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## The Potential Money Character of Assets

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# The Potential Money Character of Assets

By Han van der Knoop\*, Den Haag

## I. Introduction

Money continues to be defined in several ways. No single definition seems as yet to have been agreed upon which could serve as a generally accepted and useful convention. In this matter economic science still displays what *Popper* (1978, p. 20) has condemned as “methodological essentialism”, i. e. the tendency to think of definitions as “statement(s) of the inherent essence or nature of a thing” instead of as conventions, merely designed to facilitate our thinking. Thus, for instance *Goodhart* (1975, p. 2) attempts to derive a “functional” definition of money from the answer to the preliminary question “What role does money play?”. Indeed, he wishes to express in the definition of money its “most important general function” (p. 2); hence, he defines it as a means of payment, thus suggesting to have added something to our knowledge of facts, viz. that money is in its essence a means of payment. Clearly this makes no sense, since definitions “never give any factual knowledge about ‘nature’ or about ‘the nature of things’” (*Popper*, o.c., p. 20, 21).

This does not imply that the definition of money as a means of payment is nonsensical. It represents, however, a choice. The definition is simple and rather obvious, yet it was not invented until 1970, by *Shackle*, who stressed the difference between a means of payment and the broader concept of a medium of exchange (*Chick*, 1978). Trade credit is a medium of exchange, since it allows transactions to take place. It is not a means of payment. Money defined as medium of exchange figures in *Niehans* (1980) or *Dornbusch* and *Fischer* (1983). Other, still broader definitions of money are or have been in use. It is sometimes thought that broad definitions may be

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necessary in order to understand movements in the price level (*Brunner and Meltzer*, 1971).

Extension of the definition of money – in the sense of broadening the range of assets covered – is often based on substitution characteristics. One includes assets in the definition that are not really means of payments but are easily substituted for it by the public. Such assets display some degree of liquidity. *Chetty* (1969) and *Fase* (1975) estimated elasticities of substitution for several assets and used these to construct alternative monetary aggregates. *Barnett* (1980) and *Barnett, Hinich and Weber* (1986) applied aggregation theory and the theory of index numbers to derive monetary aggregates from the liquidity and substitution properties of relevant assets. Central banks also commonly regard their target variables from the perspective of substitution characteristics. Extension of the money concept then takes place in order to cover a new financial instrument, which, though again not a means of payment itself, is highly substitutable for it.

In this note broad monetary aggregates are examined from the perspective of *Kessler's* (1958, 1962) distinction between micro- and macro-liquidity (section II). Assets displaying the property of macro-liquidity form “potential” money. In section III it is argued that absence of money stock control is a necessary and sufficient condition for the existence of potential money. Section IV offers two explanations for the occurrence of potential money.

## II. Micro- and Macro-Liquidity

The monetary aggregates used by central banks have on average been constructed as *unweighted* sums of assets. This approach has been criticized by *Barnett* as being in conflict with notions from aggregation and index number theory. Such unweighted sums abstract from the degree of liquidity or “moneyness” as this is perceived by the public or the banking system. This perception may differ between assets. Liquidity or moneyness here indicates the ease and speed by which an asset can be converted into money (defined as means of payments with M1 as corresponding monetary aggregate for the remainder of this note).

It is important to note that *Barnett's* criticism as well as the monetary aggregates, against which it is directed, are based upon a notion of liquidity that seems to overlook an important qualification. However liquid an asset may be in the eyes of individual economic agents, if the asset can only be converted into means of payment when it is sold on a secondary market between private agents not being banks,<sup>1</sup> then the aggregate of all such assets

represents no liquidity at all for the economy as a whole. Any sale of that asset involves a purchase and, thus, a shift of means of payment from the new towards the old investor. It will not affect the existing amount of money, it only redistributes it. More accurately expressed, a seller of any such assets cannot change the total command of means of payment in the economy.<sup>2</sup> Only her or his own command can be modified.

It follows that assets which can be sold only on a secondary market, can never be cashed by the collectivity of economic agents. It is impossible to transform even a part of the aggregate of these assets into money. Hence from the perspective of the economy as a whole such assets do not display liquidity or moneyness.

