SECTION 31. Economic research, finance, innovation, risk management.

**SCIENTIFIC AND THEORETICAL BASES OF FORMATION OF MONEY MASS**

**Abstract:** The article is devoted to the theory of the formation of money supply, its methodological foundations. The dynamics of changes in the money supply was studied as a result of the formation of monetary policy in the practice of Uzbekistan and the theoretical aspects of electronic money that may affect the change in the mass of money.

**Key words:** money supply, money demand, supply, inflation, electronic money, dollarization.

**Language:** English

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**Introduction**

In Uzbekistan, trends in the circulation of money circulation are closely linked to the amount of money in cash and cashless form. Including, the Decree of the President of the Republic of Uzbekistan "On additional measures to improve the mechanism of payment of salaries, pensions, allowances and stipends" of February 2, 2017, has clearly defined the structure of payments that are to be made in cash. According to him, all types of pensions, employees of budget organizations in remote and remote regions will be provided with wages, social payments, and scholarships for students at least 50% in cash. In our opinion, this situation can be explained by the fact that all service points are not fully equipped with terminals, the volume of coverage of remote banking services, and preferring the cashlessness of the population to non-cash. The formation of the above case can also be seen in some figures. For example, in 2017, the share of cash flows in circulation was 62%, while the proceeds from sales and paid services accounted for 14% of tax, communal and other mandatory payments [17]. As it is seen, the bulk of cash is formed in economic relations, which are related to the daily needs of the population. Accordingly, the main (2/3) of the cash flows of commercial banks in the country corresponds to the share of wages and social payments. At the same time, in order to prevent the outflow of cash, it requires not only in Uzbekistan but also in all countries. From this point of view, it is important to make the reforms aimed at the transformation of cash into cashless economic relationships. In particular, we believe that it is necessary to form an electronic payment system and to increase the coverage of the population in the country. As a result of the reforms and changes in the sphere of monetary policy in 2017, the monthly growth rate of money money increased from 1-1.6 percent to 2.7-3.1 percent. At the same time, the balance of banks' loan portfolio grew by 32 percent (10 trillion soums) and money supply by 15 percent [17]. In our opinion, such a sharp increase in the money supply in 2017 has had a significant impact on two factors: firstly, the significant increase in the microcrediting practices by the banks and a large share of this loan portfolio, and second, the Resolution of the President of the Republic of Uzbekistan No. PQ-2753 acceptance.

**Literature review**

In general, a number of scientific studies have been carried out to make money circulation and to generate money, and scientists have made conclusions. Some of them can be viewed below. I.Ya. Kulliev pays special attention to the peculiarities of interest rate policy in regulation of monetary circulation and inflation processes. He also examined some aspects of the Central Bank's monetary policy and made conclusions based on research [10]. F.A. Allayarov gives conclusions on the role of flexibility of money supply to GDP in...
In determining the demand for money, it tries to substantiate the lack of methodology for the evaluation of GDP. When determining the amount of demand for money, it is expedient that one (1) be taken as a criterion of elasticity ratio to GDP. For example, if the coefficient above 1 means an increase in the money supply in the economy, the value of 1 would be the opposite. On the other hand, the coefficient equal to 1 indicates a stable state [1]. In our opinion, the above two studies indicate the need for inflation targeting and demand for money, taking into account the elasticity of GDP. Also, the activity of the Central Bank plays an important role in regulating the money supply in the country. In this regard, the Central Bank pays special attention to the regulation of money supply using its monetary and credit policy. The rate of money circulation affecting the money supply and the value of products (works, services) in the period examined are considered as the major factors. Nevertheless, a number of scientists note that the monetary policy of the Central Bank has its significant influence. In particular, the state is a key asset in ensuring the stability of the "money" economy in the country. Therefore, in order to regulate the money supply, the state ensures the fulfillment of its economic obligations using its credit, fiscal and other administrative institutions [13]. I.A. The Somua highlighted monetary and credit policies as one of the factors affecting money supply. In particular, monetary and credit policy is a major factor affecting macroeconomic stability, reflecting changes in refinancing rate, mandatory reserve requirements, exchange rates and open market operations. On the other hand, believes that price dynamics can help create conditions for long-term growth [15]. In his research to improve the monetary policy management mechanism, E. Suakalo considers that mandatory reserve requirements appear as an important institutional of monetary policy. The analysis notes that the change in the reserve policy reflects the tendency of money supply. Therefore, it recommends banks to use the factor of compulsory reserve in the regulation of lending practices, thereby positively influencing the money supply. The researcher also points out that, in some respects, the decrease in the supply of money by the Russian bank in 2010-2015, and secondly, tanyach interest rates are diminishing. Therefore, it is pointed out that there is a regulating feature in monetary policy. As a result, the decrease in the money supply was observed in the analyzed period [14]. VKomkov believes that the change in the money supply is directly related to the money multiplier and the monetary base and represents it with the formula [8]:

