

FINANCIAL AND MONETARY CRITICAL ANALYSIS OF ENDOGENEITY/EXOGENEITY OF MONEY SUPPLY

Dušica, KARIĆ¹, Dragana, LABOVIĆ² and Petar, BOJOVIĆ³

¹“Alfa” University, Belgrade, Serbia

²“Alfa” University, Belgrade, Serbia

³“Union” University in Belgrade, Belgrade, Serbia, e-mail: psbojovic@sbb.rs

ABSTRACT: Supporters of monetarist ideas within modern monetary theory shift the responsibility for the cyclic movement of money supply to monetary policy itself, believing that such a movement appears as a consequence of sudden and relatively big oscillations between expansive and restrictive impact of short-term monetary policy on economic trends. Neo-Keynesians contest the monetarist stand by the claiming that the cycles in movement of the rate of money supply are endogenously determined, by the behaviour of non-financial economic subjects and sector of commercial banks. The influence of these two groups of economic entities blurs the anti-cyclic effects of monetary policy on the movement of money supply.

KEY WORDS: Monetarists, money, Neo-Keynesians, banks

1. INTRODUCTION

Both monetary theory and appropriate empirical study of monetary phenomena have mostly dealt with the effects that the amount of money (money supply) causes with other economic quantities – price, investment, employment or the level of economic activity in general. However, the interest for studying those factors that determine the real amount of money in circulation has been increasing. These studies are embedded in frequent discussions that are on theoretical level done between economists and Neo-Keynesian preferences and monetarist current, and they refer to the issue of the causes that result in cyclic oscillations in the movement of money supply in the developed countries.

One of the relevant issues, which is the subject of a serious theoretical and empirical study, refers to the degree in which monetary conditions dominate over other factors that can influence the movement of the nominal income. The results of conducted empirical studies in developed market economies (and in our country, as well), which have indicated the existence of correlation between the amount of money and nominal income, could not provide a precise answer to the question of causal link: whether the amount of money influences the nominal income or the nominal income influences the amount of money.

The movement of money supply is the result of the impact of not only the instruments of monetary policy, but also the feedback effect of the total economic system. It is known that economic variables can directly cause changes in the volume of money supply in market economy. Primarily, the volume of credit, which represents the most significant source of money creation, is conditioned by the decisions of economic entities in the aspect of their indebteding and readiness of the banks to borrow their funds. Credit demand will be higher in conditions of the increased economic activity and increase of the general level of prices. In addition, it can be expected that the credit offer will be much more expressed in the periods of economic expansion than in the periods of economic recession, because in the first case, the risk of unfulfilling the payment obligation by particular economic entities is relatively smaller [5].

Secondly, changes in the balance of economic relations between the country and abroad (including capital transactions – short-term and long-term) change the volume of reserve money through the variation of the amount of foreign exchange reserves in the banking system.

Thirdly, the influence on money supply can also come through the particular financial behaviour of population sector, which is expressed in the effort of this sector to keep a larger amount of cash, instead of investing the money in savings at banks or to turn it into other forms of property (increased tendency towards liquidity). Due to that, the reduction of reserve money in banks reduces the investment possibilities, i.e. it reduces the money supply through bank's investments.

Finally, as the answer to the effects that particular variables within economic system cause to the movement of money supply, monetary policy can activate various instruments of monetary regulation. These instruments provide the carriers of monetary policy with the possibility to regulate the real amount of money in circulation.

Not only that different economic variables can influence the money supply in many ways, but some of them can have a simultaneous effect in a complete opposite directions. In that way, for example, the price growth will influence the growth of money supply in circulation through credit expansion, but it will at the same time influence the reduction of monetary supply through deterioration of the trade balance (import greater than export) and formation of astringent effect on foreign exchange reserves of the banking system.

Economic models consist of two types of variables – exogenous and endogenous. In statistical theory, one variable is endogenous when its movement is a result of joint action of other variables in the model (to which the observed variable belongs). Exogenous variable is the one for whose value it is assumed that it is determined by the factors that are out of the observed economic model. Small economic models, whose purpose is to explain the behaviour of only a few variables, include a large number of exogeneous variables. Wider models, which intend to explain further the functional links between relevant variables, have less exogeneous variables. exogeneous variables do not require the explanation in economic model,

because it is assumed that those variables are determined out of the model itself.

