has been used to justify the issuance of fiduciary media under a system of fractional reserve "free" banking. The present paper examines this monetary disequilibrium theory and concludes that it contains numerous errors and logical fallacies. The foundational economic argument in favor of fractional reserve banking is invalid.

KEYWORDS: free banking, business cycle, credit expansion, monetary equilibrium

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INTRODUCTION

In a free banking system, does it make economic sense for banks to have the freedom to issue fiduciary media? Modern fractional reserve free bankers, such as Lawrence White and George Selgin believe that it does. For Selgin (1988) and White (1989), fractional reserve free banking (FRFB) is not only ethical, it is beneficial from a utilitarian perspective, for it eliminates alleged economic coordination failures that would otherwise be caused by changes in the demand to hold money.

The economic justification for FRFB relies heavily on a theory of monetary disequilibrium, initially developed by authors such as Davenport (1913), Harbeler (1931), Malchup (1940), Warburton (1946), and later by Yeager (1997) and Horwitz (2000). According to this theory, any deviation from "monetary equilibrium" produces economic discoordination. While standard Austrian business cycle theory (ABCT) is a theory of economic discoordination and malinvestment that occurs as a result of changes in the *supply* of money, monetary disequilibrium theorists allege that similar kinds of problems occur from unopposed changes in the *demand* for money; that is, business cycles can be generated whenever there is an upset in monetary equilibrium, regardless of whether the disturbance originates from the supply or the demand side. Accordingly, advocates of FRFB contend that monetary disequilibria caused by changes in the latter, along with their associated price coordination failures, can be eliminated by precise, compensatory changes in the supply of fiduciary media. Moreover, they assert that under FRFB this process is entirely self-correcting, in that the quantity of fiduciary media issued by banks automatically adjusts to changes in the public's demand, in such a way that monetary equilibrium tends to be maintained.

Hoppe, Hülsmann and Block (1998), Hülsmann (1996) and Huerta de Soto (1998) have demonstrated that fiduciary media issued in response to changes in the demand for money, create, rather than eliminate, economic discoordination under a system of FRFB.[1] In

[1] Block (1998), Hoppe, Hulsmann and Block (1998), and Rothbard (2004) have also criticized the issuance fiduciary media on ethical grounds. Block and Davidson (2010) have argued that the ethical reasons for opposing FRFB are even more fundamental than the economic-utilitarian ones.

a more recent paper, Bagus and Howden (2010) have argued that FRFB's feedback mechanism, by which it is alleged the requisite amount of fiduciary media issued or destroyed maintains monetary equilibrium, simply cannot work. The purpose of this article, in contrast, is to dismantle the theoretical foundation upon which FRFB rests, by exposing the illegitimacy of the concept of monetary equilibrium itself, and thus the more basic fallacies of the monetary disequilibrium theory (MDT).

"Monetary equilibrium" is claimed to exist when the demand to hold money equals the supply of money at the current price level. All things being equal, a change in either the demand or supply of money causes a disequilibrium in the money relation, leading to a change in overall prices. It is contended that the readjustment process to the new price level—and the new monetary equilibrium—entails social costs caused by economic discoordination as a result of a change in relative prices. Moreover, it is alleged that monetary disequilibrium (MD) causes a disequilibrium in the market for loanable funds, entailing a disparity between gross saving and investment and implying a market rate of interest that is not in accordance with the social time preference. If, for example, there is a change in the demand to hold money, and nothing is done to counteract this change, the discoordinating effects and social costs are similar to those described by Austrian business cycle theory (ABCT). On the other hand, if the quantity of fiduciary media is adjusted by the banking system to cater to changes in the demand for money, then investment remains equal to saving, monetary equilibrium tends to be maintained along with a stable price level, and the above described social costs are averted.

The present article disputes the above claims. Part 1 examines the money relation—the relation between the supply and demand for money—and shows how MD theorists wrongly interpret the demand for money and its relation to market prices. Part 2 establishes how a change in the money relation stemming from the demand side does not entail the extended equilibrating process that is claimed. Part 3 demonstrates why a change in the demand to hold money does not produce the type of intertemporal economic discoordination associated with ABCT. Part 4 looks at the role of the entrepreneur

and why changes in money's demand do not represent a failure of the price coordination mechanism. Part 5 concludes.

1. THE MONEY RELATION

In contrast to other goods and services, money is not used up in consumption or production; its ultimate use lies in the fact that it is exchanged for other goods. But because the world is uncertain, economic agents usually feel compelled to retain a certain portion of their income, at any given time, rather than dispose of it immediately. Money, therefore, is a good which has utility, not just when it is exchanged, but also when it is held. The utility of holding onto money lies in the fact that it is available when needed.

As Horwitz (1990) explains:

> When one holds a stock of money, one has something available, waiting to perform its ultimate service of exchanging for non-money goods and services. As Hutt insisted, "the act of passing [money] on is merely the culmination of a service which it has been rendering to the possessor." Hutt compared the yield from money to the yield from a standing fire truck. Surely it is not the case that there is no benefit flowing from such a truck. Rather the service it renders is being available in case it is needed.

