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POST-KEYNESIAN THEORIES OF THE ENDOGENOUS MONEY SUPPLY*

I. INTRODUCTION

The foundation of the research programme of Post-Keynesianism launched in the 1970s was the endogenous nature of money supply. According to this idea, the money supply is determined by the credit needs of business entities. Changes in the amount of money in circulation are a response to the fluctuations in the level of economic activity, which means that they are the result – and not the cause – of fluctuations in the nominal income. Credit money is created *ex nihilo*, implying reversed causality (credit creates deposits) and rejection of the concept of a monetary multiplier and quantitative theory.

According to Post-Keynesians, in modern credit-based economies there is no technical possibility of managing the supply of financial resources. The endogenous creation of money is therefore an immanent feature of today's banking systems. Moreover, modern central banks perform the statutory role of lender of last resort. Thus, they are legally bound to provide the economy with the necessary funds. The key task of the authorities is to adapt to the demand of the reserves of commercial banks in such a way that demands from credible private agents for these reserves are fully met. In this situation, the only variable that monetary authorities can effectively control is the interest rate. In this way this variable takes on an exogenous character.

Post-Keynesians agree on the endogenous nature of money and reversed causality, but not all share the same opinion on the role and actions of the central bank to satisfy the demand for reserves required by commercial banks. In the course of many years of discussions, four fundamental Post-Keynesian approaches to this issue have emerged: accommodative, structuralist, from the perspective of the money circuit theory and from the perspective of liquidity preference. The aim of the article is to present these positions as, firstly, diametrically opposed to the views of the representatives of the mainstream economics, and secondly, as differing in terms of the tasks and capabilities of entities forming the banking system. In accordance with the assumed goal, in the second part of the article the concepts of the exogeneity and endogeneity of the money supply are presented. The third part is devoted to the description of the four Post-Keynesian approaches to

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the endogenous nature of money. The fourth part presents the results of the most important empirical research devoted to the Post-Keynesian mechanisms of money creation.

II. EXOGENEITY AND ENDOGENEITY OF MONEY SUPPLY

The approach from the perspective of exogenous money is associated primarily with monetarism and the new classical economy. In this reasoning, the central bank determines the size of the monetary base, and after that, the further process of money creation takes place through a money multiplier:[1]

$$M = h_m H. \qquad (1)$$

The causality runs from right to the left. The size of the monetary base H, controlled by the central bank, is an independent variable while the volume of the money in circulation M is a dependent variable. The h_m multiplier is by definition constant (or at least stable) over time, which enables monetary authorities to control the total money supply.[2] The central bank, using its monetary policy tools, which are primarily open market operations and the rate of obligatory reserves, determines the size of commercial banks' lending. Monetary authorities can also control the aggregated demand. This is because what is assumed here is a stable function of the demand for money which combines monetary aggregates with total income. The money supply is therefore perfectly fixed, determined by the monetary authorities regardless of demand. Any change in the demand for money caused by a change in liquidity preference or income leads to a change in the interest rate which in consequence becomes endogenous.

It follows from this reasoning that in order to be able to grant loans, banks must first build up adequate reserves of money. As a matter of fact they are only intermediaries transferring funds from savers to debtors. In addition, there exists a classical dichotomy according to which, in the long term, real quantities are independent of the monetary sphere. Increasing the money supply can only have temporary real effects when such an increase comes as a surprise or when the economy turns out to be dominated by various imperfections, such as for example rigid prices and wages, preventing a continuous and immediate cleaning of the market.

The heterodox economics view of endogenous money, typical of Post-Keynesianism, is completely different. It breaks with the classical dichotomy by implying that money in the economy is only a 'veil'. An immanent feature of modern economies is the uncertainty which makes money take on features unnoticed in the neoclassical paradigm. It allows protection against the occurrence of events whose probability distribution is unknown. Because of

[1] M. Lavoie, *Foundations of Post-Keynesian Economic Analysis*, Aldershot 1992: 170–172.

