UCO Cahiers de recherche en économie-gestion
N° 2025-eco-14

UCO Working Paper Series in Economics and Business Administration
N° 2025-eco-14

Avril 2025

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ABSTRACT: Mises and his followers have often argued that the demand for money to hold has something to do with uncertainty but nothing to do with time preferences, the pure interest rate and intertemporal choices. However, Hülsmann (2009) has challenged this idea of a "time neutral" demand for money, arguing on the one hand that an increase in its demand schedule could trigger an arbitrage process resulting in an increase of the pure interest rate, and on the other that money is more generally a present good. Here we revisit the theory of the demand for money balances and the relations between them and inter-temporal exchanges. We argue that the demand for money is indeed not neutral in relation to inter-temporal choices, but not as a demand for a present good. Instead, we conclude that a decrease (/increase) in the demand for money and an increase (/decrease) in the investment/consumption ratio (or, depending on the case, a fall (/rise) in future money holdings and a shift in spending from short-term to longer-term investments (/from LT to ST investments)) can be understood as two aspects of the same phenomenon involved in the fall (/rise) in perceived uncertainty or uncertainty aversion. Hence, the demand for money balances is better understood as a component of the demand for future goods. Consequently, we further argue that it is also affected by time preferences and lay out some implications wih respect to the configuration of the production structure.

Key words: demand for money, uncertainty, time preference, risk aversion, interest rate, term structure of investment
JEL Classification : A10, B10, B13, B22, E41, E43, O40

RESUME: Mises et ses disciples ont souvent soutenu que la demande de monnaie à détenir a quelque chose à voir avec l'incertitude mais rien à voir avec les préférences temporelles, le taux d'intérêt pur et les choix intertemporels. Cependant, Hülsmann (2009) a remis en question cette idée d'une demande de monnaie « temporellement neutre », arguant d'une part qu'une augmentation de sa demande déclencherait un processus d'arbitrage entraînant une augmentation du taux d'intérêt pur, et d'autre part que la monnaie est plus généralement un bien présent. Nous revisitons ici la théorie de la demande d'encaisses monétaires et les relations entre celles-ci et les échanges intertemporels. Nous soutenons que la demande de monnaie n'est effectivement pas neutre par rapport aux choix intertemporels, mais pas en tant que demande pour un bien présent. Au contraire, nous concluons qu'une diminution (/augmentation) de la demande de monnaie et

une augmentation (/diminution) du ratio investissement/consommation (ou, selon le cas, une diminution (/augmentation) des encaisses monétaires futures et un déplacement des dépenses des investissements à court terme vers les investissements à long terme (/des investissements à LT vers les investissements à ST)) peuvent être comprises comme deux aspects du même phénomène impliqué dans la diminution (/augmentation) de l'incertitude perçue ou de l'aversion pour l'incertitude. Ainsi, la demande d'encaisses monétaires s'appréhende mieux comme une demande de biens futurs. Par conséquent, nous soutenons également qu'elle est également affectée par les préférences temporelles et nous présentons certaines implications de cette idée en ce qui concerne la configuration de la structure de production.

Introduction

In the Austrian literature and elsewhere, a perceived decrease in uncertainty, or a reduced aversion to it, is commonly said to result in higher savings and investment. In other words, the supply of present money in the "time market" becomes greater than otherwise, and consequently, the market rate of interest – or rate of return on investment in general – becomes lower and the volume of investment spending higher. A perceived increase in uncertainty or increased aversion to it results in the opposite, superimposing a higher "entrepreneurial component" on the "originary" or "pure" interest rate which would prevail in the absence of uncertainty (in the "evenly rotating economy").

From an Austrian perspective, specifically *à la* Böhm-Bawerk ([1889] 1930), the former implies a longer production structure, with actors tending to consume less and spend less in the last stages of production processes before consumption, and more in the earlier stages, including the first stages that would not otherwise exist, further from consumption than would be the case in processes otherwise undertaken. This roundaboutness in production ultimately results in higher productivity per unit of labor and higher standards of living.

