

THE QUANTITATIVE THEORY OF MONEY AND THE FISHER EQUATION – STATISTICAL DATA ON ROMANIA

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ABSTRACT

Regardless of the period of time to which we refer, the demand for money practically reflects the desire of economic entities, organizations but also individuals to own resources, especially money and the attractiveness for a certain amount of money. This attractiveness can be seen in parallel with the amount of goods and services that can be purchased with that amount. There are two basic approaches related to the long-term vision. One is the Keynesian approach, which emphasizes the relevance of the claim for money in economics and the motivations for possession it, and the other is the monetarist approach that emphasizes the strong effects of monetary policy on economic activity. The second category also includes the quantitative theory of money – Irving Fisher’s equation. In our days, these choices are theoretical notions based on various methodological points of view. This article aims to present the evolution of theories regarding the value and determinants of money, its impact on the economy and the principles of the quantitative theory of money as presented by Irving Fisher. At the same time, the monetary situation in Romania in relation to the quantitative theory of money is exemplified by statistical data collected from official sources.

KEYWORDS: Irving Fisher, inflation, quantitative theory of money, monetary theories

1. Introduction

In any country, the socio-economic and political conditions, as well as the multiple phases of its development, are factors that determine changes in the basic conceptual principles of monetary theories. The tendencies of the fundamental methodological premises of these theories are oriented towards the elaboration of practical recommendations on the improvement of economic policy, which must be adapted to the concrete situations and phases of the economic cycle or the specificity of the transitional economy.

The process of analyzing monetary transformations presupposes the existence of theories that can provide consistency in order to validate a real analytical and interpretative

approach. Thus, monetary theories are those that give a relevant image of the clarifications (not always scientific) elaborated by economic, social, political thought on the evolution or regression of money. Theories about money are focused on solving the problems that society has always faced through the dematerialization, diversification and reconfiguration of monetary instruments. As a result of these transformations, the currency becomes an essential element of changes and developments over time from an economic perspective.

As far as monetary theories are concerned, it is necessary to note three basic orientations: *the metallistic theory*, *the nominalist theory* and *the quantitative*

theory. In the following lines, some specific elements will be briefly presented.

The primary principles of *the theory of metallism* were formed in the period of primitive accumulation of capital, that is, in the sixteenth and seventeenth centuries, especially in England, which stood out as one of the most developed countries of that era. Specific to this theory is the identification of money, as the wealth of society, with the noble metals (gold and silver), which were attributed the exclusive fulfilment (based on monopoly) of all the functions of money (Bain & Howells, 2003).

At the basis of nominalism there are some fundamental principles such as: money is issued by the state, utility of funds is indicated by the nominal and the essence of money is summed up in the ideal price standard. This theory was established during the period of massive penetration into the sphere of money circulation of depreciated coins. More precisely, nominalism is associated on the one hand with the Austrian school and on the other hand with Bailey's theory of relational value (Rodman, 2012).

The essence of nominalism manifested itself most prominently in the monetary theory of the German economist Georg F. Knapp. Money, in his opinion, has a certain purchasing power, the representative value of which is attributed to it by the state. At the basis of his theory, it was not money with full value, but paper money (the Treasury Note). Then, analyzing the concept of money supply, he took into account only the treasury notes and the divisional (exchange) currencies of the state. Credit money (bills of exchange, banknotes, checks) were excluded from his study, which conditioned the unfounded nature of his conception that was true as the popularity of credit money spread (Rodman, 2012).

The third theory, *quantitative monetary theory*, explains the point of commodity cost, the utility of funds by its quantity (money supply) in circulation. The followers of the quantitative theory started

from the idea that money is only a means of circulation, wrongly claiming that in the process of circulation, due to the appearance of the equilibrium between the money supply and the volume of commodities, prices could be fixed and the value of money determined. At the beginning of the twentieth century, quantitative monetary theory occupied dominant positions in Western economic thought as an important element of the neoclassical theory of reproduction. In the contemporary stage of the evolution of quantitative theory it can be noted that it is fully based on credit money and on the circulation of paper money. Starting from this, two of the most famous theories can be mentioned: the Cambridge theory of Alfred Marshall and Arthur Pigou (the concept of "cash balances") and the quantitative monetary theory of Irving Fisher. The latter theory will be presented in detail in a separate subchapter (Aslanbeigui & Oakes, 2019).