When considering the demand for money, it is necessary to distinguish between the pre-income exchange demand for money, by those who seek to acquire it by selling goods or labor services, and the post-income or "reservation demand" to hold money,[2] by those who already own it. This is precisely analogous to the pre-purchase exchange demand for any non-money good by those who seek to acquire the good by selling money, and the post-purchase reservation demand to keep the good by those who already own it (where such a reservation demand exists).

MD theorists contend that it is changes in the *post*-income reservation demand to hold money that cause monetary disequilibria.

[2] The term "reservation demand for money" is used by Rothbard (2004). In this article it shall be used instead of the term "demand for money" when it is necessary to distinguish it from the "exchange demand for money."

But in order to prove their claim, and to demonstrate the effects of such changes on the money relation and the purchasing power of money—the reciprocal of the so-called price level—they disregard the effect of money's exchange demand.

This is a fundamental error. Just as the price of any good is determined by its total demand—both in exchange and to hold—as against the total stock of that good, the purchasing power of money is also determined by its total demand—both in exchange and to hold—as against the total stock of money.[3] Any discussion regarding the money relation—the relation between the supply and demand for money—and the determination of the price structure as far as the reciprocal exchange ratios between money and other goods and services are concerned, would be incomplete without considering *both* the reservation *and* exchange demand for money. Herein lies a fundamental disagreement with the advocates of MDT, for in all their representations of the demand for money, as it concerns the money relation and the price level, they consider only the reservation demand.

For example, according to Selgin (1988):

> Thus to be useful the expression demand for money must refer to peoples' desire to hold money balances and not just to the fact that they agree to receive money in exchange for other goods and services, including later-dated claims to money. It is only when people who receive money income elect to hold it rather than spend it on other assets or consumer goods that they may properly be said to have a demand for money. Edwin Cannan (1921) made this point forcefully years ago: "We must think of the demand for [money] as being furnished, not by the number or amount of transactions, but by the ability and willingness of persons to hold money, in the same way as we think of the demand for houses as coming not from persons who buy and re-sell houses or lease and sub-lease houses, but from persons who occupy houses. Mere activity in the housing market—mere buying and selling of houses—may in a sense be said to involve 'increase of demand' for houses, but in a corresponding sense it may be said to involve an equal 'increase of supply'; the two things cancel.... In the same way, more transactions for money—more purchases and sales of commodities and services—may in a sense be said to involve increase of demand for money, but in the corresponding sense it may be said to involve an equal increase of supply of money; the two

[3] Rothbard (1962), ch. 11, "Money and Its Purchasing Power."

> things cancel. The demand which is important for our purposes is the demand for money, not to pay away again immediately, but to hold."

While it is certainly the case that in order to *describe* the alleged monetary disequilibria it is useful that the expression demand for money "must refer to peoples' desire to hold money balances and not just receive money in exchange," it is certainly not the case that in order to *explain* disequilibria in terms of the money relation, it is valid to do so without referring to peoples' desire for money in exchange. And yet that is precisely what MD theorists unsuccessfully attempt to do.

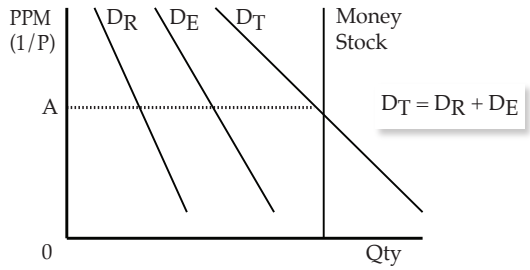
With reference to the above quotation, it is of course true to say that any transaction involves an increase in the demand for money matched by an increase in the supply, but it is true only in a trivial sense. It is true only in the sense that *ex post* the *quantity* of money demanded must equal the quantity supplied, which is of course true for any kind exchange. Only in this sense do the "two things cancel." However, it is definitely not true to say the demand *schedule* for money in exchange, as determined by the value scale of the buyer of money, is equal to the supply schedule of money in exchange, as determined by the value scale of the seller of money.

For the purposes of determining money's purchasing power we are not interested in mere quantities. Money's purchasing power, its "price,"[4] is determined by the intersection of the demand *schedule* for money with the stock. And it is impermissible to use *only* the schedule of the reservation demand, while excluding that of the exchange demand, on the grounds that the latter is a mere quantity that cancels out in the process of exchange. It is not a quantity, and it does not cancel out. The demand for money schedule is the sum of both the reservation demand *and* the exchange demand schedules, and the purchasing power of money is determined by this total demand against the stock.

[4] The author recognizes that the purchasing power of money cannot be represented by a single number—the reciprocal of the so-called price level, P—because P itself is not a single number. Rather, P is the array of all the prices of goods and services that exchange for money in the market, and 1/P is an array consisting of the inverse of these prices.