However, this result is not obtained by higher investment spending *per se*, but by a higher ratio of investment spending to consumption spending. If the amount of consumption expenditures were also to be so much higher that the ratio remained the same, the above result would not hold. The only difference in this context would be that the demand schedule for money balances would be lower as a necessary counterpart to higher aggregate spending. Nominal prices would be higher (the purchasing power of money balances would be lower) but relative prices, including the interest rate, would be the same. The structure of production would not be systematically affected, except by the redistributive effects of this change, in one direction or another depending on the specifics of the case.

A tension appears. If it is true, as Mises and his followers have often argued, that the demand for money to hold has something to do with uncertainty but nothing to do with time preferences and intertemporal choices, then a change in uncertainty aversion or perceived uncertainty should only result in an increase or decrease of the demand for money and of its purchasing power. On the other hand, it seems at least plausible that the impact of uncertainty is not entirely unrelated to intertemporal choices, as per the aforementioned conclusion. But the alleged existence of this relationship, accounting for an entrepreneurial component in the interest rate, seems incompatible

with the idea of a time-neutral demand for money. We are thus led to re-examine the theory of the demand for money balances and the relations between them and inter-temporal exchanges.

Below we try to sort those things out by arguing that the demand for money is indeed not neutral in relation to inter-temporal choices. This revision allows us to conclude that a decrease (/increase) in the demand for money and an increase (/decrease) in the investment/consumption ratio (or, depending on the case, a fall (/rise) in future money holdings and a shift in spending from short-term to longer-term investments (/from LT to ST investments)) can be understood as two aspects of the same phenomenon involved in the fall (/rise) in perceived uncertainty or uncertainty aversion. Hence, it follows that the demand for money balances is better understood as a component of the demand for future goods. We will then be in a position to broaden the analysis to lay out some implications in regard to the relationships between time preferences, uncertainty-bearing, money balances, the inter-temporal market and thus the configuration of the production structure.

Inter-temporal choices and the demand for money to hold

A necessary precondition for the existence of a demand for money balances and thus of money itself is uncertainty. As Mises ([1949] 1998, 249-250)[1] explains in his presentation of the analytical tool of the "evenly rotating economy", used to conceptually distinguish interest from profits and losses by eliminating all change and thus all uncertainty,

> In the imaginary construction of an evenly rotating economy, indirect exchange and the use of money are tacitly implied. But what kind of money can that be? In a system without change in which there is no uncertainty whatever about the future, nobody needs to hold cash. Every individual knows precisely what amount of money he will need at any future date. He is therefore in a position to lend all the funds he receives in such a way that the loans fall due on the date he will need them.

The demand for money balances thus is the expression of the desire to be able to cope with uncertainties and unforeseen events in the future, whether they concern the performance of one's investments or, more generally, the circumstances of one's future actions and even one's future preferences. Therefore, it follows that the less uncertainty there is about one's future situation, the

[1] See also Rothbard ([1962] 2004, 328-329)

less reason there is to hold cash balances. We can also immediately deduce that, given one's perceptions of uncertainty, the less aversion one has to uncertainty, the less reason one has to hold cash balances. The demand for money should decrease when the perceived probability of adverse events to be protected against decreases (or when uncertainty aversion decreases) and it should increase when the latter increases.

For the classical school, aggregate demand for money and its stock as such do not influence production decisions. Production is a matter of "real factors" that are essentially unaffected by "monetary factors". The "neoclassical" school accepted this idea in the context of the "quantity theory of money," at least in its most basic version (Fisher [1912] 2006)[2]. Of course, Keynes ([1936] 2018, chap. 15) objected on the grounds that the interest rate and the demand for cash (liquidity preference) are interdependent, although as Rothbard ([1962] 2004, 786) explains, it is not entirely clear in his account what variables are determined and what variables are determining.

It should also be noted that the idea of inter-temporal choice between consumption and investment is problematic, to say the least, in the Keynesian framework, insofar as Keynes envisaged the relevant choices in two separate stages. Individuals would first choose whether to consume, and then in a second stage allocate the rest of their income to investment or hoarding (money balances). This separation between one choice and the other appeared highly unsatisfactory and indeed arbitrary. Even if actors can and do make choices sequentially - without deciding the details of the allocation of an entire stock of a good at the same time - there is no reason to postulate a particular order as a rule, and at any given moment the actor must choose what to do with the units of the stock of money (and other goods) at his disposal: consume, invest or hoard.

