THE ROLE OF MONEY MARKET FUNDS (MMFS) IN THE AUSTRIAN THEORY OF MONEY: A COMMENT ON MONEY AND THE BUSINESS CYCLE

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I
INTRODUCTION

Money market funds (MMFs) represent $3 trillion dollars in financial industry assets. However, regulations regarding MMFs have increased substantially after various of them have "broken the buck" in the 2008 crisis. Moreover, negative interest rates have destroyed a great part of the MMF industry in Europe, since it is impossible to maintain a stable net asset value (NAV) and pay dividends (which can be considered *de facto* interest payments) when the underlying assets have negative yields. Yet, despite the recent exodus of MMFs, MMFs rarely get into trouble. In 1978, *First Multifund for Daily Income* (FMDI) went bankrupt, with investors eventually taking a 6% loss. Yet the average maturity of FMDI's assets was longer than two years, so FMDI could hardly be considered a MMF. In 1994, the Community Bankers Fund "broke the buck," leading to a 4% loss to shareholders; curiously, no "redemption run" (equivalent of a bank run) occurred. In 2008, the Reserve Primary Fund "broke the buck" due to their exposure to Lehman, but eventually paid back 99 cents on the dollar (1% loss).

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Thus, the MMF industry has historically been much more resilient and stable than the banking industry. The relative number of bank defaults and losses suffered by depositors (or taxpayers) outstrip the harm caused by MMFs by a very large margin. One important difference between a modern commercial bank and a MMF is that MMFs avoid maturity mismatches as they invest the proceeds of issuing (redeemable) shares into short-term liquid assets.

MMFs are, nonetheless, completely ignored in Austrian theory. A quick search in the *Review of Austrian Economics* is illustrative. The term "money market fund" is not even once mentioned in any of its articles. Other (Austrian) papers on money market funds are scarce (e.g., Haymond, 2000). This paper attempts to contribute to the, sometimes confusing and contradictory, Austrian literature on money. Moreover, there exists a gap between a great deal of the Austrian theoretical body (e.g., the Austrian business cycle theory) and the concept of money. I will critique some theories that do not take financial instruments such as MMFs adequately into account and propose an integration of MMFs into the (Austrian) theory of money.

To begin, I will conduct a brief literature review with some of the terms that Ludwig von Mises uses in his monetary studies, and later compare the work of more modern Austrian authors to see where "money substitutes" like MMFs come into the picture. Then I will discuss the implications for various other theories, most prominently the Austrian theory of the business cycle.

1. The Insoluble Paradox of Ludwig von Mises's Definition of Money

Ludwig von Mises, in his first major contribution *The Theory of Money and Credit* (1912), attempts to separate money, as a tangible good (historically, gold), from credit and the intermediation of savings. On banks, Mises (1912) writes: "Banking is negotiation between granters of credit and grantees of credit. Only those who lend the money of others are bankers; those who merely lend their own capital are capitalists, but not bankers" (p. 262).

He implicitly rejects the view that hoarding money (that is, gold) is a form of savings and a form of transmitting savings to production at large (or, in other words, converting savings into productive investment). To him, only if savers decide to hold claims on money, can savings be converted into investment. Yet the money business is a completely separate branch from the credit business. This view seems untenable.

Mises (1912) writes: "A person who has a thousand loaves of broad at his immediate disposal will not dare to issue more than a thousand tickets each of which gives its holder the right to demand at any time the delivery of a loaf of bread" (p. 267). He ignores, however, that a person would actually do so, *if* he expects the delivery of other loafs of bread in the near future and *if* he expects that not all holders show up the very same day to claim their breads. Expanding our analogy to money and banking, a banker tries to estimate the expected rate of withdrawals and/or adverse compensations to other banks, as to make sure that he can meet any future redemptions. Mises, in this case, ignores the temporal element of issuing claims bearable on demand (as demand deposits are) and the businessman's experience as to at what rate claims are redeemed.

At a later point in his life, in his chef-d'œuvre *Human Action* (1949), Ludwig von Mises defines money as the "commonly accepted medium of exchange." He then proceeds to explain the origin of money, very much in line with Menger's (1892) theory of the evolutionary origin of money. However, Mises merely explains the origin of gold as medium of exchange. In a world *without* financial intermediation, this might be of great relevance. Nevertheless, in a world characterized by an increasingly greater degree of financial intermediation, there exist many other media of exchange that should be considered. Mises (1912) called these media of exchange "money substitutes." In other words, Mises, probably unaware of his own definition, operationalizes money not as a commonly accepted medium of exchange, but rather as the "ultimate extinguisher of debt." Mises says *A*, but uses *B*.