\[ \Delta M_2 = k \times \Delta B + B \times \Delta k \]

Here, \( \Delta M_2 \) – growth of money supply, \( k \) and \( \Delta k \) – absolute size and growth of money multiplier, \( B \) and \( \Delta B \) – the size and growth of the monetary base.

In general, a number of scientific studies have been carried out to regulate the money supply. Their differences are explained by the different approaches to the cash money, such as the need for money in the first place.

I-line Money demand theory:
1. The theory of quantitative monetary theory (I. Fisher).
2. Keynes model (DjM. Keynes).
   Post-parity theory:
   a) Investigating the elasticity of money in the volume of interest rates (J. Leydler);
   b) "Portfolio Analysis": Optimization of Assets, Creation of Private Assets (Dj Tobin).
4. Keynes-neoclassical synthesis:
   a) The theory of efficiency a. P. Pigu;
II line Money supply theory:
1. The theory of credit: the continuity of the money offer (the Central Bank fully monitors the money supply) (J. M. Keynes).
2. The theory of money multiplier is defined on the basis of a competitive selection of commercial banks on "deposit-reserves" and non-banking sector "Liquid Funds" (G. Torton, DjJordan, K. Brukker and others).

Chapter III Money and Real Sector Interaction:
1. Neoclassical approach: Neutralization of money in market economy (Dj St Mill).
2. Keynesian Approach: Money runs in the economy and is influenced by the percentage of investment interest (J. M. Keynes).
3. Efficiency of real cash balances: cash flows in other markets are provided through real cash balances (D. Patinkin).

IV direction Econometric Route: Money supply and demand are analyzed through interest, income and accumulated wealth.
1. Availability of "standard" equity demand (S.Goldfeld)
2. To prove that there is no demand equation for money (Dj.Entsler, L. Johnson, Dj.Paulus, D.Leydler)
3. Econometric research on money supply (K.Naftberson).
### Impact Factor:

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<th>Country</th>
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<td>ISRA (India)</td>
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### Money supply indicators [23]

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| 1. | Monetization coefficient of the economy:  
  \[ m = \frac{M^2(2M^2X)}{Y} \]  
  \[ M^2 (2M^2X) \text{ – monetary aggregate } M^2 \text{ or } 2M^2X; \]  
  \[ Y \text{ – gross domestic product.} \]  
  \[ m \geq 20 - 30 \% \] |
| 2. | Dynamics of share of assets of the banking system relative to the level of monetization  
  \[ (A_1 / A_0)100\% \]  
  \[ M^{2X} / M^{2X_0} \geq 100\% \] |
| 3. | Money supply and monetary aggregate change  
  \[ \Delta M^2 = \Delta Y + \Delta P \]  
  \[ \Delta M^2 > \text{inflation} + 10 \% \]  
  \[ 10 \% \text{ - The upper limit of GRP growth} \] |
| 5. | The ratio of money and interest rates to the real sector  
  \[ i < r_a < P \]  
  \[ P \text{ – economic efficiency; } r_a \text{ – loan interest rate; } r_i \text{ – interest rate on deposits; } i \text{ – inflation rate} \] |

### Research Methodology

The research will be based on a selection of scientific literature and research materials. Special attention is paid to scientific literature created by local and foreign scientists. In the case of Uzbekistan practice, comparisons of statistical data are analyzed for many years.