Economists usually refer to money supply as endogenous variable (not discussing the degree of endogeneity), starting from the fact that the mentioned variable contains the so-called „feedback effect“ (or reverse causation). „Feedback effect“ means that the effect of initial change in money supply firstly starts from the money towards the real economic flows and then it returns to the money – toward the monetary sector of economy. Some economists believe that money supply could be observed as an endogenous quantity and in those cases when monetary authorities would allow for the changes of money supply to be simultaneously adjusted to the changes in bank reserves and money demand to which it comes under the effect of the factors out its control (assuming the defensive actions, i.e. leading a passive monetary policy). In the absence of appropriate (preventive) actions of the Central Bank, it can be expected that autonomous factors cause unexpected (and strong) changes in money market [6].

2. MONETARISTS' VIEW

According to the standard monetarist explanation, changes in the amount of money are determined by factors out of economic system, actions of monetary authorities based on one independent, prudent monetary policy. Therefore, the amount of money is exogenously determined variable, whose changes are not a passive response to the changes in money demand that have resulted from oscillations in flows of economic activity.

Such monetarist attitude was based on numerous empirical studies of monetary movements within the economy of USA during a long time interval, and they were conducted by Milton Friedman (with his associates) in the first half of the '60s [10, 11, 12], considering numerous historical and institutional factors. Their evidence for claiming that in American economy, in the period 1867-1960, the changes in the amount of money were largely determined by money supply can be broken down into three parts. The first element refers to the fact that changes in the money supply, as a rule, preceded the changes in flows of economic activity. Secondly, their detailed study of monetary history of American economy have shown that the most significant changes in money supply were actually exogenous by their character in the sense that they were determined by money supply that was achieved through independently conducted monetary policy. Thirdly, the ratio between money and economic activity (represented through the size of nominal gross product or national income) was stable, despite changes in institutional factors that influence on money circulation and the change in methods of monetary authorities directed towards controlling that circulation.

Orthodox monetarist attitude on the final exogeneity of money supply is exposed to numerous characteristics. Money supply (M) is a multiplied amount of reserve money (B) and its change ($M = m \cdot B$) greatly depend on the behaviour of monetary multiplier (m). However, monetary multiplier is a complex parameter within monetary system, whose size depends on the behaviour of its two basic coefficients – coefficient of cash (ratio of cash to bank deposits) and coefficient of bank reserves (ratio of bank reserves to total bank deposits). Height of both coefficients can deviate from the values required by the Central Bank for implementation of the established monetary policy. Within limits, determined by the supply of reserve money and control of bank deposits, the size of the coefficients of cash and bank reserves is determined by

desires and behaviour of non-banking economic entities and commercial banks [4].

Although the reserve money (monetary base) is basically under control of monetary authorities, the economists (the neo-Keynesians) indicate that the supply of reserve money does not have to be exogenous (in particular time intervals and in case of various combinations of autonomous flows in its creation). Change in the supply of primary money is exogenous only when it is initiated by an independent action of monetary authorities, and not a reply to the change of one or more assumed endogenous variables, such as the income or interest rate. In that way, for example, monetary policy in Great Britain and, to a certain extent, in the USA in the end of '70s and the beginning of '80s was dictated by the tendency to achieve the balance in foreign relations of a country, the need for financing the variable state deficits and general goal of monetary policy to avoid large oscillations of interest rates [9].

English economist Goodhart [13] has contested the ability of monetary authorities to precisely determine the supply of reserve money on several grounds. In his analysis, he starts from one given scope of the deficit in state budget and points out that this deficit can be financed in three ways: firstly, by selling a certain amount of securities to the private sector of economy (i.e. issue of the public debt); secondly, by the inflow of capital from abroad; and thirdly, by direct borrowing from Central Bank, which means by creation of the new quantum of reserve money. Accordingly, as the factors on which the change in money base in a certain period depends, there are the volumes of the deficit of state budget, volume of securities of the state (public) sector that can be realized in financial markets, as well as the quantity of foreign capital that is ready to be transformed to domestic economy. The size of budget deficit is determined by the state (public) consumption and tax policy that are not subject to rapid changes. Inflow of capital from abroad moodily responds to the changes of domestic interest rates, which also refers to the sale of securities to the private sector of economy. In short, of all the listed flows that influence the changes of monetary base, one flow is far beyond the control of monetary authorities (budget deficit), while the other two respond very unpredictably to the changes in level of interest rates.