This can be represented graphically in a conventional total demand-stock diagram as shown below. It should be noted that these kinds of representations of the money relation are conceptual only, since money has no unique price.

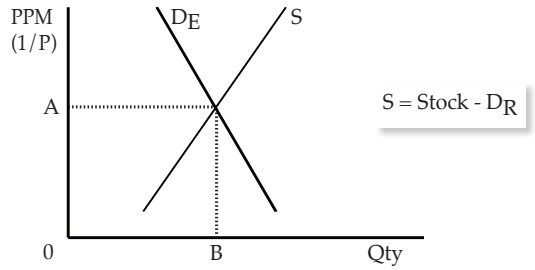
Figure 1. Total Demand Schedule for Money and Money Stock



2. CHANGES IN THE MONEY RELATION

In most discussions of the money relation, the total demand-stock analysis is used. However, there is no practical reason why a standard supply-demand type of analysis cannot be used instead. Both methods of inquiry convey the same information, but represent it in a different way. In the latter method, the "supply"—meaning the schedule—is the total stock minus the reservation demand, and the "demand" is simply the exchange demand schedule. Since money has a reservation demand, the supply *schedule* of money—not the stock—becomes an upward sloping curve to the right, which is intersected by the downward sloping exchange demand curve. It represents the quantity of money supplied to the market at various "prices" of money by market actors who seek to exchange it for goods and services. The application of this supply-demand type of analysis to money more readily facilitates an explanation of its connection to the goods for which it exchanges. Proceeding in this somewhat unconventional way, the same conceptual information presented in Figure 1 can be represented in the diagram below.

Figure 2. Exchange Demand and Supply Schedules for Money



The supply schedule of money, S, in Figure 2—which is the stock minus the reservation demand from Figure 1—is also the exchange demand schedule for all *goods* in terms of money. And the supply schedule of goods in general is also the exchange demand schedule for money shown above. Thus, for example, if the reservation demand for money curve, D_R, in Figure 1 decreases, i.e. shifts left, the supply curve for money, S, in Figure 2 shifts right by a corresponding amount, which is to say the exchange demand curve for goods (in terms of money) shifts right also.

However, because money is exchanged for every other good, its purchasing power—money's "price"—is not a single number, A, as shown above; rather it is comprised of an *array* of values, each value in the array being the reciprocal of the price of a particular good, one for each good on the market. When the price of *any* good changes, money's purchasing power changes. Since each good on the market has its own supply and demand schedule expressed in terms of money, money has a separate (partial) supply and demand schedule, expressed solely in terms of that good. Thus, when the social reservation demand for money changes, it is not a single supply curve shown in Figure 2 that shifts, rather it is the partial supply curves of money with respect to goods individually (and hence those goods' demand curves) that shift, all to varying extents. And they do so precisely because a change in the social reservation demand for money is nothing more than a change in its marginal utility as it moves up or down each market participant's value scale, a value scale that encompasses all goods including money.

Thus, suppose on the value scale of Smith, the marginal utility of a certain quantity of money in his cash balance moves below that of commodity Z. Ceteris paribus, Smith's partial supply curve of money, with respect to good Z, shifts right, which is to say Smith's exchange demand curve for good Z, in terms of money, also shifts right. Another way of looking at this is to say Smith's total demand for money falls and his total demand for Z increases. When all the potential buyers and sellers of Z are taken into account, the change in their valuations, if they are great enough, causes a new marginal buyer and seller to emerge, and a disequilibrium to occur, which lasts only until such time as the market clears again. At this point a new higher price for Z is established at a new plain state of rest (PSR).[5] This is *precisely* the same thing as saying that a new lower "price" for money has been established at that same PSR, due to the fact that one of the components that defines money's "price"—the component in this case being the reciprocal of the price of Z—has fallen in value.

If everyone's demand to hold money falls, then the price array for money decreases with respect to a broad spectrum of goods, the components of which are established at a new PSR. Since a change in liquidity preference does not involve a necessary implied change in time preference—a topic that is addressed further in the next section—a fall in the social reservation demand for money (absent an independent change in time preference), must, in general, entail a shift to the right of the demand curves for goods associated with both consumption and investment. If market actors demonstrate

[5] Mises's plain state of rest (PSR), which corresponds to Bohm-Bawerk's "momentary equilibrium" and Rothbard's "market equilibrium," is a real-world phenomenon involving a pause in market activity when the gains of trade between buyers and sellers are temporarily exhausted. It persists, with respect to a given good, as long as the relative valuations of the marginal buyers and sellers remain constant. When the market supply or demand schedules change, such that new marginal pairs arise with different valuations, the PSR ends, trading resumes, and a new PSR is established after the market clears again. It must be distinguished from the final state of rest (FSR) which is the hypothetical zero profit equilibrium that occurs after all production consequences have run their course, and prices have fully adjusted. The FSR can never be attained in the real world because new exogenous inputs—stemming from changes in consumer preferences, technology, and the availability of natural resources—always arise before the FSR can be reached. See also Salerno (1993) and (1994) and Klein (2008) for an explanation of the differences between the PSR and FSR.

a preference to consume more and invest more simultaneously, without any change in the investment/consumption ratio, the demand schedules of both consumer *and* producer goods (at all stages of the production structure), in general, increase together, ceteris paribus. This is the same thing as saying that, in general, the partial supply schedules of money with respect to all non-money goods increase.