Hence, Mises (1949) falls into a contradiction. Laymen commonly accept commercial bank deposits as media of exchange. In popular language, we even call these demand deposits "money".

However, Mises operationalizes money not as demand deposits, but rather as the instrument or good that is no longer "redeemable" or "convertible" into something else. In other words, Mises first defines money as the commonly accepted medium of exchange, but when he begins defining "money substitutes," he redefines money unwittingly as "the irredeemable instrument."

We will assume, for the sake of argument, Mises's (1949) position and apply his reasoning to MMF shares. A MMF is a mutual fund that issues shares with a nominal value of $1, which the fund attempts to maintain stable (that is, at "par") over time. The MMF issues shares when an investor deposits funds and uses those funds to buy liquid, short-maturity bonds (certificates of deposits or CDs, short-term liquid corporate bonds, etcetera). Any interest is paid out to shareholders in the form of new shares, which are exactly worth $1 each. A MMF fund manager attempts to avoid any loss of principal (limiting himself to only creditworthy counterparties), any holdings of illiquid assets (which could potentially impair asset values if shareholders begin redeeming shares, that is, if a liquidity run occurs), while he simultaneously tries to maximize yields[1].

Now, if money market fund shares can be redeemed into demand deposits of a commercial bank, and these demand deposits can be redeemed into central bank currency, then paper central bank currency, according to Mises (1912), is "money." Money market fund shares would represent "money substitutes." In a similar fashion, other liquid credit instruments, like commercial paper and in some cases US Treasuries, would be considered "money substitutes" by Mises (1912) as well. However, bank deposits are just as "commonly accepted" as central bank currency, and in some cases even preferred over physical currency (bills), that is, in some cases bank deposits are *more commonly accepted* than central bank currency[2].

[1] Negative interest rates have recently destroyed a great part of the MMF industry in Europe, since it is impossible to maintain a stable net asset value (NAV) and pay dividends (which can be considered *de facto* interest payments) when the underlying assets have negative yields.

[2] This can be especially observed in retail stores that, due to the cost of handling cash or even frequent robberies, have decided to no longer accept cash payments and

Mises's (1949) position is therefore contradictory; he *defines* money as a commonly accepted medium of exchange but *operationalizes* money as the ultimate extinguisher of debt.

2. The Recognition of Friedrich Hayek.

Friedrich Hayek, in his often-cited work *The Denationalization of Money*, recognizes this error, which was not only committed by Ludwig von Mises, but by many other economists. To quote Hayek (1976):

> "[A]lthough we usually assume there is a sharp line of distinction between what is money and what is not (…), there is no such clear difference. What we find is rather a continuum in which objects of various degrees of liquidity, or with values which can fluctuate independently of each other, shade into each other in the degree to which they function as money." (p. 56)

Here, Hayek (1976) moves to a definition of money that does not clearly separate money from credit, but rather argues that any economic good – even loans, bonds and securities – has a degree of liquidity. The most liquid goods tend to be used as media of exchange.

Does Hayek refer to money as being able to extinguish or settle debts? Does Hayek further develop his definition of money? Unfortunately, he does not. He chooses to leave this very important question aside and directly delves into the theory of currency competition:

> "There is, however, as we have just pointed out, **no need for a very sharp distinction between what is and what is not money** [emphasis of the author]. The reader will do best if he remains aware that we have to deal with a range of objects of varying degrees of acceptability which imperceptibly shade at the lower end into objects that are clearly not money." (p. 58)

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only accept debit and credit cards. A payment with a bank's debit card involves an exchange of *bank deposits*, *not* of central bank money.

There exist various other modern-day authors who have taken Mises's (1912) separation between money and credit to an extreme, such as Shostak (2000). Shostak (2000) argues, for example, that a money transaction (money is a "claim" according to Shostak) should be contrasted with "(…) a credit transaction, in which the lender of money relinquishes his claim over the money for the duration of the loan" (p. 72).

What Shostak (2000) misses, however, is that money holdings (as part of a portfolio) are simply one form of savings. The portfolio demand for money is thus a subset of the broader portfolio demand for (financial) assets. Moreover, he misunderstands the practical difference between legal maturity and duration. While demand deposits might have a zero maturity, they might have a duration of 12 months[3], since deposit holders do not actually use *all* of their cash balances.

