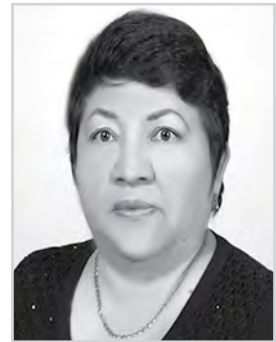**Ramzan Janshanlo**
D.Sc. (Economics),
Al-Farabi Kazakh National University,
Almaty, Republic of Kazakhstan
71 Al-Farabi Ave, Almaty, 050040,
Republic of Kazakhstan
ramazan1951@mail.ru

Gulsagat Andybaeva
PhD (Economics),
Turar Ryskulov New Economic University,
Almaty, Republic of Kazakhstan
55 Zhandosov Str., Almaty, 050035,
Republic of Kazakhstan
gulsagat.andybaeva@newuni.kz

Azhar Beysenbaeva
PhD (Economics), Associate Professor,
Al-Farabi Kazakh National University,
Almaty, Republic of Kazakhstan
71 Al-Farabi Ave, Almaty, 050040,
Republic of Kazakhstan
azhar.kakimovna@mail.ru

Methodological aspects of inflation management by example of Kazakhstan

Abstract
Inflation is a well-known phenomenon of social and economic life, but so far it has not been sufficiently explained. This is explained by the complexity and diversity of the problem, as well as the fact that the content of inflation evolves in time and space, depending on specific economic and political conditions. Therefore, there have been attempts to reconsider the phenomenon of inflation theoretically. Since inflation is a «subject» of the economy, after determining the object under study within a proper framework, we have established the nature of the problem, as well as the ways and mechanisms for inflation management.
The social conflict over the redistribution of social wealth has been highlighted as one of the root causes of the existence of inflation. At the same time there is a variety of factors determining the character of the flow of inflationary process that predetermines the need to examine the contents of inflation at the country level. According to this, an analysis of inflationary processes for the period of 1992-2014 was conducted in Kazakhstan, where a discrete model of the origin and development of inflation had been studied. Based on this model, a formula was derived connecting inflation, the growth rate of money supply and economic growth with regulatory aspects of the currency exchange rate. Inflation management involves the use of a set of measures helping to a certain extent combine price increases with the stabilization of revenues. At the heart of the proposed mechanisms of inflation management lies the factor-targeted approach which makes it possible to establish the relationship of anti-inflation, monetary and credit, fiscal and currency policies, to make projection of the inflation rate for the coming years taking into account the cyclical changes in prices by various factors.
Keywords: Money; Inflation; Monetary and Credit Policy; Inflation Management; Factor-targeted Approach
JEL Classification: A10; E31; E42; E61; C53

Джаншанло Р. Е.
доктор экономических наук, кафедра учета и аудита,
Казахский национальный университет имени Аль-Фараби, Алматы, Казахстан
Андыбаева Г. Т.
кандидат экономических наук, кафедра бухгалтерского учета, аудита и оценки,
Новый экономический университет имени Т. Рыскулова, Алматы, Казахстан
Бейсенбаева А. К.
кандидат экономических наук, доцент, кафедра учета и аудита,
Казахский национальный университет имени Аль-Фараби, Алматы, Казахстан

Методологические аспекты управления инфляцией на примере Казахстана

Аннотация
Инфляция – хорошо известный, и до настоящего времени недостаточно изученный феномен социально-экономической жизни. Это связано со сложностью и многогранностью проблемы, а также с тем, что содержание понятия «инфляция» эволюционирует во времени и меняется в пространстве, в зависимости от конкретных экономических и политических условий, в связи с чем предпринимаются попытки теоретического переосмысления феномена инфляции. Поскольку инфляция – это «субъект» экономики, то, как и при любых исследованиях, определен объект исследования, а затем в его рамках установлены природа, проблемы, пути и механизмы управления инфляцией. В качестве первопричины существования инфляции выделяется социальный конфликт, в основу которого положено перераспределение общественного богатства. В то же время демонстрируется многообразие факторов, непосредственно определяющих характер протекания инфляционного процесса, что предопределяет необходимость изучения инфляции на уровне государства. Это обусловило проведение анализа инфляционных процессов в Казахстане за период 1992–2014 гг., а также исследование дискретной модели появления и развития инфляции. На основании этой модели выводится формула связи инфляции, темпа роста денежной массы и экономического роста с учетом аспектов регулирования валютного курса. Управление инфляцией предполагает использование комплекса мер, помогающих сочетать рост цен со стабилизацией доходов. В основе предложенных механизмов управления инфляцией лежит факторно-целевой подход, позволяющий установить взаимосвязь государственной антиинфляционной, денежно-кредитной, бюджетно-налоговой и валютной политики, проводить прогноз темпов инфляции на ближайшие годы с учетом цикличности изменения цен по различным факторам.
Ключевые слова: деньги; инфляция; денежно-кредитная политика; управление инфляцией; факторно-целевой подход.

