# THE MONETARY NEUTRALITY AND ITS IMPLICATIONS UPON THE REAL ECONOMY

**Alexandra ADAM**[*]
**Ioana MOLDOVAN**[**]
**Simona HUDEA**[***]

**Abstract**

*The monetary neutrality considers the way the monetary decisions affect the real variables and implicitly the real economy both on short term and long run. Although early study of this problem is rooted in the '70s, the issue is studied also nowadays, as many works aim to test whether the long-term monetary neutrality occurs indeed at any time, in any circumstances and regardless of the area. This paper aims to analyse the answer to the following question: How do monetary changes affect the main macroeconomic variables, such as output, real wages and real interest rates?*

**Keywords:** *money, real interest rate, monetary policy, real wages, real variables*

## Introduction

In this article we consider particularly the discussion of some key issues regarding money, the effects on real variables in short term and long run due to its changes. To reflect this interaction between money and real economy, we considered it necessary to display different ideas acquired by Keynesians and Monetarists. While the debate of these economists' opinions pertaining to these two trends seem to be of the past, from our point of view in order to develop new theories and ideas is absolutely necessary to study the past.

Moreover, in order to highlight the importance of interaction between money and real economy we could not neglect monetary neutrality, which is referring to how the monetary decisions affect real variables (and implicitly the real economy) on short term and long run. Although early study of this problem is rooted in the '70s, the issue is studied also nowadays, as many works aim to test whether the long-term monetary neutrality occurs indeed at any time, in any circumstances and regardless of the area.

This paper aims to analyse the answer to the following question: How do monetary changes affect the main macroeconomic variables, such as output, real wages and real interest rates?

The answer to the question was obtained by analyzing several reference works on the topic, one of them being Robert Lucas' lecture, Nobel Laureate on monetary neutrality.

The need to capture the monetary implications on socio-economic and political space from nowadays leads us to do, above all, a periplus in the literature, covering the history and evolution of money because the latter is, rightly so, "the central axis" of the modern society.

[*] Lecturer Assistant, Academy of Economic Studies, Bucharest (e-mail: ale_adam2007@yahoo.com).
[**] Lecturer Assistant, Academy of Economic Studies, Bucharest (e-mail: ioana.moldovan@economie.ase.ro).
[***] Lecturer Assistant, Faculty of Economic Sciences, "Nicolae Titulescu" University, Bucharest (e-mail: caraman_simmy2005@yahoo.com).

In the everyday language and literature, it is used not only the term "money", but also the term "currency".

Money is "anything that is generally accepted as payment for goods and services and replicas of debt" (Mishkin 2004, 8). Money is, also, considered "a set of assets in an economy that people regularly use to buy goods and services from other people" (Mankiw 2007, 320). In the explanatory dictionary of Romanian language, the money means "general equivalent value of the goods, metal or paper currency recognized as a medium of exchange and payment.

The term of currency means "notes and coins" in Miskin's opinion and according to Larousse dictionary it means "a piece of metal issued by the sovereign authority to serve as a medium of exchange".

The definitions above allow us to observe differences between the two concepts:

- the concept of money includes all means of exchange;
- the concept of currency is the generic name for banknotes and metal parts.

Nowadays, the term of currency is broadly used, which means consideration of coins, banknotes and scriptural money. From this point of view, it is considered that the two terms are similar, leading to the similarity of currency and monetary circulation (Vasilescu 1980, 15).

As the economy takes place in time and a considerable number of decisions are made in situations of uncertainty, currency plays a vital role by creating a link between present and future. Therefore, it is imperative to study it in light of two trends: Keynesism and Monetarism, which led to the shaping of ideas on its role in the economy.

**Monetarism vs. Keynesism – confrontation of ideas**

To reveal the importance of money we have to discuss the divergent views of Keynesians and Monetarists from the 1950s until the 1970s (Bradford de Long, 2000, 83-94).