Of course, the fact that the demand for cash - a monetary factor - has an impact on output via the interest rate, in the Keynesian model depends on the assumption that economic agents are only capable of binary choices. It is because consumption is determined first and then a choice is made about what to do with the residual income that investment and production on the one hand, and the demand for cash, on the other hand, are necessarily played off against each other. Hoarding thus appears to be a "leakage". Unsurprisingly, then, the Austrians' rejection of this postulate could lead to a reaffirmation of the classical view of production being unaffected by monetary factors.

[2] See also Friedman (1989).

Actually, and contra Fisher and his followers, the methodological individualism of Austrian economists led them to question the idea of money being neutral with respect to production, but only because a change in the relationship between the demand for and the stock of money affects prices in different ways, which implies redistributive effects, which in turn require an adjustment of the structure of production[3]. Otherwise, monetary factors were deemed non-determinant[4]. In particular, the demand for money balances had no systematic connection with the choice between consumption and investment.

Rothbard ([1962] 2004, 774-776) thus states quite explicitly that:

> A man may allocate his money to consumption, investment, or addition to his cash balance. His time preferences govern the proportion which an individual devotes to present and to future goods, i.e., to consumption and to investment. 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,

[3] See for example Rothbard ([1962] 2004, 811-815). The Austrians are mostly known for their theory of the business cycle in which monetary expansion through bank credit alters the structure of production in an unsustainable boom that is the cause of a depression. See in particular Ebeling ([1978] 1996). Here too, then, changes in the money relation and in the production structure are linked. However, it is not the increase in the money supply as such that causes the cycle in this view, but the fact that the new money enters the economy via bank credit. This is what "pulls" the market interest rate below what the time preferences of the actors justify and causes "malinvestment".

[4] A notable exception to this principle, however, is that changes in the demand for money balances affect the profitability of money production in a commodity-money regime. As a result, producers will bid up or down the price of the required factors of production, the allocation of non-specific factors of production involved in money production being consequently altered. Cf. Rothbard ([1962] 2004, 776). As Hülsmann (2009) explains, Rothbard does not draw the full implications of this: if an increased demand for money drives up its purchasing power, the subsequent increase in money production to take advantage of the situation makes the return on investment in money production fall again after the temporary increase until it becomes the same as elsewhere, for sure, but this arbitrage process also entails an increase of the return on investment elsewhere until equalization is reached. In other words, there is a new pure rate of interest, higher than before. Therefore, Hülsmann concludes that the demand for money is not time-neutral. We do not pursue this line of thought here, because we want to make the case that the demand for money to hold lacks time-neutrality in a much more direct and fundamental way.

> there is no causal connection between the two; one is determined by the valuations for money, and the other by valuations for time preference.
>
> (…) The only necessary result, then, of a change in the demand-for-money schedule is precisely a change in the same direction of the proportion of total cash balances to total money income and in the real value of cash balances. Given the stock of money, an increased scramble for cash will simply lower money incomes until the desired increase in real cash balances has been attained. If the demand for money falls, the reverse movement occurs. The desire to reduce cash balances causes an increase in money income. Total cash remains the same, but its proportion to incomes, as well as its real value, declines.

Thus, the demand for money balances would be perfectly neutral with respect to the choices between consumption and investment, since it would be governed by something other than time preferences, the cause of the originary or pure interest rate. Strictly speaking, this would seem to imply that if an individual's or group's demand for money balances were to fall because of a decrease in perceived uncertainty or aversion to it, investment spending and consumption spending would increase keeping the investment/consumption ratio unchanged.

Some Inconsistencies

Despite what they say, it should be noted that Mises and Rothbard have difficulty maintaining that the demand for money balances is neutral with respect to consumption and investment choices, either because other elements in their analysis indirectly suggest an incongruity in this respect, or because some of their proposals directly contradict it.

Is the idea that the monetary relation is involved in all prices compatible with the thesis of "neutral" money *vis-à-vis* inter-temporal choices?

First, it should be noted that Mises and Rothbard's caveats regarding the analysis of the price level, the purchasing power of money and their alteration, suggest at least that it is intuitively implausible that changes in the demand for money balances are unrelated to changes in inter-temporal choices.