### Central Bank’s Role in Regulation of Money Mass

In general, the mechanism of impact on money supply through monetary policy can be seen in the experience of many countries. For example, the monetary policy of the economically developed countries is reflected in three criteria by the central banks. This, first of all, is aimed at strengthening the strategic (long-term) political and economic position, which is reflected in the Central Bank laws. Secondly, it is envisaged to implement the same fiscal year, covering the current and medium term. Thirdly, it is intended for operational purposes.

From the second half of the 20th century, trends of change in money supply began to accelerate. The essence of this process is that there is a change in the money mass relative to the private sector, not with the central banks. This tendency is conditioned by the emergence of an innovation in the financial sector. In particular, the following can be included:

- creation of banks’ capacity to accelerate the bank’s passive management strategy, as well as to further increase the value of assets;
- The development of securitization through the use of other loans on the portfolio of existing loans;
- formation of credit lines between financial institutions;
- acceleration of activity of leading central banks as the last lender.

Table 2 shows the economic policy objectives of Central Banks of developed countries:

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<tr>
<th>Authorized Government Authority</th>
<th>The strategic objective of economic policy</th>
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<td>U.S. FZT</td>
<td>Maximum employment is a productive activity aimed at maintaining sustainable prices and interest rates in the long term</td>
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<td>Canadian bank</td>
<td>Achievement of economic results based on small, sustainable and predictable inflation</td>
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<tr>
<td>The British Bank</td>
<td>Sustainability in money (price stability and national currency) and financial (identification and reduction of negative effects on the financial system)</td>
</tr>
<tr>
<td>French bank</td>
<td>Achieving the stability conditions of the general framework set out in the Maastricht Treaty within the Euro Area</td>
</tr>
<tr>
<td>German Bundesbank</td>
<td>Achieving the stability conditions of the general framework set out in the Maastricht Treaty within the Euro Area</td>
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Italian bank
Achieving the stability conditions of the general framework set out in the Maastricht Treaty within the Euro Area

Japanese bank
Ensuring price stability and development of the national economy and the continuity of settlements between banks and financial institutions

Source: Elaborated by author based on research.

The following tendencies can be observed in regulating money supply through monetary policy:
- Increase of base interest rates by the established maximum rate means the reverse proportional change in the mass of money;
- slow change in the base interest rates does not allow increasing the rate of money supply growth;
- insignificant decline in interest rates and long-term growth will allow stabilization of money supply;
- sharp change in the base interest rates leads to a significant increase in the money supply.

In our opinion, the monetary policy carried out by the Central Banks influences the change in money supply. In particular, compulsory reserve rates, interest rates, and so forth have been reflected in scientists’ conclusions. For example, tanyach can see an important role in the formation of monetary aggregates, such as interest rates fluctuations or GDP elasticity.

Analysis and results

The relationship between the levels of inflation and the money supply has been proven by a number of Russian scientists. In particular, S. Yu. Glazev [4], V. E. Krolivetskaya [9], p. R. The works of Moissev [12] are among them. A.S. Loleyt focuses on a number of factors in the fight against inflation. In particular, limiting growth in money supply, stability of the exchange rate, and a reduction in public debt result in a significant impact on the size of inflation [11]. In our view, the increase in the money supply creates a long-term inflationary nature, resulting in proportionally the rise in prices for the economy. However, the impact on the purchasing power of money is shaped by inflation, but the basis of the issue is closely related to the tendency of change in money supply. Taking this into account from the neo-classical point of view, it reflects the rise in the price of money through the normalization of the money supply and ultimately inflation. This is due to the fact that interest rates are noelas tic and that there is an inadequate equilibrium in the economy. Particularly, it is important to say that M. Friedman believes that the growth of the gross domestic product by three percentage points may increase the mass of money by 1 or 2 per cent [18].

For example, in the context of the consumer price index in Uzbekistan, the inflation rate for food products grew by 15.9 percent and services by 8.6 percent. This, of course, has led to the increase in cash flow in circulation. In general, the level of inflation in 2017 was 14.4 percent [17], an increase of 8.7 percentage points over the same period in 2016.

