

# Endogenous Money and Central Bank's Control on the Short-Term Interest Rates

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**Abstract.** Interpreted in the paper are the actual questions of the endogeneity of money as part from the modern monetary economics. Outlined in this relation is the contribution of authors like B. Moore and others. Emphasis is put on the issues of horizontalist and structuralist approaches for investigation of endogenous money theory and the role of the liquidity preferences in this theory. Considered are also the problems of the inflation risk and buffer stocks in the light of the money demand.

**Keywords:** Endogeneity of Money, Horizontalist Approach, Structuralist Approach, Buffer Stocks.

## 1. Introduction

The Post-Keynesian theory for the money endogeneity is criticized as stochastic and philosophic and of little importance for the monetary economics development [Gale, 1982, p. 183]. Under the last decades the question for the endogeneity of money is a constant challenge. B.J. Moore – the pioneer in development of the concept for the money endogeneity, critically outlines that this interest had been slowed in the time after the publication of his work for horizontalist versus verticalist approach [Moore, 2001, pp. 11-30]: “Even 12 years after the *Horizontalists versus Verticalists...*, there is no work on macroeconomics of money and banking activity, who threat the question for the endogenous money”. This regards especially to the money supply problems and the monetary transmission mechanism.

The reminder of the paper is organized as follows: Section 2 is focused on the horizontalist and structuralist approaches. Section 3 put emphasis on the role of the liquidity preferences in the theory for endogenous money. Section 4 is focused on the inflation risk and the buffer stocks in the light of demand for money. The paper concludes with summarizing the results from the study.

## 2. Horizontalist and Structuralist Approaches

The mainstream economics postulates that when a commercial bank has extended all its credits it could supply new once only after accumulation of new deposits. Once establishing the official interest rate the Central Bank (CB) should cover the incoming demand for money reserves. That in turn depends on the liabilities under the form of bank deposits as their changes are determined by the demand for loans under the current interest rates. It could be argued that the demand for loans does not create money unless the firms and individuals express a desire to have deposits – a point under which the demand for money will be a restriction for this creative process. This is however an argument for the economic equilibrium. The buffer stocks models (a trivial anti-crisis device of the regulative powers to the bank equity capital) as regards the demand for money, are built just to cope with the opportunity the quantity of money (at least in short-run period) to be distinguished from what the market participants finally would want to have.

It is summarized in the begging of 1990s that on the basis of the enriching the endogenous money theory and the discussions for its application, separately formed were the *horizontalist approach* and the *structuralist approach* [Pollin, 1991, pp. 366-396]. Both of them consider the money as emerging from the bank credit but differentiated by the criteria: does the bank credit supply is fully or partially determined from the demand for loans?

*The horizontalist approach* supposes endless elasticity of the credit money supply to the interest rate. This approach is developed in 1970s and supported by many authors (Kaldor, 1970, Lavoie, 1992, Moore, 1988, and others). The focus is on the partial individual decisions that determine the supply of credits and

deposits and on this point the supply of credit money. Thus, the credit money grows “endogenously” in the face of uprising needs of banking activities [Wray, 2007, p. 10]. It’s thought that the CB can only “exogenously” determine the short-term interest rate on which it supplies “horizontally” reserves to commercial banks. In the works for the horizontalist approach the state role and the fiscal transactions’ impact on the banks and CB are neglected. B.J. Moore argues that the CB’s role is limited up to establishing the overnight interest rate that requires its passive adjustment to the demand for bank reserves [Moore, 1988, pp. 67-68].

In the literature for the endogenous money usually the fiscal effects on the bank reserves are ignored. The argument is that the CB’s behavior must be viewed separately from the fiscal transactions because of the CB’s independence from the government in many countries. However, according to L.R. Wray practically the desire of CB to establish a targeted overnight interest rate means that it cannot be independent from the government. Independency is in a sense that each undesired influence of the governmental fiscal transactions on the bank reserves ought to be immediately and fully neutralized with the CB’s transaction. At the end of the day the quantity held by the public of the non-bearing interests CB’ liabilities – available money and reserves, are determined by the demand from the public. They are not discretionary variable from the viewpoint of the CB.

The *structuralist approach* considers that if the money is endogenous, the liquidity preferences and the proposition for demand of money’s elasticity to the interest rate are meaningless. The representatives of this approach are many authors (Dow, 1997, Sawyer, 1996, Wray, 2007 and so on). Their works are aimed to enrich the horizontalist approach as regards the credit money supply. According to the structuralists, the banks are eager for profit through innovations just to escape the restrictions and to use the new possibilities. The banks are active institutions that create new financial instruments aiming to economize their reserves. The CB may decide to use quantitative restrictions to reduce the supply of reserves which in turn gives birth to the bank’s reaction to escape those restrictions. It is well known that the CB targets the overnight interest rate and by this way adjust the demand for reserves. Practically the real interest rate deviate from the targeted level and the CB intervenes when the interest rates go above or below the established borders of variation. For the market powers it is not possible to determine the overnight interest rate because the demand for reserves is completely inelastic – the excess reserves cannot be eliminated neither through reduction of interest rates, nor by overcoming the lack of reserves through interest rate’ increase. That is why the structuralists think that the quantitative control over the interest rates is out of acceptance. Thus, while the banks are profit oriented, the CB stimulates their innovative behavior mainly by setting the interest rates and not through the reserves’ quantitative restrictions. Especially, the European Central Bank (ECB) conducts a monetary policy of ensuring an unlimited admittance to the liquidity at a fixed interest rate for the period of over 6 months and extending the range of assets which are eligible as guarantees.