Джаншанло Р. Є.
доктор економічних наук, кафедра обліку та аудиту,
Казахський національний університет імені Аль-Фарабі, Алмати, Казахстан
Андибаєва Г. Т.
кандидат економічних наук, кафедра бухгалтерського обліку, аудиту та оцінки,
Новий економічний університет імені Т. Рискулова, Алмати, Казахстан
Бейсенбаєва А. К.
кандидат економічних наук, доцент, кафедра обліку та аудиту,
Казахський національний університет імені Аль-Фарабі, Алмати, Казахстан

Методологічні аспекти управління інфляцією на прикладі Казахстану

Анотація
Інфляція – добре відомий і в той же час недостатньо досліджений феномен соціально-економічного життя. Це пов'я-
зано зі складністю й багатогранністю проблеми, а також із тим, що зміст поняття «інфляція» еволюціонує в часі й
змінюється в просторі залежно від конкретних економічних і політичних умов, у зв'язку з чим робляться спроби спробу
теоретичного переосмислення феномена інфляції. Оскільки інфляція – це «суб'єкт» економіки, то, як і в будь-яких
дослідженнях, визначено об'єкт дослідження, а потім у його рамках установлено природа, проблеми, шляхи й механізми
управління інфляцією. Як першопричина існування інфляції виділяється соціальний конфлікт із приводу перерозподілу
суспільного багатства. У той же час демонструється різноманіття факторів, що безпосередньо визначають характер
протікання інфляційного процесу, що визначає необхідність вивчення змісту інфляції на рівні держави. З цією метою
нами проведено аналіз інфляційних процесів у Казахстані за період 1992–2014 рр., досліджено дискретну модель
зародження й розвитку інфляції. На підставі цієї моделі виведено формулу зв'язку інфляції, темпу росту грошової маси й
економічного росту в тісному взаємозв'язку з аспектами регулювання валютного курсу. Управління інфляцією припускає
використання комплексу заходів, що допомагають сполучити ріст цін зі стабілізацією доходів. В основі запропонованих
механізмів управління інфляцією лежить факторно-цільовий підхід, що дозволяє встановити взаємозв'язок державної
антиінфляційної, грошово-кредитної, бюджетно-податкової й валютної політики, а також прогнозувати темпи інфляції на
найближчі роки з урахуванням циклічності зміни цін за різними факторами.
Ключові слова: гроші; інфляція; грошово-кредитна політика; управління інфляцією; факторно-цільовий підхід.

1. Introduction. The phenomenon of inflation to a greater or lesser extent exists in modern economies of almost all countries. If we turn to the history of world economic development, then we notice that there are a few countries that managed to avoid inflation and did not experience the burden of struggle against it (Frisch, 1983).

Inflation has a devastating impact on the economy. High levels of inflation not only reduce the purchasing power of money but also undermine the possibility of economic regulation, nullify the efforts to implement structural reforms. Inflation is the main obstacle to the inclusion of the national economy into the system of international relations (Hahn, 1984; Ijiri, 1975).

The problems of inflation and financial stability occupy an important position in economic science because its indicators and socio-economic consequences play a significant role in assessing the economic security of the country and the world economy. The relevance of these problems in the current conditions is determined by the necessity to identify the essence, the underlying causes and the mechanisms for the development of inflation, the nature and characteristics of inflationary process, as well as by the need to improve financial management in the context of inflation and development of the main directions of anti-inflation policy in the country through the use of foreign experience.