Europe has experienced for the first time what much later was to call monetarism in the XVI century, under the influence of mercantilist doctrine, which saw the accumulation of precious as a source of wealth nations. Unfortunately very few endowed with gold and silver, Europe was obliged to seek different solutions to get rich with these metals. English people, due to a system of contracts, forced every importer to buy with gold English products before leaving England. The French people made low-priced manufactured goods guaranteed by the State in order to be more competitive abroad. Payable in gold, these assets contributed to increasing the nation's stock of precious metals. Spanish and Portuguese conquistadors went to South America to bring precious metals and so to enrich considerably Spain and Portugal. Gold brought in Spain caused a real economic crisis. Economic growth slowed and inflation appeared. Taking advantage of its reserves, Spain multiplied minting gold coins, thus contributing to the devaluation of reference monetary material and to further increases of the price.

The first relationship between real property and monetary system has been identified as a result of the above events, opening the way for theoretical debates during the following centuries.

The increase of prices led to a famous controversy between Malestroit (Adviser to the Court of Auditors) and Jean Bodin (French economist and philosopher). According to the first, the price increase is only apparent because it is due to the currency's wear, these do not contain enough gold. Jean Bodin considers the price increase as being real and takes account of the gold stock's growth. His paper, *Responses à monsieur de Malestroit*, announces the quantitative theory of money.

These theories are then studied by David Hume in *Of Interest*, David Ricardo in the *Des principes de l'economie politique et de l'impôt* which defines the first principles of the Cambridge equation, resumed by Latane in *Cash, Balances and the Interest Rate: A Pragmatic Approach* and known as a "quantity theory of money" by Fisher, the representative of early monetarism.

Monetarism is divided into four parts: First Monetarism, Old Chicago Monetarism, Classic Monetarism and Political Monetarism.

First Monetarism belongs, among others, to Irving Fischer *(Appreciation and Interest, The Rate of Interest and The Purchasing Power of Money)*. In its work, the author stresses that to understand the determination of prices, interest rates and the business cycle it should be seen first the stock of money. Also, Fisher is the one who developed "quantitative theory of money". It is true that this theory goes back to David Hume, or even earlier, but Fisher is the one who turned the theory into a tool to achieve the quantitative analysis and for producing forecasts on prices, inflation and interest rates.

The theory is mathematically represented as: MV = PQ, where M = money, V = velocity of movement, PQ = total transactions. This simple equation allows a greater understanding of the monetarist critics. Nobody disputes the form of the equation, but having it as a base the economists may collide with each other endlessly in the variables behaviour.

The Monetarists' critics say that the standard analysis of the quantity theory of money is completely useless: " Now "on long run" this thing (drawing the quantity theory: a doubling of money doubles price level) is probably true ... But this term is a cheating guide to current affairs. In the long run we are all dead. "(Keynes 1923)

Furthermore, Milton Friedman agrees with the assessment made by Keynes. He stated that one of the main aims is to save Monetarism from being a "rigid and atrophied caricature" of the economic theory that has become in the period between the two wars (Friedman 1956, 3-21). Meanwhile, economists such as Robbins (*The Great Depression*) and Joseph Schumpeter (*Depressions*) shared the view that monetary and fiscal policies were ineffective in fighting recession as they could not create real wealth, but only one false that contains the seeds of a future longer or deeper depression.

The Old Chicago Monetarism is represented by Viner, Simons and Knight. This school emphasized the variability of velocity and its potential correlation with inflation. They accused the monetary forces that have caused deflation as a source of depression. Viner said that due to monetary and fiscal policies ... banks failed and the amount of deposits dropped "along the Great Depression. Their solution is a stimulating monetary expansion and large government deficits (Viner 1933).

Among those who do not recognize this school include Don Patinkin and Harry Johnson. In their work *The Chicago Tradition, The Quantity Theory, and Friedman and The Keynesian Revolution and the Monetarist Counterrevolution* they argue that Old Chicago Monetarism is too amorphous and vague to be called a theory or a school.

On the other hand, there are supporters as Friedman or Tavlas (*Retrospectives: Was the Monetarist Tradition Invented?)* who agree that it is a theory, even if only a default theory, a theory that was not ever written, an "oral theory ". Friedman in *Comments on the Critics* (1972) believes that this oral tradition made possible macroeconomic analysis considered by Viner: a "subtle and relevant version .... of the quantitative theory .... a flexible and sensitive tool for the interpretation of aggregate economic activity movements and for the development of relevant policy recommendations.