The only response to the influences to the movement of reserve money that come from these factors, Goodhart sees in their neutralization through compensatory changes in the issue of public debt or through the operations in the open market. Goodhart's analysis actually enlightens the dilemma of monetary authorities in developed market economies that are in the gap between appropriate budget policy, determining the necessary amount of money in circulation and control of interest rates. Goodhart concludes that with a large budget deficit, the successful monetary control is not possible, except if the monetary authorities are willing to accept drastic increase of interest rates. But such considerations belong to the field of priority selection in the implementation of particular economic (i.e. monetary) policy.

Monetarist attitude on exogeneity of money does not rule out the possibility of existence of a certain feedback from business activity to money supply during conjuncture cycle [14]. Study A Monetary History of the United States, 1867–1960 (M. Friedman and A. J. Schwartz), based on the approach through the determinants of money supply, shows that cyclic variations of cash coefficients and bank reserves were largely responsible for continuous changes (contraction and expansion) of money

supply with the given volume of money base. However, monetarists believe that these effects are secondary in relation to the impact of reserve money, whose movement is exogenously determined [19].

Certain deviation from orthodox monetarist attitude in the aspect of exogeneity of money supply is brought by the members of a particular stream within the group of monetarists that is sometimes marked as open-economy monetarism. In monetary theory, this group of monetarists is known by developing of a modern monetarist approach to the theory of balance of payments. General thesis on the exogeneity of money supply is kept for holdings at the level of closed (global) economy, but within one open economy, it is started from the assumption that the obligation of maintaining a fixed exchange rate entails a loss of control over the quantum of money supply by domestic monetary authorities [15]. The argument of this stream of monetarist stream does not question the essential elements of orthodox monetarist attitude. Although money supply becomes endogenous in one open economy with a fixed exchange rate and in that sense, it is not controlled by the national Central Bank, change in money supply, determined by a global rate of monetary expansion, it will still have the role of independent factor that effects domestic nominal income.

3. NEO-KEYNESIAN VIEW

The thesis that money is endogenous by itself, in modern economy, is usually linked (maybe somewhat unjustly) to the name of Nicholas Kaldor [16]. However, viewpoints on endogeneity of money supply in circulation we can find with Adam Smith and David Ricardo. This thesis can claim its right even in certain remarks of Keynes (although The General Theory assumes the exogeneity of money).

In the report of Radcliffe committee, the attitude on endogeneity of money was quite clearly developed. Committee has claimed that there cannot be a strict line between the money and other financial assets of economic entities. All the forms of financial assets of economic entities contain a certain monetary quality, which has, of course, different strength from one form to another. If we tend to constrain the liabilities of particular financial institutions (such as commercial banks), economic units will start with the formation of new financial institutions, from whose liabilities, the financing of the desired scope of consumption will be done. Finally, monetary authorities cannot stop the creation of non-banking money that appears on the basis of international crediting of economic units.

Thesis on endogeneity of money was, also, strongly indicated by Cramp and Moore and discussed in the papers of James Tobin and David Laidler [17].

For Neo-Keynesians, Central Bank in one developed economy has no possibility to control the amount of money in circulation – both in the short or long-term. While in case of monetarists, the money supply is adapted through the changes of prices level in money supply (which is controlled by monetary authorities, hence exogenous), until then Neo-Keynesians insist on the opposite argument: money supply is adjusted to money demand in the long run. The money responds (reacts) to the so-called „exchange needs“.

Neo-Keynesian statement that the existing amount of money is also exogenous and short-term is relatively recent. Explanation of the standpoint on endogeneity of money supply in the short-

term can be found with Kaldor. According to him, in the economy where the majority of money supply is a form of deposits, it is not possible that there is any discrepancy between the money supply that is required and the real money supply in circulation. According to Kaldor, monetary authorities can cause the increase of holdings of non-banking economic entities above their desired level. The growth of money supply in circulation (monetary expansion) can be realized either in the connection with fiscal policy (monetization of the deficit in state budget) or through the operations in open market. In the first case, the excess of money in circulation will be followed by a simultaneous increase of the level of income of non-banking economic entities (through fiscal expansion – increased expenditures of the state for consumption). Economic consequences of monetary expansion (consequences in the real sphere of economy) will completely fit into Keynes's scheme of multiplication effects – expenditures (costs, primarily investment) of non-banking economic entities will respond to the emerged growth of their incomes, opening the spiral of multiplication effects. In the second case, monetary authorities can come before non-banking economic entities with the offer to purchase the bonds in their possession by attractive prices. However, the transaction can occur only when non-banking economic entities want to get rid of the bonds that are in their portfolios and change it for money. They can be forced to keep more money in their portfolios than the amount they would like.