Indeed, against the now mainstream view that money and its purchasing power can be analyzed separately from the determination of the prices of other goods –an assumption which separates "macroeconomics" from "microeconomics"– they explain that there is no "general price level" and thus no purchasing power of money that can be measured. There is no unit for this, because the price or purchasing power of money is in fact the array of its prices in terms of all other goods. Thus, the purchasing power of one euro is at a given moment so many eggs, so many books, a certain number of minutes of economics courses, etc.[5]

Once this is taken seriously and kept in mind, it becomes clear that there is no change in the demand for money balances that is "neutral" with respect to the prices of each non-monetary good and their relations. Thus Rothbard ([1962] 2004, 843-844) notes in this decisive passage for what concerns us here that:

> The PPM [purchasing power of money] can and does vary, in response to changes in the supply of or the demand for money. These, in turn, can be resolved into the stock of goods and the total demand for money. Individual money prices, as we have seen in section 8 above, are determined by the stock of and demand for money as well as by the stock of and demand for each good. It is clear, then, that the money relation and the demand for and the stock of each individual good are intertwined in each particular price transaction. Thus, when Smith decides whether or not to purchase a hat for two gold ounces, he weighs the utility of the hat against the utility of the two ounces. Entering into every price, then, is the stock of the good, the stock of money, and the demand for money and the good (both ultimately based on individuals' utilities). The money relation is contained in particular price demands and supplies and cannot, in practice, be separated from them. *If, then, there is a change in the supply of or demand for money, the change will not be neutral, but will affect different specific demands for goods and different prices in varying proportions*. [Our emphasis]

[5] As Rothbard (2004 [1962], p. 849) writes, "There is no "price level," and there is no way that the exchange-value of money is manifested except in specific purchases of goods, i.e., specific prices. There is no way of separating the two concepts; any array of prices establishes at one and the same time an exchange relation or objective exchange-value between one good and another and between money and a good, and there is no way of separating these elements quantitatively."

In other words, when someone lowers his cash balances, for example, he affects the bidding on specific goods and not on an average good whose price would be the "general price level". He must therefore participate in the determination of relative prices that are different from what they would be with higher cash balances. And these additional expenditures are the result of his relative valuations of the various goods and cash balances. Since one cannot separate considerations of the demand for money from relative valuations among other goods, one cannot really consider a change in the demand for cash without a change in the relative prices of other goods. But if this is true in general, why should one particular price, the interest rate, be the exception and not vary "one iota"? This seems intuitively implausible.

If we can thus envisage that changes in the demand for money balances are not neutral vis-à-vis inter-temporal trade after all, it could nevertheless be so in the narrower sense that they would not affect it univocally in a necessary relationship. Depending on the value judgments of the actors, variations in the demand for money would affect the investment/consumption ratio in one direction or the other, without the economist being able to predict in which direction. It turns out, however, that even in this more restricted sense of the "neutrality" of money with respect to the interest rate, the analyses of Mises and Rothbard sometimes suggest non-neutrality, or at least hint at the possibility of a more systematic link between the demand for money to hold and inter-temporal choices.

This is certainly the case when they refer to the risk or uncertainty premium as a component of the market interest rate in addition to the originary interest rate that depends only on time preferences. For although they do not refer to the demand for money balances in that context, they nevertheless suggest that the degree of perceived uncertainty is not neutral with respect to inter-temporal choices, an uncertainty that is precisely supposed to be the central consideration with respect to money demand.

On the one hand they say that the demand for money is unrelated to time preferences and has everything to do with uncertainty. On the other hand, they say that an uncertainty premium emerges in the time market. But for a premium to emerge or increase, it must be the case that at any interest rate, the quantity of savings to invest is lower when people perceive greater future uncertainty and/or because their aversion to uncertainty increases (leftward shift of the supply curve of saving). This would also lead to a lower volume of savings and investment.