Whether it is considered a theory or not, it is important to note that those who belonged to the Old Chicago Monetarism did not believe that the velocity is stable and the money supply can be controlled directly and easily. They didn't believe that the velocity is stable as traders act differently in the period of boom, inflation, recession and deflation. Or just because of such differences, there are amplified the effects of monetary shocks on nominal total expenditure with effect on the real economy.

The Classic Monetarism is represented mainly by Milton Friedman with the following works: *Essays in Positive Economics, Studies in the Quantity Theory of Money, A Program for*

*Monetary Stability and The Role of Monetary Policy*. Other representatives are: Karl Brunner with *The Role of Money and Monetary Policy*, and Alan Meltzer with *Friedman's Monetary Theory.*

This school includes empirical demonstrations for several problems, namely:

- if money demand functions may be stable under extreme conditions of hyperinflation;
- how close is the natural rate of unemployment the unemployment rate;
- what is the potential of monetary policy over time;
- demonstrations of short-term effects of monetary policy.

So, the monetarists argue that on short-term, money can influence both prices and economic activity, but on long run, changing the money supply leads only to price changes.

Keynes advocated state intervention in economy and thought that a government that leads well and prudently can bring economic growth and stable prices. In contrast, the monetarists considered the non-influence of government expenditures on prices or production, if money supply does not change. In other words, money is the only that counts.

We believe that this vision is an extreme approach, because in reality, there is a need of both a monetary and fiscal policy. For an economy to achieve the optimal level, these policies should be intertwined, coordinate, in order to achieve a policy mix.

Monetarists argue that velocity is stable because if the Central Bank increases money supply by buying securities, the producers have more money. People, believes them, have money in particular for daily transactions. If they have more money, then people will buy more goods and services, so GDP increases. Otherwise, if people have less money (Central Bank has reduced money supply), they will spend less, so GDP will decline. Therefore, monetary policy affects the liquidity of the population.

If velocity is stable, and the central bank can control the money supply, then there is an effective tool (money supply) which can speed up or slow down economic activity. However, when the velocity is not stable, and people oscillate between keeping a greater or lesser part of their current funds and current accounts, controlling money supply is no longer of much use, and the acceleration stops working well.

Keynes's criticism aimed precisely the following: why the velocity must be stable? Why do people have to spend all that have more? Why cannot be save that money? Keynes introduced another reason, the speculative one, in which economic agents can use extra cash to speculate on market shares and bonds.

The Keynesians appreciated, also, another transmission mechanism of money, the interest rate. They considered two important steps must be fulfilled. The first phase refers to the fact that if the Central Bank increases the money supply, people should not collect money. However, if this is not done, they can buy stocks and bonds, meaning financial assets rather than real assets. This will result in lower interest rates. The second stage involves credits from banks to households and firms, but, also, the purchase of goods and services, so as to increase the GDP.

Conversely, if money supply is reduced, people might not care about having less money saved. Even if they could sell their financial assets, leading to increased interest rates, those who want loans might not be discouraged by this (if they have to continue some projects necessarily), so that GDP will fluctuate.

In this criticism, as that money would not count too much, Friedman published a series of essays by which he improves the quantity theory. He says that demand for money is stable because it depends on factors with long-term action, such as health, education and income level which one expects to obtain throughout life. As these factors do not change randomly, the velocity does not fluctuate (Friedman 1956, 3-21). (Keynes did not take into account long-term factors)

Moreover, Friedman turned his attention to consumption. If Keynes believed that people change their consumption based on current income changes, Friedman says that people consume

steadily as they have certain expectations in the long term income. Thus, the permanent income hypothesis is born. Consumers will not allow a low week, month or year to change their lifestyle. They simply will use the savings. But if they see a major shift, they will change their way of acting.

The conclusion of Friedman's remarks is represented by the stability of consumption.

Friedman believes, also, that the Great Depression is a proof of monetary policy and not of her inability - as Keynes believed. It argues, moreover, the idea that misuse of monetary policy accompanies each strong recession and each period with emphasized inflation (Friedman and Schwatz 1963). The authors have not agreed with the Federal Reserve, which during the crisis did not give cash to banks in order to give customers money back. They argue that a little help from the Federal Reserve would have instilled more confidence to the customers.