[2] J. Haghighat, Endogenous and exogenous money: an empirical investigation from Iran, *Journal of Accounting, Finance and Economics* 1(1), 2011: 62.

this, money is not neutral in either the short or the long term. What is more, Post-Keynesians stress that the production process takes time and usually requires financing before any of the effects that can be offered on the market occur. The investor obtains funds from commercial banks (or other financial institutions) right from the planning stage. This means that banks respond to the demand for credit, not the demand for deposits from entrepreneurs and households. Hence the conclusion that 'loans create deposits,' not *vice versa*, as suggested by the premise of exogeneity. The endogenous approach focuses on the debt creation process, which is an important part of the production process in the capitalist economy. It thus negates the orthodox quantitative theory which starts from a fixed amount of money and concentrates on its use as a means of exchange, ignoring the fact that money takes part in determining all key economic variables.[3]

What follows from the above is that banks do not need to accumulate deposits in order to be able to start lending. It is the act of granting a loan and transferring it to the debtor's account that creates a deposit of an appropriate amount. Banks are therefore able to create new purchasing power (new deposits) without having to reduce the amount of money accumulated by savers.[4] In the endogenous money model, credit is not treated as a transfer of funds from the saver to the debtor, but as the primary creation of the purchasing power by the bank, and then transferred to the borrower.

What we are dealing with here is reverse causality, according to which banks first grant loans and only then obtain adequate reserves to cover their growing assets. The money supply is perfectly flexible and coincides with the credit money demand curve. Commercial banks satisfy the demand for new funds at a certain price, and the central bank increases the monetary base in proportion to the increase in money creation. This reasoning may be expressed by means of a credit divisor, replacing the orthodox money multiplier:[5]

$$H = d_c C. \tag{2}$$

The causality should be read again from the right to the left. In this case, however, the demand for C credit is an exogenous factor, while the size of the monetary base is an endogenous factor.

Assuming that the only assets of commercial banks are loans granted to enterprises, the demand for credit is equivalent to the money stock in the economy, and $M = C$. The credit divisor will then be equal to the inverse of the monetary multiplier:

$$H = (1 / h_m)\ C. \tag{3}$$

[3] L.R. Wray, *Money and Credit in Capitalist Economies. The Endogenous Money Approach*, Aldershot 1990: 16 and 72.

[4] S. Keen, Debunking macroeconomics, *Economic Analysis and Policy* 41(3), 2011: 155ff.

[5] M. Lavoie, op. cit.: 174.

In practice, the size of loans granted to the private sector is not the same as the money stock. The actual value of the credit divisor therefore depends on the proportion of loans in the bank's assets portfolio. There is still, however, a finite relationship between the amount of money that society demands and the size of the monetary base that is determined by this demand. In this situation we can therefore speak of a money divisor:

$$H = (1 / h_m)\, M = d_m M. \tag{4}$$

The financial sector responds to the demand for credit from the private non-banking sector. As companies make new investments, banks make more money available to them for this purpose. It may be said that 'demand for credit creates its own supply.'[6] If the money supply is determined by private decisions as to whether or not to sign a loan agreement to finance expenditure, it cannot be directly controlled by the central bank.[7]

III. POST-KEYNESIAN APPROACHES TO ENDOGENOUS MONEY CREATION

The concept of the endogenous money supply is the basis and core of the Post-Keynesian research programme. Nevertheless, while agreeing on the reversed causality running from a credit to monetary aggregates and on the possibility of creating money *ex nihilo*, Post-Keynesians have developed interpretations that differ in detail as regards the activities of the central bank and commercial banks. As a result, four Post-Keynesian views on this issue have emerged: accommodationism (horizontalism), structuralism, from the perspective of the money circuit theory and from the perspective of liquidity preference.

1. Horizontalism

The accommodationists view, also known as the horizontal approach, is identified primarily with the name of Basil J. Moore.[8] The central bank is considered to be independent in determining the interest rate at which it

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[6] S. Gedeon The Post Keynesian theory of money: a summary and an Eastern European example, *Journal of Post Keynesian Economics* 8(2), 1985: 208.

[7] M. Lavoie, op. cit.: 73–74 and 89.

