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FINANCIALIZATION AND INCOME VELOCITY OF MONEY

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Abstract :

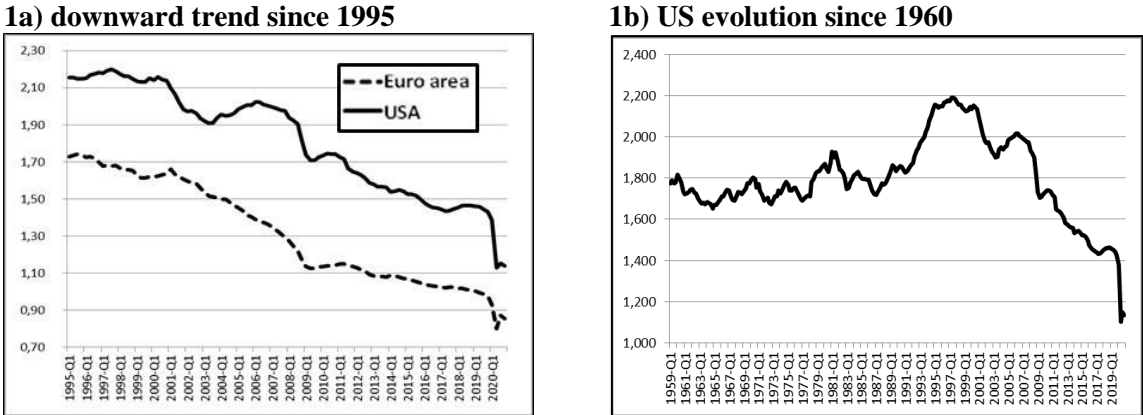
This paper reconsiders the Fisherian equation of exchange by explicitly distinguishing two types of transactions associated with industrial circulation, on the one hand, and financial circulation, on the other. In this context, a formal link can be established between the financialization of the economy and the downward trend in the income velocity of money during the last decades.

Keywords: money, quantity theory of money, equation of exchange, velocity of money, financialization, monetary policy

JEL : E40, E41, E52

Following massive injections of liquidity into the economy, some commentators are already considering a return to inflation. Such a rapprochement brings the quantitative relationship between money and price back to the fore. Yet until recently, despite monetary stimulus efforts, there was more fear of deflation than of inflation. Quantitative theory seemed to have lost its explanatory power. Questions about the relevance of the quantitative relationship originate in the observation of a loosening of the relationship between money and price (see, for example, Teles et al., 2016). They can also be based on the observation of a significant decrease in income velocity of money over the past twenty-five years (see Figure 1).

Figure 1 : Income velocity of money (M2)



Data sources: ECB and Eurostat for the euro zone; FRED St. Louis for the United States

The article argues that this downward trend is directly linked to the financialization of the economy. More precisely, it can be accounted for by a reformulation of the quantitative relationship explaining the duality of transactions that money allows: exchanges of goods and services and exchanges of financial assets. To do this, the first section proposes to reconsider the equation of exchange by dissociating these two families of transactions. Section 2 shows how the rewriting of this equation brings to light structural factors of variation of the income velocity of money. Section 3 concludes with some implications for economic policy.

1. Reconsidering the equation of exchange

The intuition of quantitative theory is old, but its most developed formal expression was given by Irving Fisher. For him, trade is “simply the exchange of a stream of transferred rights in goods for an equivalent stream of transferred money or money substitutes. The second of these two streams is called the "circulation" of money. The equation between the two is called the "equation of exchange"” (Fisher, 1911, p.7). Fisher formalizes the writing of this equation: the total quantity of money (*M*) multiplied by its velocity of circulation (*V*) is equal to the sum of the values of exchanges, a sum which can be aggregated into a product *PT* where “*P* then represents in one magnitude the level of prices, and *T* represents in one magnitude the volume of trade” (Fisher, 1911, p.27). That is:

$$M.V = P.T \tag{1}$$

When Fisher proposes the equation of exchange, he does so with a very broad conception of economic flows. This broad view is retained a priori with regard to the measurement of the general level of prices associated with the equation and therefore of general purchasing power: “This includes purchasing power over everything purchased or purchasable, including real estate, securities, labor, other services, such as the services rendered by corporations, and

commodities” (Fisher, 1917, p.218). But, recognizing that it is “utterly impossible to secure data for all exchanges”, Fisher comes to accept specifications “leaving practically nothing but wholesale prices of commodities to be included in the list of goods, the prices for which are to be compounded into an index number” (ibid., p.225).