After the power of money has been proven, Monetarists wanted to contradict Keynesians' statement that government spending would stimulate the economy. They obtained the demonstration by answering the following question: where comes the money that the government spends from? If money supply is constant, while the state spends money means that someone should spend less. If you increase taxes to finance various programs, consumers no longer have as much cash available for purchases. If the State borrows by selling bonds, companies can not borrow as much to invest. Interest rates increase and decrease investments. It is clear that increasing government spending lower the private sector spending.

Keynesians can not deny this, but they claim that the reduction in private spending is not perfectly equal to the growth of government, especially during recessions. So what is important is the extent of reduction.

Even if Monetarists are right and the velocity is stable on long run, it certainly varies in the short term. If the velocity drops for a few months, while the money supply continues to grow at a steady pace, the economy will collapse. Maybe not for long, but in such circumstances the number of jobs depend on what the Central Bank does. Some hard questions about the central bank remain unanswered: How long it needs to detect a change in velocity? How much time must pass so that the measures taken by it to influence the economy?

Moreover, the behaviour of a central bank depends heavily on the information available. The dynamic behaviour of the monetary policymaker varies because it reacts differently when there is complete or incomplete information. (Dotsey and Hornstein 2002)

It is said that "early Keynesianism received a "rediscovery of money ". Money matters without and can only. In their enthusiasm about the role of fiscal policy many Keynesians unduly underestimated the role of money. "(Samuelson and Nordhaus 1985, 331)

Currently, it takes a mix of policies, both monetary and the fiscal one.

Political Monetarism was something different from the Classic Monetarism. The idea of this theory is that the velocity can be made stable if monetary shocks are avoided, but that the velocity is stable. It supports the idea that there is no need for institutional reforms as the central bank to have easy control over money supply because central bank already controls the money supply changes. The Central Bank is the source of all monetary forces. Everything goes wrong in the economy has a single, simple cause: central bank failed to increase the money supply with an adequate rate.

Those who belong to this school claim that the major effect of fiscal stimulus is to increase interest rates more than you should and not to increase the nominal demand. Only if the fiscal stimulus is financed by issuing money has a positive effect. They also are sceptical regarding velocity's dependence of interest rates. Their conclusion is that any policy that does not affect the amount of money and its growth rate simply can not have a major impact on the economy.

The Political Monetarists have not enjoyed the same success as the Classics. The research that we undertook in this area show that, currently, there are ideas kept from both

Monetarists and Keynesians. From Monetarists the ideas preserved are in particular those relating to the fact that for realizing a macroeconomic policy analyse should be considered long-run implications, that monetary policy is a powerful tool for achieving macroeconomic stability and from Keynesians the one relating to the fact that for an economy to function optimally the state intervention is, also, necessary.

But, the assumption that it is easy for a central bank to find and control the relevance of money supply has proved to be false. (Goodhart 1970)

It is therefore necessary to observe short term and long run implications of monetary changes needed to study monetary neutrality, meaning how these changes affect real macroeconomic variables.

**Monetary neutrality and its implications**

How monetary changes affect important macroeconomic variables, such as production, real wages and real interest rates?

This question has intrigued many economists. David Hume, the great philosopher, suggests that all economic variables should be divided into two groups: nominal variables - measured in monetary units and real variables - measured in physical units (Hume 1970). Currently, this separation of economic variables is called the classical dichotomy.

Applying classical dichotomy on price is a little more complicated. Prices from an economy are usually noted in terms of money and therefore are nominal variables. Regarding the relative price - the price of an object compared with one another - it is a real variable because the measure in monetary units disappeared and appears the one in physical units.

Separation of variables is necessary. According to Hume, certain factors affect nominal variables and other real variables. He supports the idea that nominal variables are affected by developments in monetary economic system, while this monetary system is irrelevant in terms of understanding the determinants of real variables.

Changes in money supply affect nominal variables but not real ones. When the central bank doubles the money supply, the price is doubled, the salary is doubled. Real variables such as production, real wages and real interest rates do not change. The irrelevance of monetary changes for real variables is called monetary neutrality.