[8] B.J. Moore, A Post Keynesian approach to monetary theory, *Challenge* 21(4), 1978; idem, The endogenous money stock, *Journal of Post Keynesian Economics* 2(1), 1979; idem, Unpacking the Post Keynesian black box: bank lending and money supply, *Journal of Post Keynesian Economics* 5(4), 1983; idem, Wages, bank lending, and the endogeneity of credit money, in: M. Jarsulic (ed.), *Money and Macro Policy*, Boston 1985; idem, Contemporaneous reserve accounting: can reserves be quantity constrained?, *Journal of Post Keynesian Economics* 7(1), 1985; idem, How credit drives the money supply: the significance of institutional developments, *Journal of Economics Issues* 20(2), 1986; idem, *Horizontalists and Verticalists: The Macroeconomics of Credit Money*, Cambridge 1988; idem, The endogenous money supply, *Journal of Post Keynesian Economics* 10(3), 1988.

grants the liquid reserves requested by commercial banks. The interest rate established exogenously is the only constraint on commercial banks wishing to raise the necessary funds. The authorities do not introduce any additional conditions or barriers, including quantitative ones. Since the entire demand of the banking sector for liquid resources is met passively at a fixed price, the reserve supply curve becomes perfectly flexible (horizontal) at the target interest rate. This behaviour of the central bank stems from its role as the lender of last resort, obliged to guarantee the banking system the required level of liquidity. At the same time, however, it means that the authorities lose control over the amount of total money supply.

The amount of money in circulation is determined by the demand for liquid resources from the private sector. If economic agents (on an individual or aggregate level) wish to increase their money stocks to meet their production and employment plans, they will always be able to do so at a certain price (once the requirements for the collateral/security requirements of the bank loan have been met). The rate is set by commercial banks as a mark-up on the interest rate set from above by the monetary authorities. Thus, the function of money supply should be regarded as horizontal at all times. The total amount of money is endogenous and determined by demand, both in the short and long term. As a result, credit money, created in order to finance economic activity, is of a non-neutral nature, regardless of the horizon discussed.

Neither the commercial banks nor the central bank is able to control the credit money supply. Banks may initiate a constraint on size of the loan only if they increase the interest rate and the requirements for securing the debt, while the only thing that the authorities can do is to determine at which price and conditions they will provide liquid reserves to meet the demands of the banking system. When the central bank increases or decreases its interest rate, the horizontal supply function will move up or down, while keeping its shape at all times.

2. Structuralism

The representatives of the structuralist approach, and among them Robert Pollin,[9] Thomas I. Palley[10] and L. Randall Wray,[11] refute the idea of full accommodation as unrealistic. In their opinion the central bank may restrict the commercial banks' access to liquid resources using for this purpose open market operations which are the main method of ensuring liquidity for the banking system. Certainly, commercial banks are capable of obtaining financial resources from other sources (for example from a discount credit), but this will usually be more costly. In the short term, therefore, the central

[9] R. Pollin, Two theories of money supply endogeneity: some empirical evidence, *Journal of Post Keynesian Economics* 13(3), 1991.

[10] T.I. Palley, Competing views of the money supply process: theory and evidence, *Metroeconomica* 45(1), 1994; idem, Accommodationism versus structuralism: time for an accommodation, *Journal of Post Keynesian Economics* 18(4), 1996.

[11] L.R. Wray, op. cit.

bank does not completely lose control of the money supply, which means that the idea of passive accommodation is not true. Thus, the aggregated credit supply curve is not horizontal, but sloped positively. Interest rates on loans are not exogenous, but change endogenously.

In the longer term, however, the situation looks slightly different. Commercial banks, being institutions focused on maximising profits, will try to avoid restrictions imposed on them from above. To this end, they will begin to implement various innovations in the financial instruments and services they offer, as well as in the way they manage their asset and liability portfolios. This will enable them to generate additional liquid funds and weaken the position of the central bank. Intensifying the management of a given structure of assets and liabilities in order to generate the necessary reserves equals an increase in the velocity of money. Unlike the horizontal approach, the increase in lending does not result from an increase in the reserves available at any time from the central bank, but from the evolution of market practices of an endogenous nature.

As its name suggests, this approach emphasises the role that the structure of the demand, on the one hand, has on particular financial assets and, on the other hand their supply, in determining the level of interest rates and the size of financial assets, including money supply. The demand for assets depends on needs, preferences, expectations, transaction costs and business environment conditions. In turn, the supply of financial assets reacts endogenously to demand, but the manner of this reaction depends to a large extent on the monetary policy implemented. It is stressed that the release of reserves through portfolio management does not necessarily lead to a supply that fully satisfies the required demand for credit. In this situation, the banking system will start to experience liquidity problems leading to credit market disruptions and a financial crisis. Structuralists accuse proponents of horizontalism of not having analysed satisfactorily the phenomena of financial instability and the credit crunch.