On the other hand, assets may exist that can be transformed into money by a transaction which is not a sale on a secondary market. Such assets can be converted into money not only by the individual agent, but also by the collectivity of agents. Bank liabilities such as time deposits offer under certain conditions an example. When time deposits mature and their holders do not wish to continue these investments, they are transformed into additional money – the stock of money has not been redistributed in order to replenish the cash balances of the agents that wish to part with their time deposits, it has increased. Unused bank overdraft facilities offer another example. When these are used, additional means of payment is created. In both these examples a basic presumption, to which is returned below, is that the central bank does not counteract the money creation.

It follows that a distinction should be made between liquidity or moneyness in a micro and in a macro sense:

- a) Micro-liquidity of an asset represents the degree of liquidity of that asset as perceived by the individual economic agents;
- b) macro-liquidity of an asset represents the possibility that (a part of) the aggregate of these assets can be converted into newly created means of payment which in macro-economic terms adds to the whole.

The distinction occurs in the works of *Kessler* (1958, 1962); I could not find it elsewhere in the literature. An asset that is liquid in micro and macro sense can be converted into additional cash. It is not yet money, *Kessler* calls it potential money or secondary liquidity.<sup>3</sup>

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<sup>1</sup> Such sales are meant to include redemptions.

<sup>2</sup> This more subtle formulation takes the possibility into account that some of the transactors involved pair their sales or purchases to credit transactions.

<sup>3</sup> As distinct from primary liquidity, i. e. money.

### III. The Operating Policies of the Central Bank

Clearly, whether an asset must be classified as potential money will always depend on the operating policies of the monetary authorities. Potential money can exist only if the central bank allows the corresponding money creation to take place. That is, if the central bank allows the public to shift its demand for money and to adapt its nominal money holdings accordingly, and does not preclude or compensate adaptations in nominal money holdings that might follow from changes in money demand.

Absence of money stock control is thus a necessary condition for the presence of potential money. It is also sufficient. Suppose no assets in the economy form potential money. Then the public cannot collectively convert assets into newly created, macro-economically additional, money. Thus the stock of money would be fixed. This implies money stock control in whatever form. Absence of money stock control with no potential money in existence is, therefore, a contradiction.

Using the above defined distinction between micro- and macro-liquidity we see that broad monetary aggregates, which are derived solely from micro-economic substitution characteristics, are based only on the micro-liquidity properties of the constituting assets. The macro-liquidity properties are not taken into account. From the perspective of this distinction such broad monetary aggregates – including those resulting from the *Chetty* and *Barnett* approach – may therefore be not without flaws. On the one hand one may safely assume that a central bank which has chosen a broad aggregate as its target discards money stock control. In such a case potential money must be present. More specifically, at least one asset, other than money itself, in the broadly defined target must be liquid in the macro-sense (otherwise, the central bank would again exert money stock control).

On the other hand, we cannot be positive that all assets, other than money, in the target have the character of potential money, since monetary authorities seldom include an asset into their targets explicitly because of its being potential money.<sup>4</sup>

If such a broadly defined aggregate indeed contains liquid assets which are not (potential) money, then it can never become means of payment for its full amount. Its monetary interpretation then requires some care. It reflects the aggregate of micro-liquidity as perceived by individual economic agents. It does not reflect, for its full amount, readily available purchasing power.

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<sup>4</sup> The Dutch central bank has – and it seems to be the only one – based its broad monetary aggregate “liquid assets” explicitly on the requirement that assets included should either be means of payment or be liquid in the micro and macro sense.

#### IV. Explanations for the Occurrence of Potential Money

If a central bank targets an aggregate broader than money, it will not react to conversions into money of the potential money in the aggregate. The central bank discards money stock control and, thus, it has declared – mostly implicitly – certain changes in money demand irrelevant for its macro policy. Two explanations are presented below for the pursuit of such a monetary policy by a central bank. As I see it, these explanations are neglected in the discussion about the question why certain variables (should) serve as intermediate targets of monetary policy.