Hume highlights the neutrality of money: "It is indeed obvious that money is not anything but a representation of labour and goods and serves only as a method of rating or estimation. When the currency is in full so that a larger amount is necessary to represent the same quantity of goods, it can't have any effect, either good or bad."

Also, Hume writes: "When a quantity of money is imported into a country, it is not initially dispersed in many hands, but it is kept in the locker of a few people that will use it in order to obtain an advantage. Here we may found a set of producers and traders who have received, for example, gold or silver for some goods sent to Cadiz. Thus, they can hire more workers than before, who do not dream to ask for higher wages, but they are happy for the job obtained from these good employers. [Crafts] ... carries his money to the market, where he finds all at the same price as formerly, but returns with a larger quantity of goods and of better quality for the benefit of the family. Farmer and gardener, finding that all their assets were sold promptly increase production ... It is easy to find money through the entire state, where we first find that each individual's diligence should be accelerated before increasing the work price." (Hume 1970)

Is this monetary neutrality conclusion a real description of our world? The answer is: not really. A change in monetary decisions has short-term effect on real variables. Hume himself was not sure whether monetary neutrality applies to short-term. Most economists accept Hume's long-term conclusions.

Robert E. Lucas, Nobel Prize in 1995 for monetary neutrality, demonstrates in one of his works of 1972 *Expectations and the Neutrality of Money* that money is not neutral in the short term.

To do this, he uses a model taken from Samuelson's working paper *An Exact Consumption-Loan Model of Interest with or without the Contrivance of Money*.

Samuelson introduced a simple example of an economy in which cash does not have a direct use in consumption or production, but plays an essential role in economic life.

In Samuelson's model, each individual lives two periods: one of activity and another one of retirement; so, two generations coexist in each period, one of active youth and the other one of old pensioners. There is no family structure in this economy: no inheritance or financial support made by one individual to another. The youth work and produce goods, while the elderly consume goods, but they are not able to produce.

One of the problems is providing sufficient resources to the second generation. Those who wish to consume, the elderly, have nothing to offer in exchange for goods produced by the young. If it is assumed that there is some money in circulation, initially in the hands of the elderly, then they will give young people in exchange for goods, establishing a market price.

The cash introduction remedies this deficiency. The presence of currency enables young people to sell their production against the money, currency that they will use in old age to purchase goods. Will accept young people these symbols- with no intrinsic value (Wallace 1980) - and to retain symbols value as goods at any level greater than zero? Perhaps not: this possibility can not be stated definitely. Young people can accept to produce in exchange for fiduciary currency because they hope that in the future when they become older to be able to pay for goods produced in that period.

The difficulty arises from non-contractual nature of money: nothing can guarantee to the current youth that, when they are old, the future young people will accept as payment the money.

It is possible that money runs endlessly, being continually changed on goods. If the exchange takes place in a single competitive spot market and the price p is established, then a young person who starts without money and produces n pieces will receive pn cash units. If that person spends all the goods in the next period, it will be achieved (pn) / p = n units of consumption. If money supply is constant and distributed to each elderly person in the value of m, then the equilibrium price will also be constant: $p = m / n^*$, where $n^*$ is the units consumed in equilibrium conditions, meaning when the consumer utility is maximized.

Obviously, in this case, Hume's theory is true: if m increases, the equilibrium price level increases in the same proportion and the amount of work and production will not be affected at all.

If the stock of money is changed, the issue of neutrality is complicated. The hypothesis of a constant money supply is replaced with the one in which the amount of money increases at a constant percentage rate. It is assumed that each young receives an equal share of the money newly created, when the transition is made from active to the retirement period. This amount is independent of the money he earns by working.

It is considered that the supply of money increases by x times in each period. Price level will rise between periods with exactly the same rate of growth of money supply, but according to the model, the balance of work is affected.

As the currency increases further, the more important is the overnight transfer, relative to the cash accumulated through work. Money transfer diminishing income from employment. Production of goods decreases as inflation rate increases, so things get worse.