Source: Data for www.cbu.uz.
Fig.1. Dynamics of the Balance of Money and Money Mass Deposits to the Economy in 2017, trln. soums
It is worth noting that the money supply has changed significantly from December 2016 to August-September 2017. In October-November we can see that the money supply has slightly decreased. One of the main reasons for this is that the Central Bank's refinancing rate was increased from 9 to 14% by June 28, 2017, which resulted in a decrease in credit investments, which contributed to the reduction of the money supply directed by the commercial banks to the economy. Secondly, in order to regulate the money supply trend, the Resolution of the President of the Republic of Uzbekistan №PP-3272 dated 13 September, 2017 "On Measures for Further Improvement of Monetary Policy" was adopted. As a result of the measures taken, the reduction of money supply was achieved. However, the inflation rate has increased.

On the basis of the analysis, it is possible to notice that in February there was a sharp increase in cash flow in circulation. After that, by the end of September, we see a rising share of cash in cash. In our view, the cash flow trend has been influenced by a number of measures (see Figure 2)In particular, with the adoption of the Decree of the President of the Republic of Uzbekistan of 2 September, 2017 "On priority measures on liberalization of the monetary policy", the process of official sale of foreign currencies by the banks started. With the entry into force of this decree, the devaluation of the soum appeared in the country. In particular, on September 2, 2017, with the implementation of the document, the exchange rate of the Central Bank of the Republic of Uzbekistan increased from USD 4210 to 8100 soums. This, in turn, has given the opportunity to limit the currencies to "informal" exchange and take measures to eliminate them. As a result, as of September 14, 2017, the population will receive US $ 200 million. As of today, November 15, 2017, this figure has increased by almost eight times and made up 1.5 billion soums to the banks. (26) (other foreign currencies are not included). First of all, it is connected with the fact that the US dollar exchange rate against the soum is equal to the "unofficial" rate, and secondly, in paragraph 9 of the Decree 5177 on the prevention of illegal circulation of cash foreign currency and illegal foreign exchange operations in the territory of the Republic of Uzbekistan and that it is closely linked to the implications of impressive measures. At the same time, taking into account the illicit trafficking of foreign currencies and other illegal actions, the hidden economy in Uzbekistan comprised 50% of the GDP by the Deputy Minister of Economy M.Mirzaev on January 11, 2018 [27]. Yu.N. Haritonova pointed out that monetary system development in the Russian Federation is based on monetary theory. In 2012, the money supply increased by an average of 28 percent, and this figure was 13 percent in the United States. In industrialized countries, there is a high rate of cashless cash outflows. In particular, Russia has 11.9 percent of GDP, with 6.6 percent in the US, 5.3 percent in Mexico and 5.2 percent in Brazil [19].

Modern trends in the change of money supply

Today, as a result of the development of innovative technologies, there is a tendency of changes in cash circulation. In fact, the mutual relations between the population and the people are carried out in cash. Nevertheless, the development of cash flows through the use of technical means and computing software in cashless manner is evolving.

It should be noted that the demand for cash still remains in developed countries. In developing countries, the demand for cash is much higher. For example, in Uzbekistan, the tendency towards the supply of agricultural products without a legal entity is noticeably improved. This, in turn, means that the supplier of agricultural products - the population will accept payments in cash and will require cash in circulation.

In our opinion, the mass of money is influenced by three factors. They can be seen below:

- formation and development of electronic money;
- development of cashless payments between physical entities;
- increasing the level of coverage of the economy by foreign currencies.

At the moment there is an unbalanced amount of cash. In particular, electronic money is reflected in formal, functional and institutional aspects.

1. Official features of electronic money:
   - Conditional non-material appearance;
   - Anonymize the possession.
2. Functional Features:
   - The main feature is the means of payment, savings and value measurement;
   - Availability of security in its disposition.
   Institutional Features:
   - participation of a third party in payment;
   - it can introduce not only credit institutions, but also business entities;
   - electronically stored in technical software systems;

It should be noted that the emergence of loyal-savings cards (electronic money), introduced by many companies, especially in the 21st Century, represent a new stage in regulating the money supply. In particular, coordination of money circulation, based on the value of commodities and services, means that complicated by the impact of electronic money.