3. The money circuit theory

This approach, known primarily from the works of Marc Lavoie[12] and Louis-Phillipe Rochon,[13] falls within the assumptions of horizontalism. However, it is characteristic because of the fact that the arguments about the existence of a perfectly flexible money supply curve have been inscribed in the macroeconomic model of money circulation developed by the Franco-Italian school, in particular Bernard Schmitt, Augusto Graziani and Alain Parguez. At the heart of this is the identification of groups of entities in the economy – enterprises, employees and commercial banks – with different objectives and constraints, among which there are asymmetric relationships. Against the background of these interdependencies, the entire life cycle of money is analysed, from the moment of its creation *ex nihilo* within the

[12] M. Lavoie, op. cit.

[13] L.-P. Rochon, *Credit, Money and Production: An Alternative Post-Keynesian Approach*, Cheltenham 1999.

banking system, through its circulation resulting from the making of payments between agents, to the moment of its final liquidation at the moment when the debt is repaid.

The relationships between enterprises and banks are crucial, as they determine the amount of money available in the market. Money, which has a credit character, is created and introduced to the market as a result of negotiations between banks and enterprises, which makes it an endogenous variable. The interest rate is exogenous. Newly created bank money is used by manufacturers to initiate the production process, with the emphasis on employment and paying the workforce. When entrepreneurs sell their goods to money-earning employees, the loans can be repaid, and money can be liquidated. The final settlement of the entire debt closes the money circuit.

The supply of bank money is therefore entirely determined by the demand for money required by entrepreneurs. The banking sector as a whole, as well as a single bank, have an unrestrained opportunity to create credit, although this does not mean that funds are granted to every agent. Companies must meet the established credibility criteria such as, for example, the provision of adequate collateral. Banks are therefore not passive in adapting to the demand for credit and may refuse to grant it to those who do not meet the required standards. The distribution of the purchasing power between the various agents is reflected in the system of relative prices. Consequently, money is never neutral.

4. The liquidity preference

The representatives of this approach include Charles Goodhart[14] and Peter Howells.[15] This approach fully accepts inverted causality, but questions the thesis formulated by horizontalism that there can be no surplus of credit money, since there is a mechanism ensuring that the supply of new deposits created by the flow of new credit is always exactly the same as the demand for these deposits. According to horizontalists, this mechanism is based on the general acceptance of money as a means of payment. Consequently, 'loans create deposits', which are held by agents, while an independent function of the demand for money does not exist. In empirical terms, therefore, causality must run one way from credit to deposits and thereafter to money supply.

According to the supporters of the fourth Post-Keynesian approach, there is, however, a demand for money, independent of the demand for credit, resulting from the different liquidity preferences that economic agents have. Loans are usually taken out to pay for a variety of goods and services. Thus, deposits created by loans almost immediately change ownership, and the new owner can convert (at least partially) the deposit received into cash or financial or real assets with a higher rate of return. At first, therefore, the

[14] C. Goodhart, Has Moore become too horizontal?, *Journal of Post Keynesian Economics* 12(1), 1989.

[15] P.G.A. Howells, The demand for endogenous money, *Journal of Post Keynesian Economics* 18(1), 1995; idem, The demand for endogenous money: a rejoinder, *Journal of Post Keynesian Economics* 19(3), 1997.

demand for credit is indeed equal to the demand for money, but in the long run, this equality cannot be sustained. Moreover, the changes in the structure of portfolios influenced by certain liquidity preferences of agents have an impact on relative interest rates, prices, on output and thus on income. In order for the demand for newly created deposits to correspond exactly to the net demand for new loans, changes in relative interest rates would have to take place continuously.

Hence the conclusion that causal relationships can be bidirectional. On the one hand, there may be a sequence which is typical for horizontalists, according to which causality runs from the bank loan to deposits and money aggregates, on the other hand, it may turn out that the existence of a function of the independent demand for money will limit the ability of a credit to create deposits. This implies causality running from the money supply to a credit, which is based on the concept of the effective size of deposits held. Moreover, this mechanism undermines the stability of the credit multiplier. This is because there may be a feed-back between the multiplier itself and the bank loan.