This is, in fact, money non-neutrality, a real effect of currency changes; this effect is not the incentive of a monetary expansion, but rather reduces the real value of income derived from employment.

Regarding long term neutrality, it is said that this "is considered as given almost an axiom" (Bullard 1999, 57-77). When referring to long-term monetary neutrality, economists refer to a hypothetical experiment which normally is not directly observed in actual economies. The experiment involves a sudden and permanent change of the stock of money. If, for example, the stock of money is 5 billion dollars a day and this value is kept for a long time, which would be the effect of unexpected changes in the 6 billion money stock and of keeping it for a long time? Pursuant to the quantity theory of money, prices will probably increase in the same proportion to the money stock and the real variables after a certain period of time, will probably return to baseline until another disturbing factor intervenes. This is neutrality in the long run.

Lucas on Nobel Prize lecture sustained (*Monetary Neutrality*) mentions some evidence of long-term monetary neutrality. Between them, Friedman and Schwartz are quoted with *A Monetary History of the United States, 1867-1960* in which the authors have argued that the major recessions in the United States between 1867 and 1960 were preceded by substantial contraction of money supply, suggesting that monetary policy errors were the main cause. Lucas, also, supports the idea that severe monetary contraction has played an important role along the Great Depression of the 1929-1933 periods.

It also cites the work of Thomas J. Sargent *The End of Four Big Inflations* making the idea that large reductions in the rate of monetary expansion - sales more than what was experienced during the post Civil War period from USA – did not lead to an unusual massive reduction in real GDP in the hyperinflationary period after First World War in the European economies. These reductions were achieved with a monetary reform. Hyperinflation has been ended abruptly when it was announced a credible reform.

Citations made by Lucas are additional to its view for which the long term monetary neutrality is preserved.

As is shown in the rows above, long-term monetary neutrality implies a permanent and unexpected change in the stock of money from a country and the impact of this change. To study this directly, we need time series on inflation and monetary growth for individual countries. The difficulty that arises is: can be isolated the permanent changes of the money stock, which are correlated with persistent changes in price level while they are not related to permanent change of real variables?

The idea of a permanent change of economic variables is modelled from econometric point of view with a unit root in a time series autoregressive representation, a time series with unit root has several different properties different from a stationary series. An autoregressive process is a model where the current value of the dependent variable y depends only on its values from previous periods plus an error term. It considers the simple case of an autoregressive process: $y_t = a\, y_{t-1} + u_t$. (1)

Coefficient 'a' takes any value. The process is rewritten using firstly a lag time between periods and then two lags between periods:

$$y_{t-1} = a\, y_{t-2} + u_{t-1} \quad (2)$$

$$y_{t-2} = a\, y_{t-3} + u_{t-2} \quad (3)$$

Substituting equation (2) in (1) is obtained:

$$y_t = a\,(a\, y_{t-2} + u_{t-1}) + u_t \quad (4)$$

$$y_t = a^2\, y_{t-2} + a u_{t-1} + u_t \quad (5)$$

Replacing equation (3) to (5) is obtained:

$$y_t = a^2\,(a\, y_{t-3} + u_{t-2}) + a u_{t-1} + u_t$$

$$y_t = a^3\, y_{t-3} + a^2\, u_{t-2} + a u_{t-1} + u_t$$

If are made T successive replacements it comes to the following equation:

$$y_t = a^T\, y_{t-T} + a u_{t-1} + a^2\, u_{t-2} + a^3 u_{t-3} + \ldots + a^T\, u_{t-T} + u_t$$

Three possible cases arise:

1. $a < 1 \Rightarrow a^T \to 0$ on the measure $T \to \infty$

In this case, system's shocks will gradually disappear, so the series is stationary. A stationary series can strongly influence its behaviour and properties. Also, this type of series is characterized by constant mean, constant variance and constant autocovariance for each lag. "Shock" is a term used to indicate a change or an unexpected change of a variable or even simple, the error's value over a particular period of time. In a stationary series, shocks gradually disappear, meaning that the effect of a shock in period t will have a smaller effect during t+1 and smaller in t+2 and so on.