A most troubling and glaring contradiction comes to light when Shostak (2000) asks: "Now, if any mixture of liquidity is accepted, why not include retail good inventories?" (p. 69). As a matter of fact, *claims* on retail good inventories have circulated as means of payment, that is, in the form of bills of exchange. And it is not just bills of exchange; US Treasuries also change hands to settle debts, for instance in the case of derivatives clearing[4].

In short, the very fact that people hold zero-maturity cash balances of some kind as part of their savings (that is, as part of their portfolio) is only different to other types of savings (for instance, in fixed maturity deposits) in degree, not in kind, *until* the money is actually spent.

Now, do shares in a money market fund (MMF) equal a cash balance (money) or investment (credit)? Distinguishing, from an economic point of view, between MMF shares and bank demand deposits appears untenable, at least from a practitioner's point of view. The arbitrary line between demanding money and saving

[3] In fact, estimating the duration of demand deposits using a common measure of duration gives an estimate of approximately 1.5 years.

[4] Although generally instead of US Treasuries changing hands, what in fact changes hands are IOUs of the clearinghouse, that is, the central counterparty (CCP), to a portfolio of collateral, consisting of cash, bonds, etc.

becomes especially problematic since, on a historical side note, in the 1970s MMFs even came to replace banks in the U.S. As Glasner (1989) explains:

> "At first, the MMMF was just a way for small savers to avoid Regulation Q ceilings. But in 1976 Merrill Lynch introduced a Cash Management Account that merged a traditional brokerage account with an MMMF, periodically transferring any idle funds in the non-interest-bearing brokerage account into the MMMF. Customers could make payments either with a credit card provided them or by writing checks. The checks and credit-card drafts would be automatically debited against any cash balance in the account. If there were no cash in the account, shares in the MMMF would be liquidated to cover the payment. If there were not enough shares in the MMMF, Merrill would pledge securities in the customer's portfolio as collateral for a loan to cover the payment. The success Merrill Lynch enjoyed with its Cash Management Account induced other brokerage houses to offer similar accounts. Pure MMMFs began allowing shareholders to write checks against their shares. The explosive growth of checkable MMMFs virtually forced Congress to enact legislation relaxing the constraints Regulation Q had been imposing on depository institutions ." (p. 168)

A cash balance at a bank or a MMF are held for essentially the same purpose: liquidity. And since what matters in economics is the subject valuations of the individual actor, rather than the pseudo-objective valuations of the economist, arguing that this position is untenable from a practical point of view is equal to arguing that this position is theoretically undefendable.

In the case of Friedrich Hayek's (1976) work on currency competition, there might be no need to further develop the theory that divides money and credit. Yet, whether the same can be said for other important theories, is highly doubtful.

We must conclude that for the treatment of other very important theories – let us highlight the theory of the business cycle – such an avoidance of defining and separating money and credit is unacceptable. The "Austrian" theory of the business cycle explains, after all, how an increase in *credit* not backed by prior savings, results in unsustainable growth and a tug of war for scarce

resources. According to the conventional Austrian business cycle theory (e.g., Mises, 1949), whenever there is an increase in credit, interest rates are affected (the "price" of time) and credit allocation (or intertemporal allocation) of resources is distorted; projects that are more capital-intensive and have longer durations are undertaken (Cachanosky & Lewin, 2014). In other words, how we define an increase in credit and distinguish it from an increase in money is of great relevance. The ability to distinguish between money and credit suddenly becomes of vital importance to the application of Austrian business cycle theory.

3. Introducing the Money-Credit Pyramid.

As we have concluded, Mises operationalizes money as "the ultimate means of settlement," even though he defines money as "commonly accepted medium of exchange." Hayek offers a critique to this conceptualization of money, but does not offer a clear-cut way to solve the problem that he raised, only pointing out that many economic goods are used as "money" and that each has different degrees of liquidity.

We will introduce an analytical tool that helps to analyze the various "types" of money we find in our day-to-day lives (Mehrling, 2012). Mehrling uses a hierarchy, in the shape of pyramid, to conceptualize the different types of money, which is very much akin to Hayek's concept of degree of liquidity.