2. Brief Literature Review. The following foreign scientists have studied inflation: M. F. Van Bred, D. Middleton, M. R. Mathews, G. Muller, M. A. Afanasiev, A. Belousov, R. Dornbusch, R. N. Evstegneev, A. Illarionov, G. Kolodko, Y. Kornai, M. U. Malkin, S. M. Nikitin, S. Pekur, Y. Rostowski, J. Sachs, V. V. Usov, S. Fischer, V. N. Shenaev.

The studies conducted by R. A. Alshanov, T. A. Ashimbaev, M. B. Kenzheguzin, K. A. Sagadiev, G. S. Seytkasimov, A. K. Koshanov, J. A. Kulekeev, N. K. Kuchukova, N. K. Mamyrova, V. D. Melnikova, N. A. Nurseit, A. D. Chelekbai can be attributed to the works considering the inflation in Kazakhstan.

Despite the fact that there is a large volume of information in scientific literature, dedicated to both inflation (its essence, mechanisms of occurrence, relationships with other macro variables of the monetary and real economy) and regulatory issues, comprehensive and systematic researches on the nature of inflation in the transitional system with regard to the objective features and the legitimacy of its evolution in the context of globalization of the world economy are not found. In practice, there are no approaches to the consideration of inflationary processes as dynamic phenomena, and its possibility of redistribution in time and space.

3. The purpose of this paper is to theoretically and methodologically substantiate and develop a comprehensive system of inflation management, contributing to financial stability of the Kazakhstani economy in conditions of globalization.

4. Results. Studies have shown that during the period from 1992 to 2014 the inflation rate was one of the defining elements of that socio-economic background, on which changes in the social structure of Kazakhstan occurred. A characteristic feature of 1992-1993 was the predominance of the impact of monetary factors on the development of inflation. Since 1994, the influence of such factors has reduced: there has been a significant increase in the money supply on the background of the deep slump in production, however, the inflation rate has declined slightly. Here, we can identify three specific periods. The first period is from January 1992 to mid 1994, when the inflation rate rose by almost 20 times and led to a decline in production by 13 percent. The peak gap of economic ties could be accounted for this period. In the second period (the second half of 1994) the stability of money supply was closely observed. The new condition, the so-called «expensive» money, was proposed to economic entities. The answer to this was the «evolutionary» inflation as economic entities tried to use this money to reach the former objectives – profitability and revenues. The third period occurred in 1995. The deep slump in production significantly narrowed the scope of business activities of each subject.

This forced the companies to keep a more restrained pricing policy, which reduced the inflationary potential of the economy. This trend can be traced up until 2015 (Table 1).

At the outbreak of the reform in Kazakhstan, few people knew about the properties, causes and consequences of inflation and how to fight it. Therefore, the debate on inflation and monetary and credit policy was under the pressure of numerous misconceptions. Some of them claimed that inflation in

Tab. 1: **Changes in inflation rate in the Republic of Kazakhstan, %**

Years	Inflation rate	Years	Inflation rate	Years	Inflation rate
1992	2,960	2000	9.8	2008	9.5
1993	2,165	2001	6.4	2009	6.2
1994	1,158	2002	6.6	2010	7.8
1995	60.3	2003	6.8	2011	7.4
1996	28.7	2004	6.9	2012	6.0
1997	11.2	2005	7.5	2013	4.8
1998	1.9	2006	8.6	2014	7.4
1999	17.9	2007	18.8		

Source: Developed by the authors according to data of the Agency of the Republic of Kazakhstan for 1992-2014

Kazakhstan was the result of the monopolization of the economy. Others argued that inflation had resulted from the price liberalization. Supporters of the monetary approach proceeded from the fact that the Kazakhstani inflation initially represents a typical, although in some ways a complicated case of demand inflation. Here is the determined volume of demand by the magnitude of the money supply. Mathematical methods seem to fully confirm this version, especially in the period from 1992 to 1994, when the inflation rate almost perfectly fit into the monetarist model with its stable three-month lag between money growth and price increases. However, there are ample reasons for the existence of cost inflation in Kazakhstan's economy.