Today, the most common formulation of the quantitative relationship is no longer expressed in terms of transactions but in terms of income. That is:

$$M \cdot V_Y = P_Y \cdot Y \quad (2)$$

The velocity of money becomes an income velocity (V_Y). This variable is not directly observable but can be easily calculated as the ratio of nominal income ($P_Y \cdot Y$) to the quantity of money (M). It plays a key role in the quantitative relationship. Its stability allows to assert that an exogenous increase in the quantity of money implies an increase in activity in nominal terms. With the additional assumption of long term neutrality of money (i.e. the long run level of real activity depends only on real factors), then the quantitative relation explains the variation of the general level of prices as a phenomenon of monetary origin.

However, the income formulation of equation (2) is not a simple approximation of the transaction formulation of equation (1). The rewriting is in fact a change in the way of approaching the quantitative relationship. It is the passage from a presentation in terms of macroeconomic identity, the Fisher’s equation of exchanges, to a vision in terms of demand for money, the Cambridge equation initiated by Arthur-Cecil Pigou and Alfred Marshall. This can be written in the form:

$$M = k \cdot P_Y \cdot Y \text{ (or equivalently } M/P_Y = k \cdot Y) \quad (3)$$

Parameter k in relation (3) is the inverse of the income velocity of money in equation (2). But reading is different. Pigou writes that, with the change he proposes, the relationship “would itself be more properly described as an equation of demand” (Pigou, 1917, p. 52). His approach “focusses attention on the proportion of their resources that people choose to keep in the form of titles to legal tender instead of focussing it on “velocity of circulation”” (ibid., P. 54). Marshall expresses the same change in reading the relationship: “The total value of a country's currency, multiplied into the average number of times of its changing hands for business purposes in a year, is of course equal to the total amount of business transacted in that country by direct payments of currency in that year. But this identical statement does not indicate the causes that govern the rapidity of circulation of currency: to discover them we must look at the amounts of purchasing power which the people of that country elect to keep in the form of currency.” (Marshall, 1923, p. 43)

Monetary theory then evolved as an extension of this reconsideration in terms of demand for money. It departed from quantitative theory with John Maynard Keynes and then returned to it with Milton Friedman. For him, the velocity of money is the expression of a demand for real balances as a stable function of permanent income and all the variables relevant in an overall wealth allocation. He sums up the quantitative theory as follows: “On an analytical level, it is an analysis of the factors determining the quantity of money the community wishes to hold; on an empirical level, it is the generalization that changes in desired real balances (in the demand for money) tend to proceed slowly and gradually or to be the result of events set in train by prior changes in supply, whereas, in contrast, substantial changes in the supply of nominal balances can and frequently do occur independently of any changes in demand.”(Friedman, 1970, p.195).

The shift to an approach in terms of demand for money or real balances holdings led to rewriting the quantitative relationship by favoring a measure of aggregate income and an associated price index representing the purchasing power of money in terms of goods and

services. The velocity of circulation is thus expressed by reconciling quantity of money and nominal GDP. The choice of such a measure of activity has the advantage of being operational since it uses a national accounts aggregate. But it deviates from the original conception in terms of transactions. While keeping in mind that the two approaches are not mutually exclusive, we return to the original idea behind the equation of exchange.