The first explanation for broad monetary targets and, thus, the existence of potential money rests on the possibility that the relevant financial markets fail to clear, or clear only through extremely high or low interest rates. By allowing potential money to exist a central bank precludes such possibilities, and, hence, avoids the effects upon the economic system which it would inflict if it would try to redress changes in the money stock. This point is related to some well known complications of money stock control concerning lags and stochastic shocks in macro-economic relations (see *Goodhart*, 1975, p. 162 and p. p. 234 - 40) but it is not identical to them. Here the perspective of *Walrasian* equilibrium is chosen in which case one recognizes a possible self-annihilating effect of money stock control. It will be explained below.

Consider a closed economy with only two assets, money and certificates,<sup>5</sup> issued by the central bank. If the central bank fixes the interest rates of the certificates and if it is prepared to buy or sell certificates at a stated price, these certificates become potential money, since the public can alter its aggregate money holdings. *Walrasian* equilibrium in a simple economy with only these two assets requires the presence of agents whom we can identify as stabilizing speculators. Following *Grandmont* (1985) it can formally be shown, however, that the conditions for *Walrasian* equilibrium are stronger if the central bank pursues money stock control than if the central bank allows the character of potential money to certificates.

- a) From the appendix it appears that to maintain *Walrasian* equilibrium with money stock control, the presence is required of stabilizing speculators whose price and interest expectations are, beyond a certain point, insensitive to movements in both current prices and interest rates. Yet it is of course conceivable that the agents' expectations about interest

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<sup>5</sup> Unless otherwise indicated, the term certificates refers solely to bearer certificates.

rates become more and more sensitive to current interest rates if the monetary authorities fix the money stock. For in that case it will be known that the authorities do not trouble themselves about the interest rates on certificates, that they have not set any target for them and that they are prepared to accept any level for them, now and in the future, to maintain their money stock target. As a result shifts in money demand may occur in which the public becomes in excess supply or demand of certificates for any level of interest rates. Money stock control renders itself impossible.

- b) However, *Walrasian* equilibrium in the situation in which certificates form potential money requires the presence of agents whose price and interest expectations are insensitive only to current prices and not to current interest rates.

This argument to discard money stock control can now be generalized as follows. In any free enterprise economy substitutes to money exist. Shifts in money demand will in general cause the markets for these substituting assets to become in excess supply or demand, given current interest rates. Substitutes that can be traded and transformed into money only on secondary markets can never affect the money stock. The other substitutes, for instance time deposits, would affect the aggregate money stock unless the central bank redresses actively the excess supply or demand on these markets. In both kinds of markets (*Walrasian*) equilibrium requires the presence of agents who act as stabilizing speculators, holding expectations which, beyond a certain point, are not sensitive to current interest rates. The presence of such agents is not warranted, however, and may be blocked by the very control of the money stock, so that the excess supply or demand may not disappear. The money stock can then be set on its target only through extreme variations in interest rates or not at all (note that the 1987 crash in the stock markets illustrates the occurrence of a sudden, large, supply that could be eliminated only through extreme price movements).

Hence the instruments of the central bank (open market, money market or discount policy instruments) through which the money stock might be kept under control and the existence of potential money is precluded, might fail. Money stock control itself may gradually undermine the conditions for its own effectiveness by affecting the formation of expectations in the relevant markets. Agents are, after all, required to act upon beliefs and expectations which are not sustained by the monetary authorities themselves.

At first sight this explanation seems to question not only the money stock but all monetary aggregates as target variables of monetary policy. It is

probable, however, that the expectations about short-term interest rates are more easily affected by current developments in the financial markets than those about long-term interest rates. It is also an empirical fact that short rates are more volatile than long rates. Thus the condition of stable expectations offers a problem notably for the markets for close money substitutes with short maturities, i.e. in the situation of control of narrow money. Note that according to this explanation potential money exists as a consequence of the objective properties of the economic system, in the face of which a central bank hardly possesses any choice.