By doing so, Mehrling (2012) shows the inconsistency of Mises's (1949) conceptualization by referring to how, in practice, it depends on the person in question (the *subject*) what the relevant "means of settlement" is. Mehrling (2012) explains this as follows:

> "In this hierarchy, where is the dividing line between money and credit? It is tempting to draw the line between currency (and everything above it) as money, and deposits (and everything below it) as credit. The source of this temptation is the institutional fact that currency is the final means of settlement for domestic payments. Just so, for a bank settling its accounts at the end of the day, currency or "high-powered money" is certainly the means of

> settlement. **But things look different farther down the hierarchy. For ordinary people like us, bank deposits are the means of settlement** [emphasis of the author]. Hence we might be inclined to view deposits (and everything above them) as money, and securities as credit." (p. 2)

Thus, it actually depends on the subjective context of the person whether a given good is considered money (defined as means of settlement) or credit (which is redeemable into money). Moreover, any of these means of settlement are commonly used media of exchange.

By viewing money and credit as dichotomies, completely separated and isolated from each other, we encounter three problems:

1. If we define money as means of (final) settlement, there exists a wide array of different types of money.
2. If we define money as a commonly accepted medium of exchange, there also exists a wide range of different types of money.
3. If we define money as a unit of account, there exists generally one type of money (that is, one kind of financial liability).

As we will see, George Selgin (2016) recognized the same problem as Mehrling (2012). He writes:

> "[He is] tempted, if only for the time being, to revert to some old-fashioned terminology that, whatever its other shortcomings, seems more useful than modern terms are for shedding light upon the nature of money creation. Nowadays economists use the term "money" to refer to anything that's a generally-accepted medium of exchange. Hence the manifold measures of the U.S. money stock — M1, M2, M3, MZM, and so forth — all of which include various sorts of bank deposits. To refer specifically to the dollars that the Fed itself creates, including both bank reserves and Federal Reserve notes circulating outside of the banking system, they use the terms "high-powered money," or "base money," or "the monetary base."
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> In the old days, in contrast, economists — or many of them, in any event — liked to distinguish between what they considered money

> in the strict sense of the term, or "money proper," and "money substitutes." **Both money proper and money substitutes serve as generally accepted means of exchange. The difference is that, while "money substitutes" consist of various kinds of instantly-redeemable IOUs or promises to pay, "money proper" refers to the stuff that the promises promise**, that is, what a bank customer expects to get in exchange for the substitutes if he or she asks the bank to pay up.
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> A century ago, when the terms were still current, in most industrialized economies "money proper" consisted of gold coins, while paper banknotes and demand deposits that were redeemable in gold were mere money substitutes. Today the same terminology might be used to distinguish the irredeemable currency supplied directly by the Fed from the redeemable exchange media created by commercial banks and other private financial firms. **According to it, and thanks to a few twists of fate, paper Federal Reserve notes are now "money proper," while bank deposits, and checkable deposits especially, are "money substitutes**." Note that "money proper" in this context isn't quite the same thing as what modern economists call "high-powered" or "base" money, because the last includes bank reserves, which aren't actually "money" at all: **they are, true enough, means of payment so far as banks themselves are concerned, but so far as the general public is concerned, it's bank deposits, rather than the bank reserves that stand behind those deposits, that serve as money.**" [emphasis of the author].

Here, Selgin (2016) recognizes the same very important problem as Mehrling (2012): money, as medium of exchange and means of (final) settlement, is different among the various economics agents in a market economy:

- For businesses and households, to settle and extinguish debts, demand deposits are generally exchanged, but also other types of IOUs are exchanged, such as MMF shares.
- For banks, to settle and extinguish debts, bank reserves (either central bank currency or deposits at the central bank) are exchanged;
- For central banks, to settle and extinguish debts, gold reserves or SDRs (Special Drawing Rights) could be

exchanged; there is no other way to reach a final extinguishing or settlements of debts for instance by exchanging IOUs such as government bonds or physical currency.

How do we get out of this impasse?