Nevertheless, because the relative positions of money and consumer goods on the value scale of every actor are unique, *relative* demand variations--i.e. relative partial money supply variations—arise in the market for consumer goods as their overall demand increases. Thus, a sequence of endogenous events is triggered. Entrepreneurs start to alter their production processes causing relative demand variations among the factors of production. Original and produced factors, at various stages of the production structure, are reallocated, which is to say the supply curves of producer goods shift with respect to *particular* productive processes (but not in general). Ensuing changes in the quantities of outputs mean further shifts in the supply curves of produced factors downstream, and of consumer goods.[6]

An alteration in the supply schedule of any good is a change in money's partial *exchange* demand schedule with respect to the good in question. Therefore, the endogenous events that follow a change in the reservation demand for money simply re-alter the money relation as they occur. Indeed, each one of these subsequent events *is* a change in the money relation, at which, on each occasion, the supply and demand for money regain momentary (and monetary) equilibrium in direct correspondence with the PSRs. But it is only by introducing the *exchange* demand for money into the analysis that this concept can be grasped accurately. Thinking of the money relation in this way, it is evident that monetary equilibrium exists as nothing more than the PSRs in the markets of the goods for which money is traded. There is no equilibrium that exists independently of them. When the money relation changes, disequilibria occur in these markets until such time as new PSRs are established, at which points the supply and demand for money are also temporarily in equilibrium.

[6] The total quantity of goods-in-general supplied and demanded does not change. Hence, in general, prices rise.

(*Mutatis mutandis*, similar arguments can be made when the social reservation demand for money rises or the stock of money falls.)

Does the process described above result in market inefficiencies and misallocations of resources? Although this question is dealt with more fully later, it should be pointed out that in general—i.e. abstracting from relative demand variations—the price ratio between inputs and outputs is unaltered, ceteris paribus, at every stage of the productive structure, when the social demand to hold money changes.[7] This is so because, *in general*, demand schedules for *all* non-money goods—and hence their prices—increase (or decrease) contemporaneously. From this perspective, it can be seen there are no "sticky prices" or "who goes first?" problems that could lead to systemic misallocations of capital. *Relative* demand variations, arising out of money's non-neutrality, are no cause for concern either. They simply reflect the differences in individual value scales regarding the relative position of goods as the general demand changes. Since they are completely in accordance with consumer preferences, the ensuing production changes they induce do not represent any kind of systemic market inefficiency. There can of course be misallocations of resources if entrepreneurs fail to respond appropriately. But these errors are precisely the same kind of non-systemic events that can occur in response to any form of exogenous change as the market data adjusts. Moreover, even in these circumstances, as long as markets are allowed to clear, full price coordination is always maintained.[8]

Contrast the above view of the money relation with that of Yeager (1968), who states:

> Instead of going out of existence, unwanted money gets passed around until it ceases to be unwanted. Supply thus creates its own demand (both expressed as nominal, not real, quantities, of course). To say this is not to assert that there is no such thing as a demand function for money or that the function always shifts to keep the quantities demanded and in existence identical. Rather, an initial excess supply of money touches off a process that raises the nominal quantity demanded quite in accordance with the demand function. Initially unwanted cash balances "burn holes

[7] In the case of an independent change in social time preference, the price ratio between inputs and outputs rises or falls equally.

[8] Salerno (1991). This is explored in greater detail in section 4 of the present paper.

> in pockets," with direct or indirect repercussions on the flow of spending in the economy.... People's actions to get rid of unwanted money make it ultimately wanted by changing at least two of the arguments in the demand function for money: the money values of wealth and income rise through higher prices or fuller employment and production, and interest rates may move during the adjustment process.

For MD theorists there is a disjunction between the supply and demand for goods and that of money, because the exchange demand for money is left out of their analysis. Instead of there being a direct equivalence between these two aspects of the market, any "excess" is passed around like a hot potato touching off a more extensive equilibrating process that lasts until such time as all the endogenous events have fully played out. This misconception arises in their analysis because their demand for money function takes no account of the partial exchange demand schedules, which change as the internal data resolve.

As a consequence, MDT erroneously concludes that monetary equilibrium is achieved only after all production consequences have run their course. However, the progression toward this end state consists of an extensive series of PSRs, *each one of which entails a monetary (and momentary) equilibrium*. Moreover, while it is certainly possible to conceive of an entire sequence of events that brings the data toward a final state of rest (FSR), the movement towards this kind of equilibrium is hypothetical only, occurring only in analytical "time," since it rests on the assumption that all external data – i.e. consumer values, technology, and natural resources – remain static after the initial change. In the real world, the exogenous data are in a perpetual state of flux, and entrepreneurs are ceaselessly amending their production processes, such that the constellation of prices are constantly moving in the direction of, but never actually closing in on, a definite end state.[9] MD theorists on the other hand, view the data as actually moving in clock time towards an end point, the point at which the quantity of money supplied and demanded allegedly regain equality.