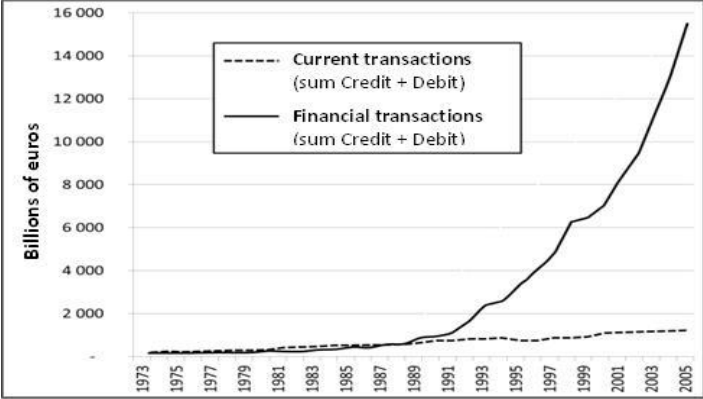
To reformulate this equation, we break down transactions into two categories that can be named, as a first approximation and with reference to balance of payments terminology: current transactions and financial transactions. We will come back to this distinction later. It can be compared to a differentiation between real and financial assets, but should not be limited to this. Based on this decomposition, the trade equation is rewritten as:

$$M.V = P.T = P_C.T_C + P_F.T_F \tag{4}$$

$P_C.T_C$ represents the total amount of current transactions defined as the product of an aggregate indicator of the volume of these transactions (T_C) and an index of the price level of assets traded (P_C). Similarly, the total amount of financial transactions ($P_F.T_F$) is written as the product of a price index (P_F) and a volume measure (T_F).

Even if direct measures of the amounts of transactions are not available, the movement of financialization of the economy in recent decades justifies the rewriting of the trade equation. We will only give an illustration of this movement through the statistics of transactions recorded in the French balance of payments (figure 2). Even if the data relate only to foreign trade and include monetary transactions in the financial account, the trend is no less significant. While the orders of magnitude of current and financial transactions were similar until the late 1980s, the total amount of financial transactions subsequently grew dramatically. In 2005 (the last year for which data are available for gross amounts of financial transactions), this amount was almost 15 times higher than that for current transactions.

Figure 2 : Current and financial transactions in the French balance of payments



Source of data: Banque de France, annual reports on the balance of payments

Directly derived from the Fisherian equation of exchange, the reformulation we propose is part of a transactional reading of the quantitative relationship. It is not intended to develop an explicit analysis of the underlying behaviors of demand for money. It only aims to highlight a necessary macroeconomic accounting interdependence between the quantity of money, transactions in goods and services and financial transactions. Nevertheless, this reformulation sheds light on the downward trend in the velocity of money over the past decades.

2. Downward trend in the velocity of money

From an analytical perspective, the proposed reformulation, with its two families of transactions, matches Keynes's idea, in his *Treatise on Money*, of distinguishing an “industrial circulation” and a “financial circulation” (Keynes, 1930, p. 243). The differentiation is due less to the nature of the traded assets (real or financial ones) than to the purpose of the transaction. At a level of generality high enough to allow a simplifying view, it is possible to give an approximate form for each of the terms of the right hand side of equation (4).

In the case of current transactions, forming industrial circulation, the assets are intended to be transformed during the period of activity to produce other assets or utility. They are associated with exchanges whose goal is the creation of value. Thus, as a first approximation, the total amount of transactions within industrial circulation can be related to a measure of the economy's overall output, GDP ($P_Y.Y$). Assuming simple proportionality, we have:

$$P_C.T_C \approx \alpha . P_Y.Y \quad (5)$$

Parameter α is a structural parameter representing the ratio between the total amount of transactions carried out in goods and services and the total of added values over the same period. Even if P_C and P_Y price indices are different by construction, their movements should hardly diverge. It is therefore more on the side of the real structures of the economy that we must look for the sources of possible variations in parameter α . An essential element is the degree of integration of production activities into the economy. As Friedman recalls: “For a given flow of productive services or, alternatively, of final products (two of the multiple faces of income), the volume of transactions will clearly be affected by vertical integration or disintegration of enterprises, which reduces or increase the number of transactions involved in a single income circuit, or by technological changes that lengthen or shorten the process of transforming productive services into final products.”(Friedman, 1970, p.199) A vertically integrated structure reduces trade in intermediate consumption and therefore the total amount of transactions for the same added value; α therefore depends negatively on the degree of vertical integration of the economy.