4. More Recent Attempts to Integrate MMFs in the Austrian Theory of Money

There have been specific debates about whether MMFs are to be considered money in more recent times as well. Larry White (1989) explicitly denies that MMFs are money:

> "[T]he item that the check-writing MMMF customer relinquishes (ownership of shares in a portfolio of assets) is not what the payee accepts (ownership of an inside-money claim to bank reserves). Because the actual MMMF shares are not what the second party accepts (or intends to accept), MMMF shares cannot be considered a generally accepted medium of exchange; hence they are not money." (p. 213)

White (1989) makes an interesting but nevertheless erroneous point. He says that even though settlements and exchanges in MMF shares happen, MMF shares cannot be considered a medium of exchange, because the payee directly exchanges MMF shares in checking account balance. However, there are two reasons to argue against this critique:

1. In practice, not every MMF share is directly converted into a checking account balance but at times held until some future point *after* the exchange.
2. The same might be said for bank deposits: a payee might not accept a demand deposit, but rather an inside-money claim to bank reserves (e.g., physical currency). Does this imply that demand deposits cannot be considered media of exchange, at least partially? It would make a conceptualization and operationalization of money complicated and unworkable.

II
CREDIT CREATION OR A CREDIT INTERMEDIATION?

When, in Austrian literature, the term "credit" is mentioned, there is often an implicit reference to bank credit, that is, commercial bank liabilities. An increase in "credit" means an increase in "commercial bank liabilities." Etymologically, credit comes from the French *crédit*, originating from the Italian *credito* and Latin *creditum*, derived from *credere*, which means "believe, trust." Extending credit and receiving credit is not merely reserved to banking institutions. Let us dig a bit deeper into the operations of a commercial bank through an accounting approach to money.

1. Credit at the commercial bank level.

Whenever we hold a deposit at a commercial bank, we extend "credit" to the bank[5]. The bank extends "credit" to businesses, households and other institutions such as governments. In other words, banks do not "create" credit, they transform credit. They often alter the maturity profile of the originally extended credit (mainly by households and businesses), by borrowing short and lending long, and diversify credit risk by raking in "credit" from a large group of depositors and creditors and by extending "credit" to a diversified, sufficiently large pool of borrowers.

Therefore, banks do not create credit, but exchange credit, and make it more "liquid", in terms of Friedrich Hayek (1979).

[5] For now, we reframe from a deeper analysis that a large part of the banks receives "credit" from the central bank. Some argue that central banks create "credit" out of nothing (which is wrong, central banks create liabilities – paper currency and bank reserves, but not out of nothing). Central banks acquire credit (generally securities) and transform that credit into central bank IOUs. Central banks, banks and MMFs are financial intermediaries and not originators of credit. Central bank can turn (and have turned) very illiquid paper (e.g., mortgage-backed securities) into liquid paper (i.e., central bank IOUs), but do not create credit out of nothing.

2. Credit at the money market fund (MMF) level

When we deposit money into a money market fund, we normally tend to wire the money by bank transfer. The money is then invested by the MMF in (short-term and low-risk) securities, and the security purchases are settled by bank transfer as well. If we refer to the money-credit pyramid of Mehrling, we can see that MMF apparently, in practice, could be placed on a lower level of the pyramid than demand deposits of commercial banks. But a MMF is similar to a commercial bank in the sense that it does not create credit.

Does a money market fund "create credit?" The answer is again a resounding "no." In a very similar manner, MMFs transform credit, by altering the risk profile and possibly the maturity profile. That is, a bank account of the MMF is credited with the MMF issuing shares in proportion to the sum deposited. Then, the MMF uses the deposited funds and buys short-term debt. It has, in the process, issued shares, received funds, and reinvested the funds into short-term debt.

The fact that not only MMFs do not "create credit" but banking institutions as well has, unfortunately, not been grasped by various authors, such as Frank Shostack (2000):

> "Since a credit transaction is a transfer of saved funds from a lender to a borrower it does not result in the creation of new money, but simply new credit. This credit, however, is not harmful, for it is fully backed by saved money." (p. 1)

To Shostack (2000), shares in a MMF are akin to a credit in which savings move from lender to borrower and, therefore, does not result in the creation of new money. However, we have already seen that banks, too, simply engage in credit transactions that do not result in the creation of new money. Illiquid (household and business) savings are transformed and turned into liquid savings (in this case in the form of demand deposits).

3. A brief comment on money as unit of account

Moreover, what both MMFs and commercial banks have in common, and any other financial intermediary or money user for that

reason, is the fact that each and every one of these instruments use the same unit of account, which is the local currency. If we refer to the money-credit pyramid of Mehrling, we will see that the top layer of that pyramid is commonly used as unit of account. However, a unit of account can hardly be money.