Because MD theorists' concept of monetary equilibrium and the equilibration process is conflated with the imaginary construct of the FSR, MDT cannot be used to expound on any actual or

[9] See on this point Klein (2008) and Salerno (1993).

realizable market phenomena. The systemic misallocation of resources alleged by the theory, that is supposedly resolved in the equilibration process it describes, is a chimera. Furthermore, as will be shown below, there is no reason to suppose that any kind of errors, real or imagined, can be averted by an injection of fiduciary media, which itself can never be neutral in its effect, and which to the contrary induces the very systemic errors the advocates of fractional reserve free banking claim that it prevents.

3. MONETARY DISEQUILIBRIUM THEORY AND AUSTRIAN BUSINESS CYCLE THEORY

In traditional Austrian business cycle theory (ABCT), an increase in the quantity of fiduciary media, entering the economy through the producers' loan market, causes the market rate of interest to fall below that which would normally prevail given the existing social time preference. Gross investment increases without a corresponding increase in voluntary saving. The artificially low interest rate falsifies the process of economic calculation, sending erroneous price signals to entrepreneurs, which result in intertemporal discoordination and malinvestment. Entrepreneurs attempt to lengthen the production structure beyond that which is dictated by the prevailing data, which, unless there is a spontaneous increase in voluntary saving, eventually gives rise to a circumstance where the more capital-intensive stages undertaken become unsustainable. The initial boom gives way to crisis and recession. Assuming no further increases in the amount of fiduciary media, the recession can be viewed as the curative for the excesses of the boom, because it is during this time that the factors of production are once again reallocated in accordance with consumer value scales. Nevertheless, since numerous resources have been squandered, the end result is a society that is impoverished relative to what it would have been absent the injection of fiduciary media.

MD theorists attempt to integrate their concept of MD with the Austrian business cycle by contending they both entail the same kind of economic discoordination. Indeed, their theory implies that the Austrian business cycle *is* a monetary disequilibrium phenomenon caused by changes in *either* the quantity of fiduciary media *or* the demand for money. Thus, a fall in the demand to

hold money, absent a corresponding reduction of the money stock—which is a situation they refer to as inflation—has the same effect as an injection of fiduciary media under traditional ABCT, in producing an unsustainable boom. And, similarly, a rise in the demand to hold money, without a rise in the quantity of money—in this case "deflation"—has the same effect as a contraction of fiduciary media in initiating a depression. Accordingly, it is claimed, when the demand to hold money changes, a matching change in fiduciary media is warranted in order to maintain monetary equilibrium and prevent the onset of booms and busts.

A major problem with this argument is that monetary disequilibria are temporary phenomena, lasting only as long as it takes for individual markets to clear at the various PSRs. Business cycles are much longer term phenomena lasting many months or years. This alone should put to rest any notion that MDT can be tied to ABCT. However, *arguendo*, let us assume MDT, as expounded thus far, is valid. If the MD theorists' expanded vision of ABCT is correct, it must be demonstrated how, in an economy *without* fiduciary media, an unmatched increase/decrease in the social reservation demand for money:

1. Causes the levels of saving and investment to differ, and;
2. How it causes the market rate of interest to be inconsistent with the rate dictated by time preference, since it is this divergence that is the root cause of the price discoordination and calculation problem in ABCT.

Let us examine each of these propositions by taking the case of an *increase* in the demand to hold money. (*Mutatis mutandis*, the same argument applies to a decrease.) First, in the absence of matching expansions of fiduciary media, does it result in an excess of saving relative to investment?

Much confusion lies in the fact that the word "saving" can have different meanings. In one sense, it means *capitalist* saving—i.e., the act of foregoing consumption in order to engage in a corresponding transfer of resources to the formation of capital goods. In this sense, as a noun, it means the amount of consumption foregone. It necessarily implies, as a prerequisite, a restriction of present consumption and a fall in time preference. It also implies a corresponding act of investment along with a period of production

that occurs over a specific period of time. The amount of investment equals the amount saved, and the return to the capitalist saver/investor is dependent on the pure rate of interest and the period of production. It matters not at all whether the saver is the investor himself, and purchases the producer goods directly, or whether he buys various financial instruments such as a stocks or bonds, and allows others to do the investing on his behalf. The logical implications are the same.

MD theorists, however, use the word "saving" to describe the act of accumulating money in a demand account or in the form of cash. While it might have this usage in common parlance, this kind of "saving" does *not* imply, as a prerequisite, a restriction of consumption or a fall in time preference. In an economy without fiduciary media, the "saved" funds are being held solely for their availability services, and thus there is no corresponding act of investment or period of production. In addition, the return to this kind of "saver" is the utility from having the funds available, and *not* an amount of money derived from the pure rate of interest.