2. Economic Cycles

The economic cycle is a complex phenomenon determined by a complex of factors that exert a greater or lesser influence on it. At the same time, it can be said that it is an alternation of periods of prosperity and poverty. Economists of the 19th century reflected for a longer period of time on the problems of production, the distribution of human resources. With the crisis of the third decade, the need to introduce some explanations into the mechanism of economic fluctuations was felt (Isaic, 2023).

Undoubtedly, the economy of the capitalist countries has experienced growth in the last 2 centuries, this rise being remotely from a straight and constant form with a stationary rate, even if periods of high values have alternated with periods of low values. Thus, there have been permanent fluctuations in productive capacity, employment, income, prices.

At the same time, there have also been recurring or regular fluctuations, the name of economic “cycles” being acquired as a result of these fluctuations. The negative side of these cycles gave rise to the human suffering recorded in periods of recession, through the loss of jobs, through the losses in production, through the bankruptcy of businessmen. Due to the uncertainty in the future regarding the path the economy will take, business opportunities become opaque, and the risk in making investments becomes higher and higher (Isaic, 2023).

When we talk about the prosperity phase of the economic cycle, production is maximum and large amounts of resources are employed in the productive circuit. In this case, there is no unemployment. Even if

prices are high, the standard of living is high and there are demands for capital goods and durable goods. But at some point there is a rupture, people become pessimistic about future earning opportunities, banks stop lending, they become susceptible about future profits from new lending requests. The anticipated rate of return on new investments decreases dramatically.

Over time, there is a need to replace morally and technically worn capital goods, even if they have not been used intensively. There is a need to replace depreciated durable goods. Investments are reinvigorating consumption. Table no. 1 presents some of the features of the business cycle and their consequences or reactions from an economic perspective.

Table no. 1

Traits of the business cycle and their consequences

Traits of the business cycle	Consequences of the traits business cycle
- periodicity of business cycles - all branches of the economy are affected - production capacities, employment, investment, interest rate, price levels are affected - capital goods and consumer durables are the most affected - the use of perishable consumer goods does not fluctuate during cycles - stocks of goods vary during the cycle around the optimal level - business profits fluctuate a lot throughout a cycle - the crisis spreads worldwide through import-export mechanisms	- phases of the business cycle: expansion, peak, contraction - a chain reaction throughout economic life - does not require urgent replacement during use, and thus prefers to keep, use and postpone changes until more optimistic forecasts; - investments are unstable and fluctuating - during the boom the quantity of stocks decreases, during the recession the quantity of stock acquires dangerous high values - forecasts are the ones that set the level of investment

In general, the usual classification in economic theories is made according to the origin of causes in the view of various schools, thus theories that seek the basis of

cycles in external forces and theories that build their reasoning on internal foundations belonging to the functioning of the economic organism are recognized.

3. Irving Fisher and the Quantitative Monetary Theory

Quantity theory is the starting point in the analysis of the effects of money on the entire economy. Therefore, it is known that the nominal rate and interest rates are important elements who established the money supply.

The quantitative theory of money is mainly focused on people's perception that they have enough money to purchase stuffs or other needs (Anghel et al., 2023).

The first variant of *quantitative monetary theory* was developed by the American economist – Irving Fisher (1867-1947). This theory of his denied the value of labor and proceeded from obtaining cash potential and established a double expression of the sum of commodity exchange transactions for a given period (Humphrey, 1997). To this end, Fisher highlighted four factors that he considered important and on which the purchasing power of money depends. These are *the money supply in circulation* (M) which represents the whole quantity of money circulating in an economy, including cash and bank deposits, the *velocity of money* circulation (denoted by V) which refers to the periodicity per year in which a monetary unit is used to buy goods and services, *the weighted average price level* (average price, denoted by P) which represents an average of the prices of all stocks in an economy and *the quantity of goods* (denoted by Q) or the volume of economic transactions (denoted by T) or gross domestic product (GDP) which represents the sum quantity of goods and services fabricate in an economy during a given period, *the weighted average price level* (average price, denoted by P) which represents an average of the prices of all stocks in an economy and *the quantity of goods* (denoted by Q) or the volume of economic transactions (denoted by T) the GDP (gross domestic product) is the sum quantity of assets makes in a economic system during a given period.