The second explanation for the existence of potential money can be found in other priorities of monetary policy. Take, as an example, the Netherlands with its open economy which has always had the maintenance of the Guilder-DMark parity as an important policy objective for the monetary authorities. The Nederlandsche Bank (the central bank) tries to regulate the exchange rate through the short-term interest rate. So it connects this rate closely to German short rates. Domestic short-term interest rates are, therefore, not available for the central bank in order to regulate the money stock. By consequence the Nederlandsche Bank cannot prevent – by pushing up money market rates – certain assets that correspond to the domestic short-term rates, i.e. time deposits, from expiring collectively once the public wishes to part with them. The central bank does not counteract the inherent money creation and allows time deposits to be potential money, expressly not because of some intrinsic property of the economic system, but because of the central bank's very choice of target variables.

To summarize: in this note the importance has been stressed of the distinction between micro- and macro-liquidity. Assets that are liquid in micro and macro sense (while not being money) form potential money. A necessary and sufficient condition for the existence of potential money is that the central bank does not control the money stock. Subsequently the question was posed as to why some assets qualify as potential money and why a central bank allows, unhampered, a collective conversion of such assets into money. Two explanations are suggested. Firstly, "Walrasian" properties of the economic system render it impossible for the central bank to counter such a conversion. Secondly, the higher priority of other objectives of monetary policy precludes action to counter such a conversion.

## Appendix

To save space the model will be set out only cursorily. It is a slight modification of a model in *Grandmont* (1985). In the model no production occurs,



each agent starts each period of time with an exogenously given stock of consumption goods. Consumption goods cannot be stored, they must be traded or consumed in the period in which they come to each agent's disposal. Agents can save by holding two kinds of assets, means of payment or money and certificates.

Agents live in overlapping generations without bequest. Each subject has certain relevant characteristics, including the amount of money  $\bar{m} \geq 0$  and of certificates  $\bar{b} \geq 0$  at the beginning of the current period. The aggregate stocks of money  $M = \sum \bar{m}$  and of certificates  $B = \sum \bar{b}$  are  $> 0$ .

Both money and certificates are issued by the central bank. This agent may manipulate the financial stocks through open market operations. The central bank may sell certificates, thus reducing the stock of money, or purchase certificates, thus enlarging the stock of money. Each certificate is a promise to pay to the holder an interest of one unit of money in each period. For each period the interest rate  $r$  makes the cash value of the flow of interest payments equal to the price  $s$  of a certificate, hence  $s = r^{-1}$ .

*Grandmont* has derived the conditions under which a (short-term) Walrasian equilibrium exists for the current period. In that equilibrium the actions of the agents in the current period will be co-ordinated although plans and expectations regarding future periods will not be attuned to each other.

Each individual consumer faces in the current period a price vector  $p_1$  and an interest rate  $r_1$  (or a price  $s_1$ ). The agent has for the rest of his and or life expectations  $p_t$  relating to future prices and  $r_t$  (or  $s_t$ ) relating to future interest rates (or prices of certificates). Optimal behaviour relating to consumption and the stock of money and of certificates to bearer requires the consumer to solve an utility maximization problem under the budget-restriction for the rest of his or her life. The problem has a solution for each (finite) collection  $p_1, p_2, \dots, p_t, \dots (> 0)$  and  $r_1, r_2, \dots, r_t, \dots (> 0)$ .

Expected prices  $p_t$  and interest rates  $r_t$  for an agent are represented as functions of  $p_1$  and  $r_1$ . The arguments of the expectation functions have thus been limited to current prices and the current interest rate (since the past cannot change and can be left implicit). Taking this functional relation between expectations and current values into account, we see that the solution of the consumer optimization problem depends ultimately only upon  $p_1$  and  $r_1$ .<sup>6</sup> By consequence the excess demand function for the current period, and the demand for means of payment and for certificates for the current period

<sup>6</sup> Individual wealth in the current period is actually also a determinant. It depends, however, ultimately only upon  $r_1$ .

are – for any consumer – functions of these quantities. Summing up these functions over all agents, we can write down the conditions for *Walrasian* equilibrium in the current period

$$\left. \begin{aligned} Z(p_1, r_1) &= 0 \\ M^d(p_1, r_1) &= M + \Delta M \\ B^d(p_1, r_1) + r_1 \Delta M - r_1 B &= B \end{aligned} \right\} (*)$$

Here the elements of vector  $Z(\cdot)$  represent aggregate excess demand for each consumption good,  $M^d(\cdot)$  and  $B^d(\cdot)$  represent aggregate demand for money and certificates at the end of the current period.