Unfortunately, by referring to the holding of money as "saving," (in the second sense) MD theorists erroneously ascribe to it all the logical implications of true capitalist saving (in the first sense), and in so doing, deduce that there must be underinvestment when the demand to hold money increases. Complicating the issue, a change in money's reservation demand might indeed involve a change in the amount of capitalist saving *elsewhere*, because when the demand for other assets falls, the demand for *either* consumer *or* producer goods can be affected, leading to a change in the overall investment/consumption ratio. But it is not permissible to describe the implications of a change in the demand for money as though it is an act of capitalist saving *itself*. Abstracting from the effect on saving and investment elsewhere, the quantities of which always remain equal to each other, there is no unmet investment. And thus a prescription that calls for the creation of fiduciary media in response, results in an unwarranted expansion of investment.

Second, does an unmatched increase in the social reservation demand for money cause the market rate of interest to be inconsistent with the rate dictated by time preference?

Before examining this proposition it is important to explain in more detail what I mean by the "rate dictated by time preference." In Mises's imaginary construction of the evenly rotating economy (ERE), where there is no uncertainty and no role for the entrepreneur, the spread that exists between the price of any given product and the total price of its factors, expressed as a percentage per unit of time (due allowance being made for the length of the production period in each case), is the same throughout the entire productive structure. This uniform rate of return is the "originary rate" or "pure rate" of interest, and totally dependent on the social time preference. It is the income every pure capitalist receives by exchanging present goods (such as money) with the owners of the factors of production, for future goods derived from the product of their factor services. In the real world, where uncertainty abounds, the price spreads include additional premiums for risk, potential changes in the purchasing power of money, and terms of trade, and thus the return to the pure capitalist varies, depending on the productive process.[10]

Though not clearly visible or measurable, the uniform pure rate of interest nevertheless underlies all rates of return in the overall market for time, including the market for loanable funds. In the Rothbardian view, it is determined by the supply and demand of present money (in terms of money receivable in the future), throughout the entire time structure of production. Capitalist-investors are the suppliers of present money, while the owners of the factors of production, at all stages, are the demanders. It is important to emphasize that the market for loanable funds is merely one aspect of the time structure, serving as a channel for investment in much the same way as the stock market. It is therefore subsidiary to, and not separate from, the overall time structure. With reference to the unhampered economy, Rothbard states:

> The producers' loan market is totally unimportant from the point of view of fundamental analysis; it is even useless to try to construct demand and supply schedules for this market, since its price is determined elsewhere. Whether saved capital is channeled into investments via stocks or via loans is unimportant. The only difference is in the legal technicalities.

[10] This is the "natural rate" of interest to which Rothbard refers. Horwitz et al. use a somewhat different definition as discussed below.

Thus, in an economy in which fiduciary media does not exist, the interest rates that exist in the loan market are underlain by a single unified pure rate of interest that is established by the supply and demand for present money throughout all time markets. In traditional ABCT, when fiduciary media enters the loan market, it lowers the market rate below the rate dictated by time preference. It is this divergence—between loan market rates that exist after the injection, and the market rates that *would* have existed given the existing pure rate—that triggers the boom phase of the business cycle. The issue before us is whether a similar kind of divergence occurs under the 100-percent reserve system when the demand to hold money changes. In the case of an *increased* demand, does the pure rate fall relative to the market rate?

No.

Consider first the possible implications for social time preference corresponding to the diminished demand for other assets. The demand for consumer goods need not necessarily fall more than that of producer goods. Money hoarding could be achieved by businesses allocating a smaller portion of their income towards capital expenditures, and by households reducing their demand for stocks, bonds, and other investment vehicles (inside or outside the loan market) *without* reducing consumption. In this case, it means the pure rate has risen and the investment/consumption ratio has fallen. In the real world, the demand for both consumption and investment are likely to fall to satisfy the increased demand to hold money, but there is no necessary implied systematic change in the investment/consumption ratio and time preference.[11]

[11] To quote Rothbard, "Now suppose a man's demand-for-money schedule increases, and he therefore decides to allocate a proportion of his money income to increasing his cash balance. There is no reason to suppose that this increase affects the consumption/investment proportion at all. It could, but if so, it would mean a change in his time preference schedule as well as in his demand for money. If the demand for money increases, there is no reason why a change in the demand for money should affect the interest rate one iota. There is no necessity at all for an increase in the demand for money to raise the interest rate, or a decline to lower it—no more than the opposite. In fact, there is no causal connection between the two; one is determined by the valuations for money, and the other by valuations for time preference." (1962, p. 774)

The pure rate of interest is thus completely independent of the reservation demand for money. Furthermore, *whatever* the movement of the pure rate, the rates of interest that exist on the market for loanable funds mirror the rates of return elsewhere, because the preferences of investors are part and parcel of the combined value scale of *all* capitalist-investors, as exhibited in the supply schedule of present money in the total market. Thus, whenever the demand for other assets falls, it matters not at all whether time preference increases, decreases, or stays the same; market rates of interest, which exist merely as a subset of the numerous natural rates of return that constitute the overall market for time, remain in accordance with the pure rate. There is no divergence.