If the non-banking sectors would somehow receive more money than they would like to, there is, according to Kaldor's opinion, one simple mechanism for cancelling such an excess of money. That is a credit mechanism between banking sector and sector of non-banking economic entities. Since the debt to the banking sector is widespread among non-banking economic entities (emerged on the basis of external financing of particular transactors – by taking credits at banks), thus the money excess will be used for repaying the debt. Cancellation of surplus money will be complete and it will be automatically in one financial (i.e. accounting) system in which the use of overdraft clause is widespread. This clause provides the owner of checking account with automatic debt at bank, i.e. transformation of his *à vista* deposit to credit up to the agreed limit. Excess money can never exist for so long in order to have the impact of consumption flows.

Kaldor also excludes the possibility of money shortage, because in that case, there are necessary actions of the Central Bank that provide the necessary level of the liquidity of macro system. If the Central Bank does not approve the current rate of monetary expansion, its reaction will be aimed at raising its discount rate. However, the Central Bank cannot strictly endure on one previously fixed low level of reserve money, and not risk that it comes to the collapse of banking system in that case (which certainly is not the desire of Central Bank). Money supply is always determined by money demand, even with the chosen interest rate of the Central Bank.

If the mentioned arguments are accepted, then the money supply really plays merely a passive role in determination of nominal income. By excluding the possibilities for emergence of excess money and money shortage in macro system, the basis for any transmission process that leads from money supply to the consumption, prices and production, is eliminated. However, Kaldor does not exclude the possibility for the monetary policy to be used actively, i.e. that the policy of interest rate be used in such a way to influence the

investments in Keynesian style. One of the factors that influence the oscillations in money demand are the changes in interest rate (which can be induced exogeneously).

According to Kaldor's viewpoint, the thesis on exogeneity of money of orthodox monetarism would be possible to apply in one economy with commodity money, in which money supply wouldn't be so elastic and within whose limits the economic entities wouldn't have the possibility to cancel an excess of funds. But in the economy in which credit money functions, Exogeneity of money is not possible and causal relation (which is realized through exogenous interest rate) goes exclusively from money demand to money supply.

Basil Moore has offered a similar standpoint, which is based on experiences of American economy, but it can also be taken that it refers to all the developed capitalist market economies. Monetarist description of the processes of money supply, which takes the changes in exogenously controlled aggregate (reserve money) as the „cause“ of particular changes in money supply, Moore considers wrong. Although between reserve money and money supply, as well as between money supply and total nominal income, there is a relatively stable relation; a causal relation is completely opposed to the one shown by monetarist standpoint. Both monetary base and money supply are, actually, endogenous.

One of the main evidences for endogeneity of monetary base, Moore draws from the degree in which the changes of the base were possible to statistically „explain“ with the changes of appropriate economic variables, especially the movement of nominal wages. Namely, for the terms of developed market economies, the economists have been trying for a long time to statistically obtain the best adjustment of the so-called reaction-function of the Central Bank in relation to macroeconomic goals of economic policy, such as inflation, unemployment, balance of payments and interest rates. On the basis of economic analysis (with data for the economy of USA), Moore has demonstrated that growth rates of nominal wages were explanatory variable with by far the largest degree of significance (with highly significant positive ratio) [18].