$\Delta M$  represents money creation in the current period. It includes interest payments of 1 times  $B$  on the beginning stock of certificates. For the remaining part, hence for a value of

$$\Delta M - B \text{ or } \frac{\Delta M - B}{s_1} = r_1 \Delta M - r_1 B \text{ certificates}$$

the central bank exercises demand ( $\Delta M - B > 0$ ) or supply ( $\Delta M - B < 0$ ) on the open market.

*Walras'* Law implies that one of the conditions (\*) is redundant. Hence, with  $l$  consumption goods we have only  $l + 1$  equations in order to determine the  $l + 2$  unknowns  $p_1$ ,  $r_1$  and  $\Delta M$ . One unknown has to be fixed. Since the central bank has the power to create money and certificates it is – under certain conditions – free to choose which one.

- a) The central bank regulates the amount of money at the end of the current period through the open market. It thus fixes  $\Delta M \geq -M$
- b) The central bank regulates the aggregate of money and the value of certificates to bearer at the end of period one, that is it holds

$$\begin{aligned} M + \Delta M + \left( B - \frac{\Delta M - B}{s_1} \right) s_1 &= \\ &= M + (r_1^{-1} + 1) B \end{aligned}$$

at a certain level  $> M + B$ . The central bank thus, in fact, fixes the interest rate  $r_1$  (because  $M$  and  $B$  are given).

If the central bank fixes the interest rate on a certain level, the bank's demand or supply of certificates and, hence,  $\Delta M$ , is determined completely endogenously, and certificates are potential money.

The conditions that must be satisfied to warrant the power of the central bank to regulate money or the aggregate of money and certificates can be found with *Grandmont* (1985, Appendix E). They establish short-term *Walrasian* equilibrium. Besides some regularity conditions, they imply the existence of agents with stable expectations who bring about intertemporal substitution effects. If an agent exists whose price and interest expectations  $p_t$  and  $r_t$  lie in a range which is independent of current prices  $p_1$ , Walrasian equilibrium is possible when the central bank fixes the aggregate of money certificates (which then form potential money). If the expectation range is independent, too, of current interest rates  $r_1$ , then money control is also possible in a Walrasian equilibrium.

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### Zusammenfassung

#### Der potentielle Geldcharakter von Aktiva

Der Begriff des Geldes ist immer noch nicht eindeutig definiert. Weitgefaßte Definitionen basieren auf den Liquiditätseigenschaften der zugrundeliegenden Aktiva. Allerdings unterscheiden diese Definitionen nicht zwischen mikro- und makroökonomischer Liquidität. Ein Aktivum, das die Eigenschaft der Makroliquidität besitzt, ist

potentiell Geld. Dieser Aufsatz untersucht die Voraussetzungen, für die Existenz potentiellen Geldes und bietet zwei Erklärungen für sein Entstehen.

### **Summary**

#### **The Potential Money Character of Assets**

Money is still a concept which is not unequivocally defined. Broad definitions are based upon the liquidity properties of the underlying assets. However, these definitions do not make a distinction between micro- and macro-liquidity. An asset displaying macro-liquidity forms potential money. This note investigates the conditions for the existence of potential money and offers two explanations for its occurrence.

### **Résumé**

#### **Le caractère monétaire potentiel d'actifs**

Le terme de monnaie n'est toujours pas encore défini sans équivoque. Les définitions générales se basent sur les propriétés de liquidité des avoirs fondamentaux. Ces définitions toutefois ne différencient pas la micro-liquidité de la macro-liquidité. Un actif déployant une macro-liquidité forme de la monnaie potentielle. Cet article examine les conditions requises pour l'existence de monnaie potentielle et présente deux explications de sa survenance.