2. $a = 1 \Rightarrow a^T = 1$, whatever T

Shocks persist in the system and do not disappear ever. Thus, you get:

$y_t = y_0 + \sum u_t$, as $T \to \infty$, t evolves from 0 to $\infty$

Thus, the current value of y is an infinite sum of past shocks plus baseline $y_0$. This case is known as unit root because the root of the characteristic equation is 1.

3. $a > 1$

Here, shocks become more influential as time passes, since if $a > 1$, $a^3 > a^2 > a$. It is an explosive event and therefore it is not considered a plausible description of the data.

In the early '70s, Lucas in *Econometric Testing of the Natural Rate Hypothesis* writes for the first time about permanent changes modelled as unit root in an autoregressive time series. Only then, the implications of unit root in an economic time series began to be recognized. Charles Nelson and Charles Plosser argued in their *Trends and Random Walks in Macroeconomic Time Series: Some Evidence and Implications* that many macroeconomic time series of the United States were best characterized by unit root in univariate autoregressive representations.

The nonstationary of economic variables has been a headache for most macroeconometricians. But as a happy change of events, it is an advantage in terms of neutrality test. As noted Lucas, to test long-term neutrality requires permanent changes in the stock of money as part of a historical record. But macroeconomic time series dispose of permanent shocks.

Lucas's ideas are used by other authors to improve long-term test of neutrality. Thus, Mark E. Fisher and John J. Seater in *Long-Run Neutrality and Superneutrality in an ARIMA Framework* used a bivariate model in which a dependent variable is the nominal money supply M (the model used the natural logarithm of money supply) and the second dependent variable is real GDP Y (the model used the natural logarithm of Y). They use all unit root process.

In the hypothetical experiments, it is very important for the change to be unexpected because if traders know that money supply will increase and thus the price level, they could begin to change their present behaviour. For example, they can now buy goods before the price rises. Thus, prices should begin to increase before the money supply to grow and things get more complicated.

## Conclusions

In this paper, we analyzed the following key issues regarding money. Firstly, we focused on the difference between money and currency. These terms are similar from one point of view: when the term of currency means consideration of coins, banknotes and scriptural money as it is broadly used.

Secondly, as currency plays a vital role by creating a link between present and future, we emphasized it through Keynesism and Monetarism. Thus, we revealed the confrontation of ideas

between these two trends making a review of the four parts of Monetarism: First Monetarism, Old Chicago Monetarism, Classic Monetarism and Political Monetarism. The research that we undertook in this area show that, currently, there are ideas kept from both Monetarists and Keynesians. From Monetarists the ideas preserved are in particular those relating to the fact that for realizing a macroeconomic policy analyse should be considered long-run implications, that monetary policy is a powerful tool for achieving macroeconomic stability and from Keynesians the one relating to the fact that for an economy to function optimally the state intervention is, also, necessary.

Thirdly, we highlighted the implications of monetary neutrality on short term and long run upon real variables. Even if it is known that money is neutral on long run, there are still researchers who try to improve this idea using different models. As a future research, we recommend to deepen the implications of monetary neutrality in the conduct of monetary policy.