In Moore's scenario, the movement of nominal wages shows the growth in the period of the declining of labour productivity (due to rigidity in downward movement of the wages). Discrepancy in movement of labour productivity and wages results in the illiquidity of economic entities (enterprises) and forces them to take bank loans to settle the due financial obligations. If commercial banks do not dispose with free credit potential, the pressure is concentrated towards the Central Bank, of which it is required to provide the additional amount of money (expansion of the credit potential of commercial banks). Central Bank is completely aware that its unfulfillment of requirements in the aspect of providing additional money supply can cause the unemployment of production. Unemployment, as a trouble which would, in the specific case, be caused by issues of (il)liquidity, monetary authorities in developed market economies consider completely unacceptable. Consequently, monetary authorities give in under the pressure of commercial banks, allowing the creation of new credits. Moore concludes that in terms where money supply is basically „politically endogenous“ (and it is referred to the terms in developed market economies, because he bases his opinions on the experiences of USA economy), Central Bank cannot keep too strict attitudes in implementation of monetary policy, because political pressures to which it is exposed are imposed by the emergence of unemployment. Monetarists

agree with Moore's theory, but they point out that Central Bank should not mitigate its attitudes regarding the implementation of one previously agreed monetary policy, when it comes to unemployment.

According to that, the behaviour of nominal wages (equally as the constituent part of the demand of working funds of enterprise and as determinants of available personal income of workers), plays a central role in determining the demand for banking credits of non-banking economic entities. According to Moore's opinion, through credit market, the process of monetary adaptation induced by increase of nominal wages is developing. Actions of the Central Bank (in accordance with its role as the headquarters of the country's monetary system) aim at allowing the money supply to adjust to the increase of demand for bank loans. The ability of Central Banks to control the growth rates of monetary aggregates depends more on their ability to control the rate of expansion of bank loans, and less on monetary base [8]. However, the ability of monetary authorities to control the rate of expansion of bank loans is constrained. Each time when it comes to sudden increase of wages, it is shown that it is very difficult for the Central Bank to limit the rate of monetary growth. Money supply is one endogenous variable and behaviour of nominal wages represents the most significant determinant of its cyclic movement.

For orthodox monetarism, the exogeneity of money and causal primacy of money in relation to numerous flows of economic activity are two related characteristics and Central Bank is usually shown in its role of a regulator of money circulation [3].

4. ASSESSMENT OF THEORETICAL VIEWPOINTS ON THE ISSUE OF ENDOGENEITY/EXOGENEITY OF MONEY SUPPLY

In modern monetary theory (of both the monetarists and Neo-Keynesians), the most acceptable seems the theoretic concept that starts with interrelations and interactions of real and financial flows within reproduction processes and which points out that it is not possible to establish one-way causal relationship between the change in money supply, on one hand, and scope of production, employment and price level, on the other. Today, economists do not dispose with any econometric finding that would, per se, strongly confirm the pure exogeneity or endogeneity of the existing money supply [7].

Real volume of money supply is commonly determined by actions, i.e. the behaviour of both monetary authorities and so-called private sector of economy (in the expressions of Western monetary literature), which includes non-banking economic entities, commercial banks and other financial institutions. Portfolio behaviour of the entities of private sector within one developed market economy has a deciding effect in mitigating between the position of monetary policy of the Central Bank and real outcome in the form of a given scope of money supply, which are available to economic entities within economic system [1].

If the amount of transactional funds in the possession of economic entities is understood more as one target average money holding during a specific time interval, and less as a completely balanced money holding, which strictly satisfies the terms of portfolio balance of economic entities at any moment (statement that is increasingly being accepted by modern

monetary economists), then the exogenous change in the real volume of money supply in relation to the aggregate that represents a sum of average target holdings of money will cause the progressive effects of adaptation during a longer period [2]. Observed in the macro plan, during the adaptation process, the economic subjects will keep the real funds that are either above or below the sum of their average target amounts of funds. In case of money excess, economic entities will keep the higher amount of real funds than they would like to until some combination of lower interest rates, higher prices and higher real income do not provide the balance between the desired funds (aggregately observed) and real volume of fund. In case of money shortage (current real funds of economic entities are below their target level), the economic entities will try gradually (by increasing their income and/or reducing the consumption) to form their average, target amounts of the real funds. If these changes in behaviour of economic entities (caused by the reduced amount of money in circulation) are widespread in greater volume, that will leave certain consequences on the real economic movement – it will cause the reduction of the growth of nominal income and these effects will be present until the moment of final balance between money demand and existing scope of money supply. In general case, if monetary holdings of economic entities are below their target levels, there is a risk that with a certain number of entities, monetary holdings will be below the level necessary for maintaining their liquidity. Assuming that these entities are not able to approach the economization of the funds when they are used (for e.g. through the increased use of the commercial credit, if they are creditworthy) or to reagree their previously agreed financial liabilities satisfactorily, i.e. if they cannot do that quickly enough, then a certain number of economic entities will be in situation not to meet due financial liabilities, thus spreading the issue of illiquidity through macro system and endangering the normal functioning of financial system.