4. A brief comment on credit versus gold money

If we extent this idea to physical gold (not an IOU on physical gold), which has historically been an important medium of exchange, we might conclude that gold is fundamentally different from the earlier mentioned bank deposits and MMF shares, in the sense that these deposits and shares are an accounting asset for some and an accounting liability for the banks and MMFs in question.

Nevertheless, gold is a vehicle that people in earlier times would acquire to as a store of value. In a certain sense, they extend credit to the object (that is, gold) and the "debt" can later be settled by exchanging the gold for the goods or services the saver wishes to acquire.

III
A NEW PROPOSED DEFINITION OF MONEY.

We have so far reached the following conclusions:

- There are different types of (generally accepted) media of exchange
- Whether a certain medium of exchange is able to extinguish or settle debt is subjective
- The different types of media of exchange have different "degrees of liquidity"

We will define and conceptualize money as all economic goods that are used as medium of exchange and that have different degrees of liquidity, that is, are not near illiquid. Money, media of exchange, are superior to other economic goods since they hold a

superior degree of liquidity. Money and credit are intimately intertwined and cannot be separated.

IV
CONSIDERATIONS FOR THE AUSTRIAN BUSINESS CYCLE THEORY

1. Maturity Transformation by MMFs and Commercial Banks.

With a thought experiment, we will try to unravel the role MMFs play in the Austrian theory of the business cycle. First, we must return to some of the characteristics of MMFs:

- MMFs, like central and commercial banks, do not "create" credit, but transform credit (that is, when investor wants to hold more MMF shares, the MMF issues shares, which are semi-credit due to interest and fixed NAV, and invest the proceeds into short-term credit).
- MMFs invest in liquid (commercial, financial and government) credit.
- Whenever a share of a MMF is redeemed, the MMF proceeds to sell the underlying assets of that share and deposits the proceeds in a bank account (demand deposit), that is, the MMF suffers a reflux. In this sense, a share in a MMF can be found lower in Mehrling's (2012) money-credit pyramid.
- Whenever a share of a MMF is issued (i.e., the fund expands), the MMF proceeds to buy securities (e.g., bonds and commercial paper) for the amount of that share and receives the amount deposited in a bank account.
- Settlements and transactions in MMF shares happen, although not in great numbers.

Now, if a MMF engages in maturity mismatching, and this happens on a large enough scale, then all the economic consequences follow that are described by the Austrian business cycle theory (that is, lower interest rates induce more capital-intensive investments with longer durations [Cachanosky & Lewin, 2014], even

though the real resources have not been freed up and final demand is more focused on the short run than the long run).

Since a MMF, like a (commercial or central bank) only transforms credit, but not creates credit, they can have the same distorting effect on interest rates (more specifically, term structures) as banking institutions and thus on the *intertemporal* allocation of resources (Fuller, 2013).

Therefore, we should conclude that excluding MMFs from the concept of money is a mistake, since MMF shares are used as media of exchange, are used for settlements and are used as store of value, and are able to induce distortions in the intertemporal allocation of capital. In fact, it is perfectly possible to imagine a scenario where a recession will be caused not by distortions at the commercial bank level, but rather at the MMF level. A failure to recognize that both media of exchange should be considered money, leads to an erroneous interpretation and explanation of the Austrian business cycle theory.

2. Winners and Losers in Financial Assets with Distinct Maturities.

Cantillon effects are difficult to defend with our notion of money. Cantillon effects are non-neutral (Thornton, 2006). As Thornton (2006) explains in his own words:

> "Cantillon showed that changes in the quantity of money could have several different types of real effects on production, investment, consumption, and trade depending on who first received the money; effects now labeled Cantillon effects, injection effects, or first-round effects." (p. 49)

But the idea of "changes in the quantity of money" is undefendable when what we consider money and what we do not consider to be money is a *continuum* rather than a *dichotomy*. The "quantity of money" is not a neatly defined set of goods, but rather a confusing and ambiguous quantity that consists of different goods of certain degrees of "moneyness." And while Richard Cantillon may be

excused, since financial markets at the time were not as advanced as today, the same excuse does not count for modern-day economists.

If money is a relative concept and merely refers to a degree of liquidity, an idea we defend in this article, and not a black and white dichotomy that separates money – media of exchange – from other economics goods, then it is not clear if Cantillon effects must be restated as to only apply to "changes in the quantity of demand deposits." But if it is true that Cantillon effects only occur when there is an injection of "new money" not backed by prior saving, then there can be no Cantillon effects of such kind in the real world, since in the first part of this paper we have established that any bank liability (demand deposit) is backed by savings or credit extended by other economic agents. Either way, redefining Cantillon effects in more concrete, modern financial terms would make for an interesting avenue for future research.