Indeed, Rothbard ([1962] 2004, 550-551)[6] essentially explains that, in addition to the investment-limiting constraint consisting of the cost of waiting (the attainment of immediate or less distant satisfaction), uncertainty about the outcome of a particular investment may constitute an additional constraint that reduces the supply of present goods in the corresponding inter-temporal market below what time preferences alone would determine:

> In the ERE, as we have seen, the interest rate throughout the economy will be uniform. In the real world there is an additional entrepreneurial (or "risk") component, which adds to the interest rate in particularly risky ventures, and in accordance with the degree of risk. (Since "risk" has an actuarially "certain" connotation, we may better call it "degree of uncertainty." (…)
>
> In the real world, of course, nothing is absolutely certain, and therefore the pure rate of interest (the result of time preference) can never appear alone. (…)
>
> On the market, then, a whole structure of interest rates will be superimposed on the pure rate, varying positively in accordance with the expected risks of each venture. The counterpart of this structure will be a similar variety of interest rates on the loan market, which, as usual, is derivative from the goods market.

But the theory of neutral money balances suggests that, in the face of growing uncertainty or uncertainty aversion, the demand for money will increase at the expense of investment and consumption spending, keeping the proportion between these two expenses unchanged. In other words, the additional cash holdings would not only come from a reduction in the investment expenditure described above, which is supposed to be the cause of the emergence of the uncertainty premium, but also from reduced consumption. But then where could the premium come from? Would the volume of investment not have to fall relative to consumption for the premium to emerge? Would the structure of production not remain unchanged otherwise, and thus also the real interest rate?

The non-neutrality of the demand for money with respect to inter-temporal choices.

[6] See also Mises ([1949] 1998, 536) who focuses on interest rates in the lending segment of the time market.

Perhaps the reason why this tension may not be immediately apparent is that Rothbard and Mises focus on the greater or lesser supply of present goods in the time market without explicitly discussing where the additional money invested comes from when someone perceives a decrease in uncertainty (thereby bidding down the corresponding premium and moving closer to the originary market rate of interest) and how consumption expenditures and money balances are affected. Nevertheless, the thesis implied but not explicitly defended here by Rothbard (and Mises) is that the variation of perceived uncertainty (and presumably of uncertainty-aversion) is not "neutral" with respect to inter-temporal choice.

In fact, Rothbard went so far as to state this explicitly in another context. At the very beginning of the theoretical edifice, 500 pages earlier in the chapter on the fundamentals of action, Rothbard ([1962] 2004, 60) explains that:

> Since investment in capital goods involves looking toward the future, one of the risks that an actor must always cope with is the uncertainty of future conditions. Producing consumers' goods directly involves a very short period of production, so that the uncertainty incurred is not nearly as great as the uncertainty of longer processes of production, an uncertainty that becomes more and more important as the period of production lengthens investment. The uncertainty factor in this case works with the time-preference factor to the disadvantage of the investment, against which the actor balances the expected utility of future output.

Curiously, Rothbard does not refer explicitly to this passage afterwards, but the whole discussion of the "risk" or uncertainty premium seems to relate to it: uncertainty is not neutral with respect to inter-temporal choices. This is implicit in the discussion of the entrepreneurial component of the interest rate and explicit in the discussion of the general principles of action, the former appearing in the light of the latter as a particular application of the same general principle.

Decrease in consumption expenditure or the demand for cash balance: how is the additional investment expenditure financed?

At this stage of the analysis, one may be reluctant to rule out in our scenario of an actor facing mitigated uncertainty that the funds used to increase investment would otherwise be allocated exclusively to consumption, leaving the demand for money balances unchanged. But it appears that a different scenario is possible and intuitively more plausible. After all, the money allocated

to investment could have been directed not only to consumption but also left as cash balances and it is certainly not clear that an increased utility of investment at the margin, linked to a decrease in the perceived probability of failure, is only relative to consumption choices. And of course, the investment/consumption ratio can increase through a combination of lower consumption and lower cash holdings, or even just lower cash holdings without lower consumption.

In fact, this is so plausible that in their discussion of the evenly rotating economy and the demand for money, Mises and Rothbard put forward precisely the latter scenario without realizing, it seems, that this could undermine their idea of the neutrality of the demand for money balances with respect to investment vs. consumption choices. Indeed, let us return to the first quote from Mises ([1949] 1998, 250) that we provided above:

> In a system without change in which there is no uncertainty whatever about the future, nobody needs to hold cash. Every individual knows precisely what amount of money he will need at any future date. He is therefore in a position to lend all the funds he receives in such a way that the loans fall due on the date he will need them.