In the case of financial transactions, the exchanged assets are kept beyond the period. The associated objective is the conservation of value. In this perspective, financial circulation includes all exchanges of assets used for the intertemporal management of accumulated wealth, so that the use of the word "financial" here must be understood in a broad sense, including certain real assets such as real estate, commodities or art and antiques. It seems logical to relate financial circulation to the total amount of this wealth. By retaining again a simple relation of proportionality, we have:

$$P_F.T_F \approx \varphi . P_W.W \quad (6)$$

where P_W and W measure, respectively, the general price level and the total stock of broadly defined financial assets.

Parameter φ represents the amount of trade in financial assets over a period relative to total wealth. It therefore reflects the operations for managing this wealth and reallocating the overall portfolio over the period. The variations of φ can have structural and cyclical causes. Changes in the institutional and regulatory framework may or may not facilitate reallocations between assets. Financial liberalization and the emergence of new products or new markets in which financial assets can be traded have a positive effect on φ . From a portfolio management perspective and from a stock balance perspective, any movement in one of the performance and risk indicators attached to any one of the assets may lead to a reallocation of these assets

and therefore give rise to financial transactions for an invariant level of wealth. An amplification of variations in interest rates, perceived risk or observed and anticipated prices of financial assets is therefore likely to increase the value of φ .

Integrating relations (5) and (6) into equation (4) gives an approximate relation which no longer has the accounting rigor of the initial equation of exchange and does not claim to constitute a behavioral equation of demand for money. But it gains in heuristic power. We thus have:

$$M \cdot V \approx \alpha \cdot P_Y \cdot Y + \varphi \cdot P_W \cdot W \quad (7)$$

Dividing by $(V \cdot P_Y \cdot Y)$, we then express the inverse of the income velocity of money:

$$1/V_Y = \frac{M}{P_Y \cdot Y} \approx \frac{\alpha}{V} + \frac{\varphi}{V} \cdot \frac{P_W \cdot W}{P_Y \cdot Y} \quad (8)$$

The income velocity (V_Y) varies in the same direction as the overall transactional velocity (V) and in the opposite direction of parameters α and φ and of the ratio of total financial wealth ($P_W \cdot W$) to PIB ($P_Y \cdot Y$).

The evolution of means of payment, which gives more flexibility in their use and allows more regularity and more correspondence between receipts and disbursements, is likely to increase V . The same applies to the evolution of means of communication and anything that helps increase transaction opportunities. The evolution of the financial system, by increasing the possibilities of investment constitutes an incentive to financial savings rather than to hoarding which should therefore, apart from specific economic situations, tend to decrease; again the effect is on the rise of V . However, a contrary effect may be at work if there is an attenuation of the differences between monetary assets and certain financial assets. The possible remuneration of deposits that can be used to make settlements plays in this direction. Similarly, and symmetrically, a downward trend in the interest rate can be favorable to hoarding by reducing the incentive to invest in financial assets. This effect is also highlighted by analyzes seeking to explain the evolution of the demand for money (Benati et al., 2021). Without being able to observe V directly, it is impossible to know whether this interest rate effect is sufficient to compensate for the other structural influences favorable to an increase in V over the long term. If in doubt, it may not be in a variation of this transaction velocity that we should look for the main explanation for the downward trend in income velocity V_Y over the past decades.

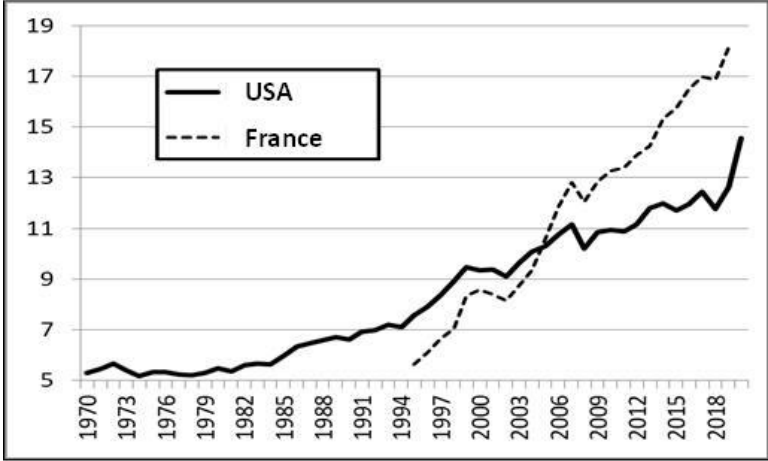
The decrease in V_Y can be explained by an increase in α . Such an increase in real asset transactions relative to production is a direct result of the development of the production process division. Even more than the international dimension of this process, with offshoring, it is its industrial dimension that matters here with the rise of outsourcing or outsourcing strategies (Lonsdale and Cox, 2000). This development automatically implies an increase in transactions within the economy for a given level of production.