The enforcing of attention on the money endogeneity is linked with the recognition of Taylor’s rule, as a more sophisticated of disclosing how really the CB works in comparison with whatever focus on the money aggregates. The CB sets the interest rates, while the rest is market-conditioned, i.e. the situation under which the reserves and deposits are demand determined.

### **3. Liquidity Preferences in the Theory for Endogenous Money**

The issue of liquidity preferences is quite strongly interpreted in the theory of money endogeneity. This is typical for the individuals and firms and presupposed of the same factors – the portfolio’s structure and the size of both subjects. Based on the credit the supply for money depends on mostly on the individuals’ behavior and in a lesser extent on the firms; behavior. The individuals’ liquidity preferences influence the supply of money through: a) Changes in the structure of their portfolios – the behavior of individuals impacts the companies’ profitability and by this way the money creation. When the individuals’ liquidity preference degree is low they will desire to change more cash money and current deposits for assets. In such a case the firms’ higher efficiency will lead to their lower demand for money for exercising capital costs. b) Changes in the size (volume) of the individuals’ portfolios – if their liquidity preference decline, the individuals will be more inclined to use mortgage and consumer loans.

The companies have a complete freedom to make their decisions for production of goods but they have to adapt their financial decisions to the real needs. That is why under the case of low liquidity preferences the firms will search for credits for financing the production of new goods. On the other hand, at the increase of liquidity preferences and nevertheless the credit policy of the banks, the firms will apply more conservative behavior to the borrowers or more liquid portfolios.

The banks' liquidity preference is the argument for the *protection of the endogenous money thesis* about the importance of the Keynesian theory of interest rate. The banks extending credits must keep their financial commitments in relevance with the content of their balance sheets. On this basis they may have different liquidity preferences under different situations [Minsky, 1975]. If higher liquidity preferences are available because of the unfavorable perspectives or high capital adequacy, the banks will have less intention to meet the demand for credits from the individuals and firms. Under weak liquidity preferences, the banks will be less intended to replace liquid for non-liquid assets (change in their portfolios' structure), as well to increase their credit activity (change in their portfolios' volume).

As concern the CB, one of its opportunities for impact on the liquidity preferences is through the short-run interest rates. The CB's liquidity preference can increase due to changes in macroeconomic variables like general price level, exchange rate and others. In such a case, the CB will have less intention to adjust to the banks' demand for reserves. The fact that the CB will have less desire to change liquid for non-liquid assets (i.e. change in its portfolios' structure) means that the CB will push up the short-run interest rate. When considering the international definitions of money it deserves to note the contrast with the method of quantitative theory of money. This theory is the base related to the money aggregates and even could be used for running a money policy oriented to money growth. In the quantity theory of money the causality moves from the money to the nominal income. It is doubtful however that in our days a CB operates only with a strong belief in this process.

It could be summarized that almost there is no any CB in the developed world that specify the money base as a target of their monetary policy. Practically, the CB runs its monetary policy through the short-term price of available reserves (i.e. the interest rates). The capability for determining the price of reserves under the lack of liquidity is due to the monopolistic CB's stance as a lender of last resort. The decision for targeting the price of reserves instead of their quantity is determined mainly from the elimination of interest rate vulnerability that would emerge from the attention focused on the volume of reserves. When determining the interest rate, the aim is to impact the aggregate demand in relevance with the targeted inflation level in the country. However, the purpose of this is not to reveal the change in monetary aggregates. The aggregates' dynamics is meaningful for the establishment of the interest rates but as much as their increase presupposes the accumulation of the preliminary data for the future inflation. Under such circumstances, the money supply is completely endogenous because it is a result of demand for loans. The situation is largely recognized from the actively engaged economists with the implementation of the monetary policy and of course from the leaderships of the CBs.

#### **4. Buffer Stocks in the Light of Demand for Money**

The empirical evidence of the demand for money suggests that the adjustment to the long-run equilibrium is slow. The reason for this delay is the existence of time lags in the financial markets. At the end of the previous century there was a large increase in the money supply that started to excess the demand for money. Under such a situation and the *suggestion for exogeneity* of the demand for money and non-equilibrium economy, the "independent" variables in the money demand function will be not completely independent. They should be seen as conditioned by the interaction between the demand and the supply. With the argument that the demand for money can be thought as only one part of a general macroeconomic model, build for the whole economy, the established estimates on the basis of a unique equation are ignored and overthrown.