IV. EMPIRICAL RESEARCH

One of the earliest empirical studies on the endogenous nature of money, conducted as part of Post-Keynesianism, was presented by Nicholas Kaldor [16] and Basil Moore[17] and concerned the revision of the horizontal approach. Kaldor analysed the data for the United Kingdom for the years 1966–1979, which showed that the money supply is determined by the demand for bank loans. Moore, in turn, devoted his numerous studies to the analysis of the American economy; in one of the first papers,[18] using the data for the years 1951–1977, he confirmed his theoretical arguments, pointing out the important link between the increase in earnings and the increase in the demand for credit for bank credit, to which the central bank passively adapts by providing adequate reserves. These relationships were confirmed in his subsequent research.

Moore,[19] analysing the data for the years 1964–1979, showed that the main factor determining the increase in bank lending is an increase in the demand of enterprises for funds financing the working capital, and primarily wages. His most famous publication is, of course, the book *The Macroeconomics of Credit Money* in which extensive theoretical considerations are complemented by econometric research.[20] His findings fully confirmed the concept of the passive adjustment of commercial banks to the needs of the private sector.

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[16] N. Kaldor, *The Scourge of Monetarism*, New York 1982.

[17] B.J. Moore, The endogenous money stock…; idem, *U*npacking…; idem, Horizontalists and Verticalists…; idem, The endogenous money supply.

[18] Idem, The endogenous money stock…

[19] Idem, Unpacking…

[20] Idem, *Horizontalists and Verticalists…*

The most well-known early studies concerning the structural version were carried out by Pollin,[21] using the data for the US economy for the years 1953–1988, who proved that the structuralist perspective describes the phenomena observed on the US financial market much better than the accommodative one. On the basis of the results of the tests, he formulated the following four conclusions: 1) the size of loans does not increase proportionately to the size of reserves; 2) an increase in lending beyond the available reserves is possible thanks to the increased practice of liability management; 3) funds from a discount credit are not a good substitute for funds provided in open market operations, and the importance of this substitutability decreases with the increased role of liability management observed; 4) market interest rates do not depend solely on top-down interventions but are driven by a complex set of interactions between the central bank and the financial market.

Empirical studies verifying the view from a money circuit theory perspective are rather rare. One of the few comprehensive analyses showing the entire circuit of money was presented by Mario Seccareccia.[22] He conducted research for Canada from 1969 to 2001 and for the United States from 1973 to 2000. The results showed that private sector investments are financed by equity as well as bank loans. The increase in profits of the private sector is used to repay bank debts taken out for the purchase of fixed assets, which reduces the demand of enterprises for credit money. The increase in bank deposits makes it impossible to close the circuit of money, hence its positive correlation with the increase in corporate debt.

The liquidity preference view was verified by Peter Howells and Khaled Hussein.[23] Both authors examined the situation in the G7 countries in the years 1957–1993. The results confirmed the endogeneity of money supply, indicating at the same time that agents do not absorb the entire stream of new deposits created by loans. This proposal confirms the approach based on liquidity preference. The feedback between loans and deposits has also been proved by Guglielmo M. Caporale and Peter Howells,[24] who used the data for Britain for the years 1970–1998.

There are other numerous empirical analyses concerning endogeneity issues and the verification of individual Post-Keynesian approaches. It is worthwhile here to mention, among others, the results reported by Thomas I. Palley[25] for the US data for the years 1973–1990, which confirmed the arguments presented by structuralists. Similar results were obtained by Deba R. Rath[26] for India for the years 1970–1997. Kevin Nell[27] described a

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[21] R. Pollin, op. cit.

[22] M. Seccareccia, Pricing, investment and the financing of production within the framework of the monetary circuit: some empirical evidence, in: L.-P. Rochon, S. Rossi (eds.), *Modern Theories of Money: The Nature and Role of Money in Capitalist Economies*, Cheltenham 2003.

[23] P. Howells, K. Hussein, The endogeneity of money: evidence from the G7, *Scottish Journal of Political Economy* 45(3), 1998.

[24] G.M. Caporale, P.G.A. Howells, Money, credit and spending: drawing causal inferences, *Scottish Journal of Political Economy* 48(5), 2001.