In particular, the essence of this issue can be understood from the point of view of institutions responsible for them. It is necessary to take into account that Central Banks is usually responsible for
cash in circulation, and that for crediting cash, credit institutions are also responsible. Free implementation of electronic money not only by credit institutions, but also by other business entities reflects responsibility for their responsibility.

It can be said on the basis of the research that cash money is equivalent to cash on its own, but electronic money can not function as a money-maker, but as a payment instrument for its issuer.

Approaches to the scientific and theoretical aspects of electronic money reflect the bilateral views of foreign scientists. For example, S.V. Afonina relies on banks’ cards and shows VISA cards as an example [2]. O.I. Lavrushin considers credit repayment with withdrawal of money from his bank account via payment, credit and debit bank cards [5]. S.Says explains that payments from bank cards arise from services such as telephone banking, internet banking, etc. [25]. Ch. Fridman notes that the use of bank cards through computers or other mobile devices [24]. V.A.Chelnokov can be used as electronic money not only for bank cards, but also for electronic payments, all electronic payments [20]. A.N. Sharing claims that electronic money is connected to bank cards [22].

In the aforementioned research, e-money is meant to be used to make cash flows on the bank card through the possibility of connecting to various technical devices online. In our opinion, it will be more expedient to say that the Central Bank will be able to electronically manage the money emitted officially. The reason is that cash is stored in cashless bank plastic cards and, as a result, the development of information technologies will result in the use of various electronic media and software. Another group of scientists describes their scientific approaches to electronic money and non-cash money. In particular, A.Valinurova considers the bank cards as a means of remote access to the customer's bank account. They stress that they serve as a means of storing cash [3]. VV Vlasov believes that payment cards, internet banking tools, are the only real money available in bank accounts [16]. SV Ovsekko explains that bank plastic cards serve as an "electronic wallet" as an effective means of managing bank accounts. AA Shangin notes that electronic money does not appear on debit or credit cards, but bank cards provide information on customer's balance of money on real money, while electronic money provides information on purchasing power [21]. On the basis of our research, we can say that electronic money is an electronic form of payment that can be used as a means of payment for an emitter that is not stored on a bank card, a cash-settler, value-savings and savings function. The Russian scientist M.E.Isayev said that electronic money was partially fulfilled by the money savings function, and no interest rates were paid to it, therefore it highlights the high risk in this process [7].

E.I.Dudikova explains the inclusion of electronic money into money mass (M1 aggregate) in two cases: If the supply of electronic money is not fully backed up, the difference between electronic money and deposited cash assets will be included in the money supply:

- if the money supply is fully stocked, the money deposited to cover electronic money will not be included in the money supply.

At the same time, it reflects the growth trends in the number of electronic money transactions and their size. For example, in Russia, electronic payments made up $ 594.70 million in 2013, reaching 1223.19 million in 2015 and, accordingly, the volume of operations amounted to 661.5 billion soums. from the ruble to 911.8 billion rubles [6].

In our view, the level of coverage of the national economy by foreign currencies, in other words, the occurrence of the dollarization is determined by the fact that the national currency functions are executed by the US dollar. For example, it can be explained by the fact that the national currency covers all of its functions, such as payment, transaction instrument, savings and value measurement. In some cases, these functions are not fully covered.

Also, as a result of the level of the national economy, there are a number of negative tendencies, which we can include:

- Increased dependence of inflation in national currency on inflation and foreign currency exchange;
- Changes in demand for money, first of all, increase of sensitivity of money demand on exchange rate changes, and, secondly, increase of elasticity due to interest rates;
- The decline in the effectiveness of the central banking management in the monetary sphere, including the failure to maintain the dynamics of deposits in foreign currency;
- "unofficial" increase in demand for foreign currency for foreign trade activities.

**Conclusion**

There are different approaches to the formulation of the money supply, one of which is the need for money and supply, which is the emergence of inflationary processes. Given that our age is an information age, such factors as electronic payment and the introduction of electronic money reflect new trends affecting money supply.

At the same time, the government's response to the impact on money supply in the conditions of Uzbekistan is of particular importance. One of them is the expansion of the practice of giving social payments to the population in cash, along with factors such as the increase in the refinancing rate of
the Central Bank, the process of transition to inflation targeting.

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