As mentioned above, the individual does not need to keep funds in money balances in the absence of uncertainty, which characterizes the evenly rotating economy. But these funds that are thus "freed up" are not spent on investment and consumption in the same proportions as in the situation of uncertainty with a demand for money. Mises asserts only that they are loaned, that is, invested and not consumed, from the point of view of their initial holders! If we transpose this to the discussion of the entrepreneurial component of the interest rate or risk premium, this means that the funds financing an additional investment expenditure while perceived uncertainty is decreasing (in the extreme, it tends towards zero as we approach the world of the evenly rotating economy) come from a decrease in the demand for money, while consumption would remain identical!

And although not essential to the issue he discusses, Rothbard ([1962] 2004, 328) too describes the same scenario in a passage also intended to expose the contradictions of the evenly rotating economy and describe its proper use:

> Money is demanded and held only because it gives greater assurance of finding a market and because of the uncertainties of the person's demands in the near future. If everyone, for example, knew his spending precisely over his entire future—and this would be known

> under the evenly rotating system—there would be no point in his keeping a cash balance of money. It would be invested so that money would be returned in precisely the needed amounts on the day of expenditure.

These cash balances, which would no longer be needed, would not be invested for one part and allocated to consumption for another. They would just be "invested"![7] Once again, the scenario put forward is one of increased investment thanks to a drop in the demand for money balances! And the decrease in perceived uncertainty seems to be the cause of both phenomena, the decrease in cash holdings and the increase in the investment/consumption ratio, as if they were two aspects of the same phenomenon.

On the non-neutrality of the demand for money balances in relation to inter-temporal choices

So far, we have tentatively established two things separately. On the one hand, in the Mises/Rothbard view, the most fundamental rationale for a demand for money balances is uncertainty. And the less uncertainty an actor feels, the less important will be the utility of money balances relative to expenditures. On the other hand, this uncertainty is not neutral with respect to intertemporal choices. Since perceived uncertainty about events is likely to be all the more marked, the further away they are from the moment of choice, the investment/consumption ratio of an actor depends on it.

Thus, a decrease in the perceived probability ("case-probability") of an adverse event, or a decrease in uncertainty-aversion, should be seen as a factor in decreasing the demand for money balances and as a factor in increasing the ratio of its investment to consumption expenditures (implying a decrease in the "entrepreneurial component" of the interest rate). Therefore, to the extent that these effects have essentially the same cause, they are only two aspects of the same phenomenon: a lower perceived probability of (or a lower aversion to) future adverse events implies a shift in allocation choices from hoarding toward spending, especially investment spending. Thus, under those circumstances, we must exclude the scenario envisaged above of additional investment being financed solely by a fall in consumption expenditure. The fall in the demand for cash holdings, however small, is consubstantial with the phenomenon described. It finances the increase in investment, at least in part.

[7] In another passage, Rothbard ([1962] 2004, 767) admittedly mentions consumption too, but the emphasis remains on investment expenditures.

The Demand for money and the term structure of investment expenditures

One might object to the analysis we have just presented that our investigation is conducted in too broad terms. Indeed, an actor may want to protect himself not only against "uncertainty" in general or the uncertainty of a vague "future" at indeterminate points in time, but also against uncertainties at more specific points in time. Thus, it is not so much money right now that the actor may need to protect himself but money holding at the appropriate time in the future. The proper moment, for example, is the time when a particular investment may result in failure and put the investor in difficulty in relation to other commitments and possible expenditures to be made.

To this, it should be replied that this reinforces the considerations already presented on the non-neutrality of uncertainty with respect to inter-temporal choices. Nevertheless, although a demand for cash now is a means of obtaining cash at the "right" time, substitutes may be available for that purpose. Today's cash demand may be insensitive to such specific uncertainties, compared with general uncertainty, because the actor will have found other ways to ensure that he will have adequate cash at the right time.