[25] T.I. Palley, Competing views…

[26] D.P. Rath, Does money supply process in India follow a mixed portfolio: loan demand model?, *Economic and Political Weekly* 34(3–4), 1999.

study for South Africa covering the years 1966–1997, in which he proved the endogenous creation of money in line with the postulates of horizontalism, structuralism, as well as the liquidity preference approach. Alfonso P. Vera[28] carried out analyses for Spain between 1987–1998, confirming the approach adopted by the horizontalists and structuralists. Bala Shanmugam and his team[29] analysed the situation in Malaysia in the years 1985–2000 and proved the significance of the liquidity preference approach and the accommodative approach. Research for Pakistan covering the years 1980–2003 was conducted by Naved Ahmad and Fareed Ahmed.[30] It followed from it that in a short time (up to 18 months) the arguments of structuralism and liquidity preferences, as well as partly those of horizontalism, can be confirmed. In the long run, however, money becomes exogenous and the central bank regains its influence on the size of the money supply. The endogenous nature of money for Russia in the years 1995–2004 was proved by Julia Vymyatnina.[31] Atilla Cifter and Alper Ozun[32] analysed the data for Turkey for the years 1997–2006. Their results confirmed partly the horizontal approach but differed from the structuralist approach or the liquidity preference view. The Post-Keynesian mechanisms for the G7 (apart from France and Japan) in the years 1980–2003 were proved by Yannis Panagopoulos and Aristotelis Spiliotis.[33] A similar study for the G7 covering the period 1973–2007 was reported by Zatul E. Badarudin et al.[34] who concluded that in the long term the money supply is of an endogenic nature, but in the short time the central banks in some countries are still able to intervene. Jafar Haghighat[35] described a study for Iran for the years 1968–2009. The tests turned out to be in line with the Post-Keynesian theory of the endogenous nature of money. Sabri Nayan et al.[36] presented the results achieved for 177 countries for the years 1970–2011, which also confirm the Post-Keynesian concept of the endogenous nature of money. Saud Almutair[37] analysed the situation of Saudi Arabia in the period 1997–2015. He confirmed endogeneity, but only in the

[27] K.S. Nell, The endogenous/exogenous nature of South Africa's money supply under direct and indirect monetary control measures, *Journal of Post Keynesian Economics* 23(2), 2000–2001.

[28] A.P. Vera, The endogenous money hypothesis: some evidence from Spain 1987–1998, *Journal of Post Keynesian Economics* 23(3), 2001.

[29] B. Shanmugam, M. Nair, O.W. Li, The endogenous money hypothesis: empirical evidence from Malaysia (1985–2000), *Journal of Post Keynesian Economics* 25(4), 2003.

[30] N. Ahmad, F. Ahmed, The Long-run and short-run endogeneity of money supply in Pakistan: an empirical investigation, *State Bank of Pakistan – Research Bulletin* 2(1), 2006.

[31] Y. Vymyatnina, How much control does Bank of Russia have over money supply?, *Research in International Business and Finance* 20(2), 2006.

[32] A. Cifter, A. Ozun, The monetary transmission mechanism in the new economy: evidence from Turkey (1997–2006), *South East European Journal of Economics and Business* 2(1), 2007.

[33] Y. Panagopoulos, A. Spiliotis, Alternative money theories: a G7 testing, *Journal of Post Keynesian Economics* 30(4), 2008.

[34] Z.E. Badarudin, M. Ariff, A.M. Khalid, Post-Keynesian money endogeneity evidence in G-7 economies, *Journal of International Money and Finance* 33, 2013.

[35] J. Haghighat, op. cit.

[36] S. Nayan, M. Ahmad, N. Kadir, M.S. Abdullah, Post Keynesian endogeneity of money supply: panel evidence, MPRA Paper, 2013, No 48716.

[37] S. Almutair, The endogenous money hypothesis: an empirical study of the Saudi Arabia, *International Journal of Social Science and Economics Invention* 1(3), 2015.

long term. The relevance of the accommodative and liquidity preference versions has been proved by Emad O. Elhendawy[38] for the Egyptian data covering the years 1990–2014. Oguzhan Cepni and Ibrahim E. Guney[39] presented the results for Turkey for the years 2006–2015. In their opinion, the data presented confirm the horizontal approach, both in the short and the long term.