Many authors explain why the adjustment may depend on long and variable lags of the basis of the *concept for buffer stocks* of the money demand [Goodhart, 1984, pp. 17-34]. The buffers are necessary in order to service the households' credits and the expected rise of unemployment. The accumulated buffer reserves have to be used under ultimate necessity. According to buffer stock concept for the money demand,

the individuals are inclined to accept some variations in their quantity of money around its level of equilibrium. If, for example, the long-run equilibrium is not achieved due to the money supply expansion, a situation will be reached when the money stocks held by the individuals temporarily will be in excess of their demand for money. In such a case the next events are realized: to return the formed financial portfolio in equilibrium the market participants will make efforts to transform the available money funds into other financial or real assets. In short-run period, however, they may choose to hold excess money balances instead to neutralize the incoming shock. The reasons for such behavior of the individuals are as follows: a) Market participants will wait to convene that the change is not a temporary because the portfolio adjustment to the realized shift is costly. b) A continuous observation on the money balances is necessary that requires a lot of time and efforts and also the accumulation and threatening of the necessary data can be problematic.

The concept of buffer stocks considers the money as buffer in the process of reaction as regards some occurred economic shock. The reason for that is the exclusive liquidity of money and the lower costs for the money balances' adjustment in comparison with the similar costs for the adjustment of all other assets. There could be objection that the typical for the financial sector transaction and information costs are relatively low that presupposes the forced adjustment. However, it could be slowed due to the non-flexibility of the interest rates and prices that can go ahead in the framework of several months. In this gradual process of adjustment the individuals will be eager to accumulate buffer stocks, i.e. the latter will be built according the economic aims and their role will be growing under the conditions of economic crises. The particularity of money to function as protected buffers is favorite orientation for the market participants towards their holding instead to care about the precise value of their money. The formation of their expectations will be grounded in the constructed models for the determined money demand including inventory-theoretical model of Baumol-Tobin. However, it is possible the individuals to keep their money within some determined borders of variations which are periodically observed.

On the ground of the buffer stocks concept is postulated that the observed changes in the real money stock may reflect the change in one or more important determinants of the long-run, respectively targeted demand for money or the shock in the nominal money stock. The latter should be no connected with corresponded changes in the conventional variables of the money demand. The relevant approach has no link with the hypothesis that the instability of the demand for money (determined through econometric analysis) is necessary as soon as possible to reflect the required time for adjustment then the corresponded instable demand. The problems of models built of the basis of equilibrium are that they are oriented to the past. The instability of the money demand function is determined first, by the shifts in the government policy with reflection on the income changes, and second, by the changes in the costs for adjustment. The models oriented to the future in which the concept for the rational expectations finds application, are also subordinated to the above-mentioned problems. In such an oriented to the future *model for the buffer stock* [Taylor and Cuthbertson, 1987, pp. 65-76], the change in the money supply may determine the re-estimation of the expected levels of price and income. Then to the traditional money demand function is added the cost function that is destined to measure the costs for the deviation from the equilibrium, as well the costs for the changeable money availabilities.

With the formed in the market participants' expectations for the incoming magnitudes of the real income, the interest rate and the price level, it is possible to determine the minimal value of the cost function. The model is based on the differentiation between the non-expected and the expected changes. The expected future growth in the real income or in the price level from one hand, or the expected decline in the interest rate from the other hand, will presuppose an immediate growth of the money held. If the above-mentioned changes are non-expected initially there will be no similar effect. They will have influence only if generate information for the shift in the process that determines the respective variable in the model (equation) built. Thus, the exogenous growth in the monetary base again will slowly transmit through the money demand function to the real income, price level and the interest rate.

The proposition for the buffer stock develops that under the availability of money shock there will be a long-term and variable lag in the monetary policy of the CB. On the buffer stock's basis also is realized the convincing theoretical basis of the existence of dependent variable with time lag in the structure of the defined equations for the money demand at the occurred money shocks [Laidler, 1982]. On the basis of the

above demonstrated proposition is established that the money demand's short-run elasticity against the income is low, while the long-run elasticity is very close to one [Taylor and Cuthbertson, 1987, pp. 65-76].

## 5. Conclusion

In conclusion, in modern, developed economies money should be considered as credit money. Most economists recognize that the CB can only set the overnight interest rate which has only indirect impact on the quantity of bank reserves and the quantity of privately created money. Both approaches, analyzed in the paper – horizontalist and structuralist approaches, consider the money as emerging from the bank credit. However, these approaches differ one from each other according to the criteria for determining of the bank credit supply – in particular, whether the bank credit supply is fully or partially determined from the demand for loans. The horizontalist approach argues that the CB's role is limited to the establishment of the overnight interest rate that requires its passive adjustment to the demand for bank reserves. According to the structuralist approach, the CB stimulates the innovative behavior of banks mainly by setting the interest rates and not through quantitative constraints over the bank reserves.

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