Therefore, the equation is set on by the equality among the multiplication of the money supply by the average speed of money circulation and the price by the quantity of goods sold, as can be seen below (Pohoață et al., 2022):

$$M \times V = P \times Q \text{ sau } M \times V = P \times T$$

Fisher admits the values of the quantitative money supply unchanged over short periods of time, the speed of money circulation determined by long-term factors, and the continuous increase in commodity production. The productive amplitude of one economy dictates the constant price. It balances itself with the factors that eliminate inflation. So, this theory shows that the value point is in proportion with the money supply. Fisher's error lies in the fact that he takes into account as variable quantities only the quantity of money (money supply) and prices.

In actual economic activity, the quantity (volume) of commodities and the speed of circulation of monetary units change (due to the cyclical character of the economy and the specificity of the transitional stage of market formation) and essentially influence the circulation of money and the formation of prices. Economic practice confirms that any increase in prices is not only conditioned by the money supply, but also by a number of other factors, in particular by the policy of the producers who have a market monopoly.

According to Fisher's theory, the real rate of interest is determined by the marginal productivity of physical capital (which depends on the population's propensity to save) and the state of technologies, while the nominal rate is determined by the market through the ratio of demand to supply of money. Given that the inflationary process is insignificant, the real interest rate is equal to the nominal rate. If inflation persists, there is a growth of the interest rate, so the interest rate is really positive. A high inflation rate will discourage saving, reducing investments both by impacting their sources of formation

and by discouraging borrowing due to high interest rates (Popa, 1994).

Inflation is a macroeconomic phenomenon that all countries are facing. Thus, it becomes a permanent companion of any economy, even if it is more or less developed. At the same time, the effects produced by inflation differ depending on the causes and intensity reached by the phenomenon (Șerban & Aceleanu, 2019).

Fisher's hypothesis (1930) states that the nominal interest rate is equal to the sum of the real interest rate and the expected inflation rate. He argues that this is a one-to-one relationship, with the real rate being independent of the inflation rate (Cooray, 2002).

Fisher's studies focused on both the connexion from the money and the price (Pohoață et al., 2022).

The illustration (Figure no. 1) portrays a revised form of the Fisher equation, showing how the value of financial resources interacts with the overall price level. The line marked AB outlines how demand for money varies with changes in prices. Meanwhile, OB, which forms a 45° angle, symbolizes the identity $M = \frac{Q \cdot V}{P}$. The point of alignment state occurs where the AB trajectory intersects the OB line, identified as point H. At this intersection, the volume of money aligns with the associated price level. If the price index rises above the balance point to F, a greater volume of currency (equivalent to FH) is needed, pushing the balance position toward LG. As a consequence, the currency regime will be in a fixed state throughout the time, AB meets OB and that means $\frac{Q}{V}$ (Iacob, 2020).

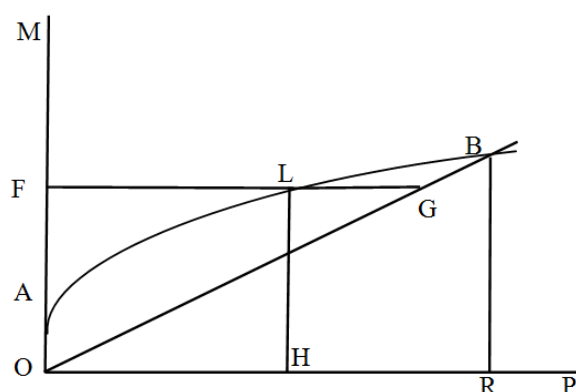


Figure no. 1: Extension of the Fisher model
(Source: Adaptation from Iacob, 2020)

The example indicates the rise of inflation, i.e. hyperinflation. Price equilibrium will only be established when the amount is elastic with respect to price levels. We cannot speak about a market equilibrium when there is an increase in the elasticity of money that is much greater than the ratio between the quantity and velocity of money circulation. Without a doubt, inflation tends to increase the speed of circulation.