There exists, however, an important application of the theory of Cantillon effects that so far has been ignored.

Whenever financial intermediaries, such as commercial banks and MMFs[6], engage in maturity mismatching (borrowing short, lending long), long-term interest rates might fall relative to short-term interest rates. As a result, there exists a winner-loser effect.

Prices of long-dated financial assets (e.g., a 30-year US Treasury) increase when long-term interest rates decline. As such, there is a transfer of purchasing power to holders of long-dated financial assets at the cost of holders of short-term financial assets (e.g., 30-day commercial credit), who now hold assets that are worth less than in a scenario in which financial intermediaries would not have engaged in maturity mismatching, bringing down long-term interest rates.

[6] Money market funds (MMFs) normally tend to engage in almost no types of maturity transformation, in stark contrast to commercial banks. MMFs tend to maintain very short-term and liquid paper with short maturities, while banks tend to maintain a large percentage of long-term loans and securities. In some way, a move from bank deposits to MMF shares, might result in less maturity mismatching and a more stable financial system. An exception is the case of First Multifund for Daily Income (FMDI) in 1978, which went bankrupt leading to a 6% loss suffered by shareholders (depositors). Yet the average maturity of FMDI's assets was longer than two years.

This increased purchasing power, if exercised, can alter the structure of relative prices, favoring assets and goods that are preferred by the "winners" of such financial Cantillon effects. The "losers" will experience a decrease in purchasing power, which affect the monetary demand on goods they prefer.

V
CONCLUSION: MMFS AS MONEY AND ITS IMPLICATIONS

Money market funds (MMFs) have so far been ignored in the Austrian theory of money. Money is generally conceptualized as demand deposits issued by banks. However, this conceptualization cannot be defended. Mises's definition of money as commonly accepted medium of exchange was criticized as he tried to operationalize this definition of money into money as the ultimate extinguisher of debt. Friedrich Hayek recognized the error implicit in Mises's reasoning and proposed an alternative way of defining money not as *dichotomy* (black versus white), but as a *continuum* (degree of liquidity). The money-credit pyramid of Mehrling (2012) is introduced to expand upon the definition of Hayek.

The author proposes a definition of money as a degree of liquidity. Some economic goods are more liquid than others, and are therefore more often used as media of exchange.

Shares in MMFs are important media of exchange – money – that have a relatively high degree of liquidity, but generally speaking not as high as commercial bank (demand) deposits and checking accounts. Some critics have argued that MMFs are credit, since MMFs cannot "create credit", whereas supposedly banking institutions can "create credit." We have seen that this theorem is based on a severe misconception of what credit is, where it originates and a lack of understanding when it comes to non-bank credit.

Having established that MMF shares are indeed money, we discussed the implications of the conclusion of credit instruments such as MMF shares as money for both the Austrian business cycle theory and Cantillon effects (and the non-neutrality of money). (1) Austrian business cycle theory is based on an explicit theory of

"credit creation (unbacked by prior savings)". However, we concluded that financial intermediaries do not possess the power to create credit, but only to transform credit (i.e., the maturity and risk profile of credit). An Austrian business cycle could occur with no changes in the composition of bank credit, but with changes only in the composition of money market funds (MMFs). (2) Cantillon effects are based on a definition of money as pure monetary metal or demand deposits. A new type of financial Cantillon effect is introduced that refers to the increasing purchasing power of holders of long-dated fixed income instruments, when financial intermediaries (central banks, banks, MMFs, etc.) engage in maturity mismatching. When they use their increased purchasing power on financial assets and/or other economic goods, real changes occur in the structure of production.

It is the hope of the author that this article will be able to spark a new debate on an often-ignored topic, which is the definition and operationalization of money, and stimulate future investigations into modern-day media of exchange (e.g., commercial paper, repurchase agreements or repos, etc.). Since so many theories depend on an implicit recognition of what is money and what is not, this is a fundamental question that deserves further attention. With a diminishing role of banks in the broader spectrum of financial intermediation, it is important for the advancement of Austrian economics to have a broader and more fundamental understanding on the role and nature of financial intermediaries.

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