The other way to ensure that these cash balances are available is to prefer to direct spending toward shorter-term investments. As for instance Bagus and Howden (2010, 69-73) explain, in an uncertain world, a 5-year investment at a certain rate cannot be considered equivalent to a succession of 5 one-year investments at the same compound interest rate. Among other causes, the reason is that there is a difference in "liquidity risk"[8]. If an actor lends a sum for one year, he will obtain the expected sum after one year, unless his counterparty defaults. If he had lent for five years instead, he would face the additional risk of getting less at the end of one year if he needs to liquidate his investment to obtain cash.

This is what accounts for a upward sloping yield curve, interest rates increasing with the duration of investments, Rothbard ([1962] 2004, 445-449) having shown that, based on time preferences alone, the yield curve should be flat under the effect of arbitrage. If the demand for cash today is less affected than it would be if the only way to ensure holding cash in the future were to build it

[8] It seems to us that the corresponding liquidity premium should be seen as part of the entrepreneurial component of uncertainty, of which liquidity risk is an example. Thus, the difference between long and short rates is a component of the "risk premium".

up now, it is because and to the extent that instead of simply arbitrating between cash and investment, the actor will also choose between investments of different terms.

In this context, a reduction in specific uncertainties would not simply lead to a reduction in cash holdings now, allowing for an increase in investment spending (in absolute terms and relative to consumption spending), but to a reduction in expected future cash holdings through an increase in the term of its investments. Consequently, the reduction in cash holdings here goes hand in hand with a reduction in the uncertainty premium between short-term and long-term investments, a factor that flattens the yield curve.

The demand for money to hold as a demand for future goods

If the reasoning above is sound, we have revised the theory of the demand for money to hold in a way which filters out the aforementioned inconsistencies. Absent time-neutrality, the theory of money demand and the entrepreneurial component of the market interest rate are compatible. Internal coherence may then have been restored. However, while such result is indispensable in order for the theory to be correct, it is not sufficient. One might as well have pronounced the theory of the entrepreneurial component of the interest rate to be faulty, scraped it and ended up with another internally coherent view (a defense of the time neutrality of the demand for money).

The question then arises why the reader should take our revision more seriously than any other, and in particular whether it may be said to fit the overall edifice, ultimately grounded in the axiom of action, that Mises, Rothbard and others have championed. The attentive reader may also have noticed at this point that what has been proposed above suggests the demand for money is a demand for future goods. However, other critics of time-neutrality have argued that such demand for money shall be thought of as a demand for present goods instead (Hülsmann 2009, 321). Hence, we are now going to further argue in favor of our revision, on praxeological grounds and explicitly in those terms, and see what other implications may follow.

The sole element brought forward so far in support of that view, in combination with the idea of holding money as a way to cope with uncertainty, is the association made by Rothbard between investment in capital goods and the degree of uncertainty involved in the length of the process of production, the uncertainty element “working with the time-element factor to the disadvantage of

investment". In other words, coping with uncertainty one way or another presupposes "looking toward the future", which suggests that anything but a concern for immediate gratification (present good consumption) underlies a reservation demand for money (as well as a reservation demand for anything else). While this points toward our solution, other well-established elements of the praxeological edifice lead to the same resolution. In particular, a reflection on the very definition of present vs future goods, as well as the very definition of money, provide firm grounding to such an interpretation.

To go straight to the main point, the reader may envisage the following thought experiment: what if suddenly people shortened their time horizon to one week? To be sure, between consumption and investment expenditures, nothing but consumption or extremely short-term investment would occur. But if it is obvious that investments would come to a halt, what about money hoarding? The question virtually answers itself once asked. Not only investment would virtually disappear but the demand for money would shrink too, and for the same reason. There is no point in holding money for more time than required to find consumption goods when nothing but instant gratification is deemed valuable. In other words, money is not "immediately and directly serviceable". It is not a "present good", a consumption good of some sort. It is "indirectly serviceable", i.e. "transformable into directly serviceable goods only at some point in the future" (Rothbard [1962] 2004, 8). Insofar as money is a good and "goods may all be classified in either of two categories", directly serviceable and indirectly serviceable, it belongs to the second one, it is a "future good".