The downward trend in velocity V_Y can also be explained by an increase in parameter φ . This corresponds to an increase in transactions in financial assets relative to their stock. Leaving aside short term reallocations linked to changes in return and risk attached to the assets, a trend increase of φ can be compared to the evolution of the financial system. The opportunities for transactions in financial assets have increased as a result of trade liberalization and financial innovations. In addition, the widening of the range of available investment vehicles increases the opportunities to rearrange the overall portfolio whenever there is a change in the characteristics of one of these vehicles.

The last element of equation (8) that can be compared to the decrease in V_Y is an increase in the ratio of total wealth to GDP. Without any measures of the broadly defined stock of wealth,

changes in this ratio can only be imperfectly illustrated. One illustration may be given using the ratio of total financial outstandings to GDP, the increase of which is sometimes used to represent the movement of financialization of the economy (see Figure 3).

Figure 3 : Ratio of Total financial assets, amount outstanding, to GDP



Sources of data: Federal Reserve Board and FRED
St.Louis (USA); INSEE (France)

The increase in this ratio has a nominal part (increase in P_W/P_Y) which depends on the rate of diffusion of the effects of a change in the quantity of money on the two types of assets. The question of exogeneity in relation to the money supply can then arise and a comparison can be made on this point with the relation already mentioned between the income velocity and the interest rate in an approach in terms demand for money (Benati et al., 2021).

Finally, our reformulation of the equation of exchange highlights several factors that may explain the downward trend in the income velocity of money. The financial dimension, which holds a central place in the reformulation, plays an essential role in the explanation of this empirical observation.

3. Conclusion

A reformulation of the equation of exchange taking into account the financialization of the economy helps explain the downward trend in the income velocity of money over the past twenty-five years. The reading in terms of transactions is renewed on the basis of a differentiation of monetary flows into a double circulation linked to two types of transactions: on the one hand, an industrial circulation supplying current transactions mainly relating to goods and services and associated to the formation of wealth; on the other hand, a financial circulation fueling transactions in assets used to conserve and manage that wealth.

This reformulation of the equation of exchange does not call into question the causal link between money and price. But it questions the mechanisms and conditions for the effectiveness of a monetary policy, the primary objective of which is price stability limited to a particular category of assets. By highlighting a sharing of the monetary flow between two categories of transactions, the analysis recalls that the control of the overall quantity of money can have differentiated effects. In doing so, it puts into perspective the debates on trade-offs between the three dimensions of stability, real, monetary and financial, and on the coordination of monetary policy with other economic policies.

Because it is part of an ex post equilibrium approach, the proposed reformulation does not make it possible to explain the behaviors and mechanisms relating to the two categories of transactions and their interdependencies, but it is an invitation to develop such an analysis in a general equilibrium framework. From this perspective, it is not only a matter of questioning the reasons for holding money but also of seeking the factors capable of orienting its use between purposes of production or consumption of goods and services and purposes of portfolio management. In addition, from the long-term perspective generally favored by the quantitative analysis, changes in the general equilibrium framework itself must be taken into account. Will the movements cited to explain the downward trend in income velocity continue or subside? How will the various parameters be affected by changes in consumption patterns, the rise in environmental concerns, the appearance of new real, financial and monetary assets or some porosity between these various categories? Answers to these questions are needed to understand and predict changes in the quantitative relationship between money and prices and to take advantage of them for monetary policy recommendations.

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