As Isaic Radu says in his book, Fisher's theory is an analysis of debt deflation. In case of deflation, the things that are the object of

the initial loan depreciate in value, but the loan remains and must be repaid in conditions of low income and purchased object, whose value keeps decreasing. There is a need to use a borrower. There is a problem in this regard: if the debtors pay their debts, then the amount of money and resources that exist changes at most its owner and the creditor is not prevented by anyone or anything from passing on the money, and the inconvenience lies in the non-existence of equivalence between money and goods, the condition for the existence of money (Isaic, 2023).

Also in Isaac's book (2023) two paradoxes of Fisher's theory are mentioned: the more debtors pay, the more they owe and the decrease in wages reduces income and the debt increases.

According to Marx, the main mistake of the representatives of quantitative monetary theory (I. Fisher, A. Pigou, etc.) consists in the fact that commodities enter circulation without prices (money having no value), during this process a part of the multitude of commodities being exchanged as a corresponding part of the pile of metals (Fine et al., 2012).

The quantitative theory of money can also be said to indicate the rate of money that marks the inflation. The Fisher's formula implies that a growth in the currency stock may influence the stated interest rate by shaping anticipated price level changes. An increase of money supply rate by 1% determines a 1% increase in the inflation rate. The "Fisher effect" is actually the connection among the inflation rate and the stated interest

rate. This supposition is constructed on an easy function of the claim for money (Anghel et al., 2023).

The quantitative theory of money explains the supply of money, and the demand for money together determines the balance at the price level. The replaces of the price are represented by determination of the inflation rate. The interest rate affects the demand for money (Anghel et al., 2023).

Considered one of the most important sections that are part of monetary theory, quantitative theory is sometimes challenged from the point of view of current validation by some specialists in economics. Thus, Table no. 2 empirically illustrates the quantitative theory of money by arguing that the variation of the consumer price index (CPI) in Romania can be fully explained by the variation of the money supply. This table illustrates data for the period 2018-2024.

Table no. 2

Consumer Price Index and Inflation Rate in Romania 2018-2024

YEAR	CONSUMER PRICE INDICES - %	INFLATION RATE - %
2024	105.59	5.6
2023	110.40	10.4
2022	113.80	13.8
2021	105.05	5.1
2020	102.63	2.6
2019	103.83	3.8
2018	104.63	4.6

(Source: INSSE, 2025a)

The National Institute of Statistics reported the following data regarding Romania (comparison of 2024 with 2025): 100.45% is the consumer price index in June 2025 in comparison with May 2025. The inflation rate is 3.1% in June 2025 in comparison with December 2024. 5.7% is the annual inflation rate in June 2025 in comparison with June 2024. 5.1% is the average rate of change in consumer prices in the period July 2024-June 2025 in comparison with the

other years, 2023 and 2024 (INSSE, 2025b).

Figure no. 2 graphically presents the data taken from the INS showing the change in the consumer price index (%) between June 2024 and June 2025. The effective level of the annual CPI inflation rate at the end of the first quarter of 2025 was 0.3 percentage points higher than that forecast in the NBR's inflation reports for February 2025. The CPI is the acronym for

the Consumer Price Index and the acronym HICP stands for the Harmonised Index of Consumer Prices (indicator for determining inflation at the level of EU Member States).

The increase in the consumer price index, an indicator for determining inflation at national level, can easily be observed.