While such an extreme scenario helps illustrate the point, one may reach the same conclusion without it, by contemplating the very definition of money Austrians normally use: a medium of exchange (in general use). Hence, as Rothbard ([1962] 2004, 764) puts it, "the utility of money depends solely on its prospective use as the general medium of exchange". Its usefulness as money only stems from its purchasing power. But even in the catallactic context of the market in which, by focusing on exchangeable goods, it may be deemed acceptable to call present or consumption goods, goods which really are future goods in need of further transformation with the help of other goods, as long as their purchase were the last in the chain of exchanges before consumption, money held, by definition, cannot fit that category. In order for it to fit the category of direct serviceableness, it would need not to be the object of further exchanges.

Even when such a rare event would occur -someone somewhere may have felt the need to eat money- the money held would stop being money by that very act, not simply because it would be

destroyed in such act of consumption but more fundamentally because it would not be used as a medium of exchange anymore. By the same token, if money was not a future good, there would have been, for Mises, no circularity issue to solve in the problem of the determination of money prices. The problem arises only because a determinant of money prices, the marginal utility of money, itself depends on money prices, which is another way of saying again, that the utility of money comes from the utility of what it helps purchase, its indirect serviceableness, that is.

It is true, as Hülsmann (2009) notices, that Rothbard claims that money is the "present good par excellence", a claim that Hülsmann himself endorses in order to deduce some implications regarding the pure rate of interest and the time structure of production (that Rothbard did not draw once he switched gear and posited with Mises that money had to somehow belong to a different realm, neither present nor future goods). However, this would seem to be a faulty line of inquiry. In support of the claim, Rothbard mentions that "the money commodity is the one completely marketable good in the entire society. It is the open sesame to exchange for consumption goods at any time that its owner desires. It is therefore a present good." But it is also the open sesame to exchange for factors of production, indirectly serviceable goods, so why would it not be a future good instead or both?

Another objection could be based on Rothbard's claim (Rothbard [1962] 2004, 265) that

> An example of general uncertainty is an individual's typical desire to keep a certain amount of cash on hand "in case of a rainy day" or an emergency that will require an unanticipated expenditure of funds in some direction. His "feeling safer" in such a case demonstrates that money's only value is not simply when it makes exchanges; because of its very marketability, its mere possession in the hands of an individual performs a service for that person.

In other words, it is this present security that a cash balance would provide, and which would justify the present good classification. The problem with this is that if we classify indirectly serviceable goods as present goods because they provide some feeling of security right now, all sorts of goods which are usually considered future goods may be qualified as present goods too, such as real estate we may have just invested in. This would seem to prove too much. Also, any choice may be said to provide instant gratification in the expectation of a favorably altered environment later. On that ground, any good or service may be classified as a present good and the distinction collapses.

Conclusion

To paraphrase Hülsmann (2009, 321), as soon as it is admitted that money is a future good, though not a factor of production *stricto sensu*, the causes of changes in the demand for money and their impact on relative spending between consumption and investment and the shape of the structure of production become "obvious". An increase in the demand for cash balances does not necessarily presuppose any change in inter-temporal value scales. It may imply a different composition of future goods in one's portfolio, in the face of increased perceived uncertainty or increased uncertainty-aversion. In such a case, investment spending becomes lower. With consumption spending remaining the same, the structure of production becomes shorter and the interest rate higher because of a higher "entrepreneurial component".

On the other hand, with given preferences in regard to uncertainty-aversion and a given perception of uncertainty of future conditions, a change in inter-temporal value scales affects the demand for money (similarly) and the structure of production (differently). An increase in the demand for money can be the result of increased future-orientedness, consumption expenditure being reduced in favor of both increased investment expenditure and a higher money balance, in such a way that the ratio of investment expenditure to consumption expenditure increases, the interest rate decreases and the structure of production lengthens. This is the familiar growth scenario, except that the effect is less drastic for a given change in time preferences since investment expenditure does not increase as much as when aggregate spending remains the same. If this view is correct, it also implies that the tendency for the purchasing power of money to rise in association with economic growth is not simply the result of the higher productivity of increased roundaboutness in the production structure but occurs from the start of the process.

As a final observation, one may add that under this view, referring to money balances as "savings", as Keynes did but Austrians usually do not, makes more sense than if they were time-neutral, not so much because they would have a similar impact than investment expenditure via a wealth effect, but insofar as money balances and investment expenditures are complement, so that increased money balances go hand in hand with an increased ratio of investment expenditure over consumption expenditure when future-orientedness increases.

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