MD theorists obfuscate the issue above by claiming there is a divergence between the market rate and what they term the "natural" rate, but their definition of the latter is inconsistent. For example, Horwitz defines the natural rate as the rate that "corresponds to the time preference of savers and borrowers as expressed in their underlying demand and supply schedules for loanable funds," but this definition by itself ignores the broader time market. That author also defines it as the rate which "*equilibrates* [emphasis added] the time preferences of savers and investors."[12] Horwitz (2000) further defines the natural rate as follows:

> In an ever-changing world of heterogeneous capital goods traded though monetary exchange, it might be better to understand the correct intuition behind the natural rate in terms of a whole constellation of interest rates arising from the structure of relative prices existing at any point in time. The natural rate of interest would then refer to the intertemporal exchange rates existing on the market when the price formation process is not distorted by fluctuations coming from the money side of the money—goods relationship. To the extent changes in the money supply are merely facilitating this relative price formation process, rather than distorting it, the market rate of interest will not be distorted by the monetary system.

The problem here is that the market for loanable funds is considered separately from the rest of the time structure. Having split the time structure into two different sectors, Horwitz then gives a different definition for what constitutes the natural rate

[12] Horwitz (2000, pp. 73–74)

in each of them. On the one hand, it is defined in terms of the constellation of rates arising from the structure of relative prices, which means the natural rate is dependent on time preference. On the other hand, in the loan market, it is defined as being the market rate *when there is monetary equilibrium*, which permits the tautological argument that a divergence between the market and natural rates is caused by monetary *dis*equilibrium. But since the natural rate in the loan market is *defined* by Horwitz in terms of monetary equilibrium, and not on the basis of time preference, we must reject his analysis as erroneous.

Another attempt to explain the link between MDT and ABCT is given by Selgin (2011):

> According to Wicksell, actual and natural interest rates coincide when the quantity of money supplied is equal to the quantity demanded, whereas they will differ if the quantity of money available either exceeds or falls short of the quantity demanded at the prevailing level of prices. It follows that a persistent divergence of the actual from the natural rate requires a persistent divergence of the actual from the equilibrium purchasing power of money. And the Austrian theory of booms attributes them to a state of affairs in which interest rates are kept persistently below their natural levels by means of excessive monetary growth.

Assuming, *arguendo*, MDT is valid, it is easy to deduce that monetary disequilibrium causes the market rate to diverge from the natural rate, when the definition of the latter is one where it is only ever equal to the former when there is monetary equilibrium! From here, it is a short and easy step to "prove" that MD causes the business cycle. What Selgin fails to do, however, is to show how MD causes this divergence when the natural rate is defined everywhere in terms of time preference. And yet, because the cause of the business cycle can only be explicated as a divergence from the rate that would otherwise prevail given the existing pure time preference, this is precisely what must be done in order to provide a genuine proof of the linkage between MDT and ABCT. Merely stating that MD causes a deviation of the market rate from a certain variable, and calling that variable the "natural rate," without demonstrating how the latter involves the concept of time preference, does not prove that MD causes the business cycle.

Mutatis mutandis, everything that has been said above applies when the reservation demand for money falls. Cash dishoarding implies neither a fall in saving nor an unmet need for disinvestment via a contraction of fiduciary media. Because there is no dissaving, the pure rate of interest does not systematically rise. If the investment/consumption ratio should change (because of an unrelated change in time preference), the change in the pure rate of interest continues to be reflected in the market rate. There is no divergence between the existing market rate and the rate that would exist according to prevailing time preferences. In this case, any prescription that aims to contract fiduciary media in a misguided attempt to forestall an alleged boom only serves to create an unnecessary depression.

4. THE ROLE OF THE ENTREPRENEUR AND PRICE COORDINATION

In the unhampered economy, it is the unified and continually modified constellation of prices that guides entrepreneurs in ensuring resources are allocated efficiently. Through entrepreneurial action, price coordination ensures that, at any given time, resources are being economized in a way that is consistent with anticipated consumer value scales.[13] Since a change in the social reservation demand for money is nothing more than a change in one or more of these value scales, it is clear that it cannot represent an *interference* with the coordinative process, because it is an integral part of it.

Following a change in the reservation demand for money, the ensuing relative price effects do not create havoc. To the contrary, they provide a constantly changing calculational framework that assists entrepreneurs in amending their production processes to suit the changed consumer preferences. In this way, the output of production remains in harmony, to the greatest extent possible, with the consumers' demands, subject to the entrepreneurs' correct understanding of these demands and other future conditions.

[13] For a detailed explanation of the concept of "price coordination" in Austrian macroeconomics, see Salerno (1991). See also Salerno (1993) for an explanation of the difference between this and the Hayekian "plan coordination."