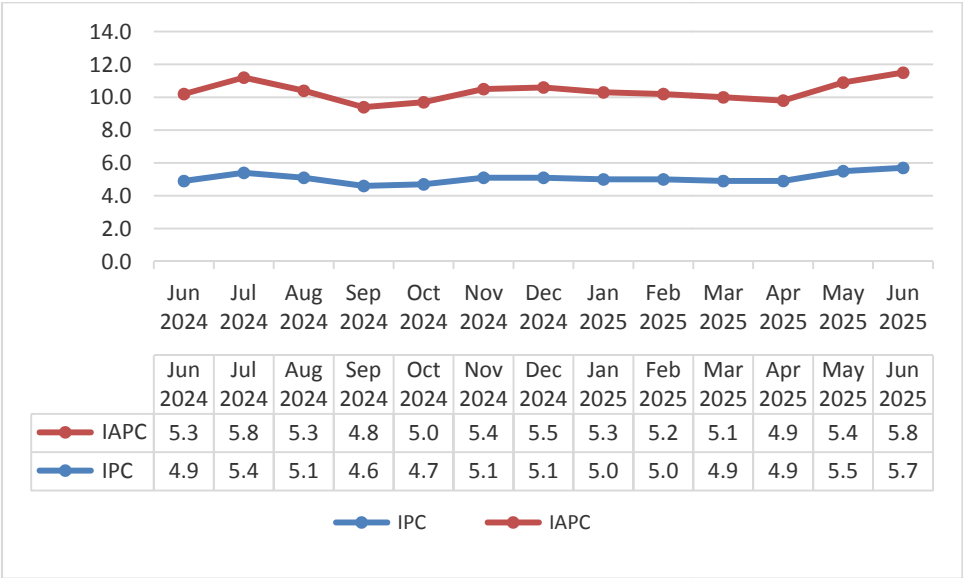


Figure no. 2: *Annual change in the consumer price index (%)*
(Source: Own creation based on data taken from INSSE, 2025b)

Figure no. 3 shows the HICP map. As can be seen, the lowest percentage is recorded in Cyprus (0.4%) and the highest in Estonia (4.6%). The percentage for the Eurozone is 1.9%.

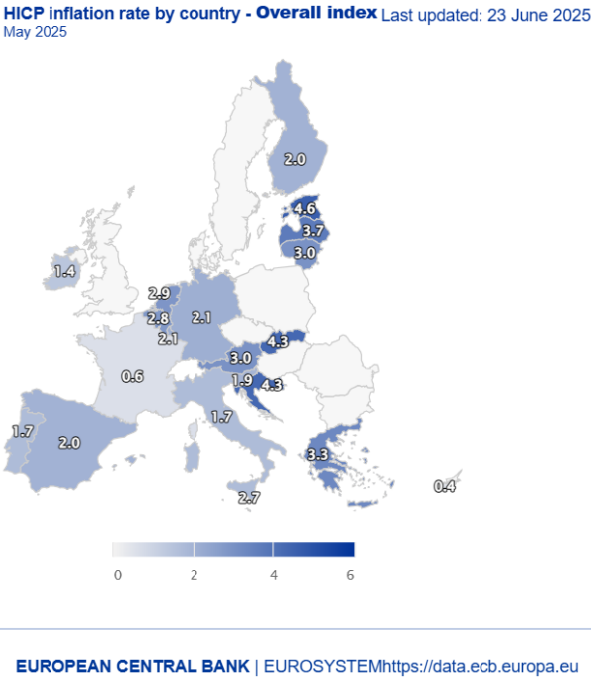


Figure no. 3: *HICP inflation rate by country - Overall index (May 2025)*
(Source: European Central Bank, 2025)

Thus, inflation represents the generalized increase in the price level. It can be seen as a devaluation of money. The causes of inflation can be numerous, the most often invoked arguments being related to the excess demand in the economy (demand inflation), high costs (cost inflation) and the excessive increase in the money supply (monetarist conception). The mechanism by which the increase in the money supply causes inflation is to create excess demand, thus making monetarism compatible with the demand-side inflation argument. These causes are associated with states' attempts to create a standard of living beyond their means or to enjoy a higher living than the country's production allows. The inflation rate varies substantially over time and from country to country (Avram, 2017).

The best way to counteract the monetary phenomenon known as inflation is by maintaining a constant money supply (Pătruți & Tăulescu, 2013).

6. Conclusions

The stability of the demand for money is a condition for the effective conduct of monetary policy because it allows a change in the money supply to anticipate with high

precision the influence on production, interest rates and finally on prices.

According to the quantity theory of money, there exists a direct and proportional correlation among the volume of money in circulation and the aggregate price level within an economy. This theoretical framework asserts that an expansion in the money supply will result in a corresponding increase in price levels, whereas a contraction in the money supply will lead to a general decline in prices. The theory is widely utilized in economic analysis to explain inflationary phenomena, emphasizing that inflation tends to occur when the rate of monetary expansion surpasses the growth rate of real economic output. Within this context, Fisher's equation further contributes by establishing that the real interest rate is obtained by subtracting the expected rate of inflation from the nominal interest rate, thereby linking monetary dynamics with interest rate behavior.

As claimed by quantitative theory, the only way to prevent inflation is to have a fixed money supply. At the level of Romania, the competent institutions must continue and intensify their efforts in combating inflation, first of all by maintaining the money supply constantly.

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