5. CONCLUSION

Monetarists acknowledge the existence of the „feedback“ and take money supply as exogenous variable, and for two reasons: members of this school believe that the effect that goes from the money to real economic flows is prevailing (feedback is very weak); monetary authorities can control the behaviour of money supply in circulation and they are able to influence the economic activity, regardless of the existence of the feedbacks from the real to the monetary sector of economy.

For Kaldor, Moore and other Neo-Keynesians, the endogeneity of money and causal primacy of economic variables in relation to the flows of money and credit are two very closely related characteristics, while the Central Bank is presented in the role of the subject that is the only one with a right (in active sense) to bring the interest rate to a certain level.

Finally, in the specific conditions of developed market economies, it is also possible to realize such a combination of impacts of particular entities in economic system (monetary authorities, banking sector and sector of non-banking entities), which would have exogenous money character as a consequence. If the monetary authorities have a strictly

established goal (target) in the aspect of achieving a particular scope of monetary expansion and they are willing, through the open market operations, to repurchase the necessary amount of securities from economic entities in the open market, which would provide the implementation of the defined goal, then the money expansion is indeed independent from portfolio decisions of banking sector and sector of non-banking entities.

6. REFERENCES

1. Jakšić M., Osnovi makroekonomije, Cugura print, Beograd, 2009
2. Krugman, P., Obstfeld, M., International Economics, Theory and Policy. Addison Wesley, Int. 2003.
3. Mishkin F., Monetarna ekonomija bankarstvo i finansijska tržišta, Data status sedmo izdanje, Beograd, 2006.
4. Olivier Blanchard, Makroekonomija, Mate d.o.o. Zagreb, Grafotisak d.o.o., treće izdanje, Zagreb, 2005.
5. Acin, DJ., Todorović, M., Acin-Sigulinski, S., Medjunarodni ekonomski odnosi, Ekonomski fakultet, Novi Sad, 2006
6. Adamović, LJ., Medjunarodni ekonomski odnosi : savremene tendencije, Savremena administracija, Beograd, 1990
7. Adamović, LJ., Integracije i dezintegracije svetske privrede, Ekonomski fakultet, 1991.
8. Appleyard, D. R., Field, A. J., International economics, McGraw-Hill/Irwin, New York, 2006.
9. Nicholas Kaldor, James Trevithick, A Keynesian Perspective on Money, Lloyd's Bank Review, January 1981, pp. 1–19.
10. Milton Friedman, Anna J. Schwartz, A Monetary History of the United States, pp. 1867–1960, Princeton University Press, 1963.
11. Milton Friedman, Anna J. Schwartz, Monetary and Business Cycles, Review of Economics and Statistics 45 (Suppl.), pp. 32–64, 1963
12. Milton Friedman, D. I. Meiselman, The Relative Stability of Monetary Velocity and the Investment Multiplier in the United States, 1897–1958, in Commission on Money and Credit, Stabilization Policies, Prentice-Hall, Englewood Cliffs, 1963.
13. Struthers, J., Speight, H., Money: Institutions, Theory and Policy, London: Longman, 1986.
14. Milton Friedman, The Optimum Quantity of Money and Other Essays, Chicago: Aldine, 1969. This circumstance was also pointed out in Friedman's response to N. Kaldor: The New Monetarism: Comment, Lloyd's Bank Review, October 1970, pp 52–53.
15. David Laidler, Monetarist Perspectives, Harvard University Press, Cambridge Mass., 1982.
16. Nicholas Kaldor, The New Monetarism, Lloyd's Bank Review, pp. 1–18, 1970
17. Cramp, A. B., Does Money Matter? Lloyd's Bank Review, pp. 23–37, 1970
18. Basil J. Moore, The Endogenous Money Stock, Journal of Post Keynesian Economics, Vol. 2, no. 1/1979, pp. 49–70.
19. A. Meltzer, Controlling Money Federal Reserve Bank of St. Louis, Review, pp. 1–18, 1969