On the other hand, an injection of new money *is* an interference with the productive process precisely because prices are made to change while value scales have not. Moreover, the issuance of fiduciary media disrupts price coordination in a particularly pernicious way, because it affects the market interest rate, and hence the differential in prices between present and future goods. It therefore misleads entrepreneurs—the very people who are responsible for mediating the processes of production when there is change—in the *time* dimension of the production structure, resulting in intertemporal misallocations of capital and malinvestment.

It has been shown that as the supply and demand for goods change, and markets clear, new PSRs are established, each one of which represents a new equilibrium in the money relation. In a free and unhampered economy, where price flexibility is necessarily maintained, Say's Law continues to work. Not surprisingly, however, the MD theorist's view of Say's Law is very different. According to Horwitz (2000):

> Say's Law finds its most accurate expression when we are in monetary equilibrium. In monetary equilibrium, production truly is the source of demand. If there is an excess demand for money, production is not the source of demand because some potential productivity is not being translated into effective demand. If there is an excess supply of money, demand comes not only from previous acts of production, but also from being in possession of that excess supply, which may have little to do with productivity... it is the very looseness of that linkage that allows the Say's Law process to break down if money is not properly supplied. It is not that Say's Law is invalidated by shortages or excesses in the money supply, rather the beneficence of its effects are lessened.

However, there is no "loose linkage" between productivity and demand. In the 100 percent reserve economy, the supply of goods neither piles up in response to ineffective demand, nor dries up from too much. The benefits of Say's Law are not lessened. To the contrary, the various markets clear in the normal way, and continue to clear as endogenous events play out. In response to the changing price structure, profit opportunities emerge, and entrepreneurs engage in competitive bidding for scarce resources. The constellation of market prices that continually develops, and which serves as the basis of economic calculation, coordinates at every moment the reallocation of resources, such that inputs are

always being dedicated to their most valuable uses as determined by entrepreneurial appraisements of relative future output prices.

Assuming no overall change in time preference, nominal prices readjust while the supply of goods-in-general remains approximately the same, even though particular outputs do not. For each good that does experience a change in output, there is a corresponding alteration in the exchange demand for money, and thus equilibrium in the money relation is maintained at each of the PSRs during this transition process.

It should be stressed, however, that while we might talk of a transition process towards some final resolution of the initial change, the general direction of prices and production towards any longer term equilibrium, or final state of rest (FSR), must be considered to be a hypothetical construct only, existing only in analytical time in an imaginary world where no further exogenous changes are brought to bear. In the real world, external factors are constantly altering any potential long term outcomes, and thus the only real equilibria are those existing at the PSRs. There is no extended equilibrating process occurring in clock time.

5. CONCLUSION

MD theorists are unable to provide the economic justification for fractional reserve free banking because their theory is fatally flawed. By ignoring money's exchange demand schedule, their theory creates an erroneous disjunction between the supply and demand for money and that of the goods for which money is traded. This leads to the unfortunate conclusion that a change in the social demand to hold money involves either a surplus or a deficit that gives rise to an equilibration process involving "relative price effects" and social costs. But there is no such surplus or shortage. A change in the reservation demand for money merely reflects a change in the position of money (to hold) on the value scales of market actors, each one of whom has a universal value scale encompassing all goods *including* money. As such, any ensuing "relative price effects," due to the non-neutrality of money, are simply a series of endogenous events that play out in accordance with the actors' changed preferences.

The theory further assumes that the alleged price coordination failures are eliminated through an equilibration process occurring over a definite period of time, this process culminating in a monetary equilibrium that is only achieved after all production consequences have fully run their course. But the notion of a series of endogenous events leading to a final state of rest is hypothetical, since it assumes all external data remain fixed, a situation that never exists in the real world. True, real-world monetary equilibria are only found at the plain states of rest when markets clear.

The errors of MDT are further compounded by attempting to integrate the theory with ABCT. ABCT relies on the fact that fiduciary media enter the economy through the loan market, distorting the rates of interest therein, and causing these rates to diverge from those that would otherwise exist, given the prevailing social time preference. But MD theorists cannot show that a similar kind of divergence occurs when the reservation demand for money changes. To do so requires demonstrating that there is a necessary implied systematic change in time preference that market rates of interest no longer reflect, but this their theory fails to do. As Rothbard stresses, time preference is completely independent of the demand to hold money. Moreover, because there is only *one* time market, underlain by a single unified pure rate of interest, and because the loan market is merely a subsidiary of this single market, it is of no help to MDT even if one does assume a (coincidental) change in the social time preference. In the unhampered economy, market rates of interest always are in harmony with underlying social time preference. In short, there is no reason to believe that a change in the reservation demand for money causes the divergence that triggers business cycle phenomena.

It is evident there are no market failures created by a change in the demand to hold money. The issuance of fiduciary media under a system of "free banking" does not alleviate economic discoordination. To the contrary, it serves only to generate the very problem that advocates of such a system claim that it solves.

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