V. CONCLUSIONS

The concept of the endogeneity of money embedded in the heterodox economics view of the functioning of the economy is one of the distinguishing features of Post-Keynesianism, making it different from the mainstream economics. However, also Post-Keynesians, differ from one another with regard to certain aspects of the process of the endogenous creation of money. Particularly fierce discussions continued for many years between the supporters of the accommodative and the structuralist approach. The whole debate, often very emotional, has brought little to the final resolution of theoretical doubts. At the same time, it severely damaged the position of Post-Keynesianism, whose research programme was found to be rather inconsistent. This weakened the role the Post-Keynesian economics message and undermined its importance in serious scientific discussions.

This unfavourable situation for Post-Keynesians, exacerbated by continuous discussions between representatives of competing approaches in scientific literature, finally gave an impulse for the development of a generalised theory of endogenous money, which combined the theoretical proposals of horizontalism and structuralism. Such attempts of this type were presented, among others, by Pierre Piégay,[40] Giuseppe Fontana[41] and Mark Setterfield.[42] Unfortunately, these efforts remained virtually unnoticed not only by economists of neoclassical provenance, but also by many Post-Keynesian economists. As a result, the theory of endogenous money creation, which is a pillar of the Post-Keynesian research programme aimed at the mainstream economy, seems to be its great weakness. This is one of the reasons why critics of Post-Keynesianism believe that it is not a convincing alternative not only to the concept of the exogeneity of money based on the

[38] E.O. Elhendawy, Money supply – exogenous or endogenous? An empirical evidence from Egypt, *International Journal of Economics, Commerce and Management* 4(2), 2016.

[39] O. Cepni, I.E. Guney, Endogeneity of money supply, *Journal of Finance and Banking Studies* 6(1), 2017.

[40] P. Piégay, Post Keynesian controversies on endogenous money: an alternative interpretation, in: L.-P. Rochon, S. Rossi (eds.), *Modern Theories of Money. The Nature and Role of Money in Capitalist Economies*, Cheltenham 2003.

[41] G. Fontana, Post Keynesian approaches to endogenous money: a time framework explanation, *Review of Political Economy* 15(3), 2003; idem, Rethinking endogenous money: a constructive interpretation of the debate between horizontalists and structuralists, *Metroeconomica* 55(4), 2004.

[42] M. Setterfield, An essay on horizontalism, structuralism and historical time, Trinity College Department of Economics Working Paper, 2014, no. 14-02.

quantitative theory but also to the concept of endogenous money which is currently being developed by the mainstream economics within the model of a new neoclassical synthesis.[43]

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Summary

One of the pillars of the research programme of heterodox Post-Keynesian economics is the endogenous creation of money supply, according to which the amount of money in circulation automatically accommodates to the needs required by economic agents. Ensuring an adequate supply of funds is the role of commercial banks that create credit money *ex nihilo*, while monetary authorities are responsible for providing commercial banks with money reserves that guarantee the continuity of lending, and thus the process of the production and exchange in the economy. While the Post-Keynesians agree on the endogenous nature of money supply, not all of them perceive the role and operation of the central bank aimed at meeting the demand for reserves required by commercial banks in the same way. As a result, four Post-Keynesian interpretations of this issue emerged: horizontalism, structuralism, an interpretation from the monetary circuit perspective and from the liquidity preference. The purpose of this article is to present these approaches and to indicate the differences between them and the mainstream economics, as well as among themselves. The impact of such heterogeneity of views on the coherence of Post-Keynesianism and the ability of the school to create an alternative to neoclassical orthodoxy is also emphasised.

[43] The new neoclassical synthesis is based on neoclassical assumptions. Therefore, although it abandoned the idea of exogenous money in favour of its endogenous character, it remained a neutral means of exchange, which in the long run has no impact on the level of production and employment. What is more, it is recognised here that the endogeneity of money is a temporary and reversible phenomenon. In a changing economic environment, central banks could – if necessary – resign from setting interest rates and return to the policy of shaping monetary aggregates. The interest rate, in turn, is the price that equilibrating the demand for and the supply of money. Money is therefore treated like any other good – the surplus of its supply will bring down the price, and the surplus demand will cause a price increase.