**References**


- Bodin, Jean. 1932. *Responses à monsieur de Malestroit.* Colin Publishing.
- Bullard, J. 1999. *Testing Long-Run Monetary Neutrality Propositions: Lessons from the Recent Research.* Federal Reserve Bank of St. Louis, 81, 57-77.
- Brunner, Karl. 1968. *The Role of Money and Monetary Policy.* Federal Reserve Bank of St. Louis Monthly Review. July, 8-24
- Brunner, Karl and Alan Meltzer. 1972. *Friedman's Monetary Theory.* Journal of Political Economy reedited by Gordon Robert J. in *Milton Friedman's Monetary Framework: A Debate with His Critics.* University of Chicago Press, 1974
- De Long, J. Bradford. 2000. *The Triumph of Monetarism.* The Journal of Economic Perspectives. Vol. 14, Nr. 1, 83-94
- Dotsey, Michael and Andreas Hornstein. 2002. *Should a Monetary Policemaker Look at the Money?* Journal of Monetary Economics
- Fisher, Irving. 1896. *Appreciation and Interest.* Macmillan
- Fisher, Irving. 1907. *The Rate of Interest.* Macmillan
- Fisher, Irving. 1911. *The Purchasing Power of Money.* Macmillan
- Fisher, Mark E. and John J. Seater. 1993. *Long-Run Neutrality and Superneutrality in an ARIMA Framework.* American Economic Review, June, 402-405, **www.jstor.org**
- Friedman, Milton.1956. *The Quantity Theory of Money- A Restatement.* In *Studies in the Quantity Theory of Money.* University of Chicago Press. 3-21
- Friedman, Milton. 1972 *Comments on the Critics.* Journal of Political Economy reedited by Gordon Robert J. in *Milton Friedman's Monetary Framework: A Debate with His Critics.* University of Chicago Press, 1974
- Friedman, Milton and Anna J. Schwartz.1963. *A Monetary History of the United States, 1867-1960.* Princeton University Press.
- Goodhart, Charles. 1970. *The Importance of Money.* Quarterly Bulletin of the Bank of England. June, 159-198
- Hume, David. 1970. *Writings on Economics.* University of Wisconsin Press.
- Johnson, Harry.1971. *The Keynesian Revolution and the Monetarist Counterrevolution.* American Economic Review, May nr. 61, 1-14, **www.jstor.org**
- Keynes, John Maynard. 1923. *A Tract on Monetary Reform.* Macmillan.
- Latane, H. A. 1960. *Cash, Balances and the Interest Rate: A Pragmatic Approach*. Review of Economics and Statistics, vol. 42, 445-449, **www.jstor.org**
- Lucas, Robert E. Jr. 1972. *Expectations and the Neutrality of Money.* Journal of Economic Theory, nr.4, 103-124, **www.jstor.org**

- Lucas, Robert E. Jr. 1995. *Monetary Neutrality.* Prize Lecture, www.nobelprize.org
- Lucas, Robert E. Jr. 1972. *Econometric Testing of the Natural Rate Hypothesis.* Econometrics of Price Determination, Board of Federal Reserve System
- Mankiw, N. Gregory. 2007. *Macroeconomics.* 320.Worth Publishers
- Mishkin, Frederic S..2004. *The Economics of Money, Banking and Financial Markets.* 8. Addison Wesley
- Modigliani, Franco. 1971. *Monetary Policy and Consumption.* Consumer Spending and Money Policy: The Linkages. Federal Reserve Bank, 9-84
- Nelson, Charles R. and Charles I. Plosser. 1982. *Trends and Random Walks in Macroeconomic Time Series: Some Evidence and Implications.* Journal of Monetary Economics, September. 139-162, **www.jstor.org**
- Patinkin, Don. 1969. *The Chicago Tradition, the Quantity Theory, and Friedman.* Journal of Money, Credit and Banking. February, 46-70, **www.jstor.org**
- Robbins, Lionel. 1934. *The Great Depression.* Macmillan
- Ricardo, David. 1981. *Des principes de l'economie politique et de l'impôt.* Champs économiques. Flammarion
- Samuelson, Paul A. si William D. Nordhaus. 1985. *Economics.* McGraw-Hill
- Samuelson, Paul A. 1958. *An Exact Consumption-Loan Model of Interest with or without the Contrivance of Money.* Journal of Political Economy, nr. 66, 467-482, **www.jstor.org**
- Sargent, Thomas J. 1986. *The End of Four Big Inflations.* Rational Expectations and Inflation, Harper and Row
- Schumpeter, Joseph. 1934. *Depressions.* Economics of the Recovery Program. McGraw-Hill
- Tavlas, George. 1998. *Retrospectives: Was the Monetarist Tradition Invented?* Journal of Economic Perspectives. 1998, pp. 211-222, **articol indexat in baza de date internațională www.jstor.org**
- Viner, Jacob. 1933. *Balanced Deflation, Inflation or More Depression.* University of Minnesota Press.
- Vasilescu, Eugen. 1980. *Circulatia baneasca si creditul.*15. Editura Didactica si Pedagogica.
- Wallace, Neil. 1980. *The Overlapping Generations Model of Fiat Money.* Models of Monetary Economies. Federal Reserve of Bank of Minneapolis.