To get a complete picture of inflation, we point to a number of circumstances that are purely of Kazakhstani specificity and act as a factor of rising prices. Nowadays, some parts of them are more relevant than the others. However, these factors shaped or continue to shape the picture of inflation.

Modern inflation is influenced by many factors. The first group includes the factors that cause the excess of money demand over the commodity demand, resulting in violation of the law of monetary circulation. The second group comprises the factors that lead to the initial increase in the expenses and commodity prices, supported by the further rise of money supply to their increased level. In reality, both groups of factors are intertwined and interact with each other, causing a rise in prices for goods and services, or inflation (Epstein, 2007; Christiano & Fitzgerald, 2003).

In addition, the factor of generating inflation is the current system of currency liberalization and associated with it dollarization of the economy of Kazakhstan. Foreign currency has been firmly established in the national channels of monetary circulation. It has entered and entrenched in the production, in price formation and, finally, in the most dangerous thing – in the domestic turnover. At present, the mass of dollars in cash circulation exceeds the mass of cash tenge (the currency of Kazakhstan) by 2.5 times.

The dollar exchange rate affects inflation, as well as other products for which prices are rising. This factor refers to the form of imported inflation. The dollars acquired in Kazakhstan contribute to the rise in prices of goods and services in the country and, therefore, require additional demand in tenge from enterprises, banks and the public.

The mechanism for importing inflation, which occurs with a decrease in the exchange rate of tenge is the main problem for Kazakhstan. The vulnerability of Kazakhstan's economy with respect to this mechanism is especially great because of the fact that half of the goods in the consumer market of the country are imported from abroad. The effect of this mechanism was clearly revealed in April 1999, and the culmination of that was the transition to a floating exchange rate.

On 11 February 2014 the National Bank of the Republic of Kazakhstan arranged «Black Tuesday» for the inhabitants of the country by having devalued the tenge. From that day, the regulator announced its intention to refuse to maintain the exchange rate of the currency at the former level, to reduce the volume of foreign interventions and reduce interference in the formation process of the exchange rate as a whole.

«In our country, imports grow faster than exports. To avoid such a rapid growth in imports, we have developed an adjustment of the exchange rate. We believe that the change of exchange rate by 20% and the achievement of the index of 185 tenge to one US dollar, plus or minus 3 tenge, is the equilibrium and competitive exchange rate, which is necessary for the Kazakh economy in the near future», said the Head of the National Bank of Kazakhstan. The Ka-

zakh authority believes that as a result of the exchange rate adjustment, there will be an improvement in competitive conditions for domestic goods and for entrepreneurs working in export and import-substituting sectors of the economy of Kazakhstan. The new currency rate can allow our producers to compete with representatives of the partner countries.

It should be noted that following the devaluation in 1999 the competitiveness of national manufacturers did not increase; the volume of imports has not changed: it remains as it has been before. This is due to the fact that the competitiveness of products depends both on the exchange rate and on other, more important factors. According to the logics of the authorities, Kazakhstan can join not only the Top 50 most competitive countries of the world, but also the Top 5 most competitive countries just by reducing the rate of tenge in relation to convertible currencies.

It should also be noted that in Kazakhstan the exchange rate of the US dollar has been increasing since January 2011. So, if in 2010 the National Bank of Kazakhstan bought $2 billion on the Kazakhstan Stock Exchange (KASE) in order to prevent excessive strengthening of tenge, then just in January and early February 2011 it bought $3 billion (one and a half times more than the annual volume in 2010).

Especially the US dollar began to rise from the beginning of 2012 and the trend continued until 5 February 2014. The same patterns of change in the dollar rate by the National Bank and the Stock Exchange (KASE) were almost the same (Fig. 1). It means that increase in dollar's exchange rate was due to currency intervention of the National Bank, connected with the purchase of US dollars.

This conclusion, of course, contradicts the statement issued by the National Bank, from which it follows that in order to maintain the tenge exchange rate in June-August 2013, the Bank sold $ 2.7 billion of the national reserve, and $ 2.2 billion in January 2014. However, there was a reason for such an action.

The trend of rising the world prices for oil and other Kazakhstan's export products has been observed for quite a long time. Accordingly, the inflow of dollars into the domestic market has been increasing too. This, in turn, has led to the fact that Kazakh tenge began to strengthen. However, the National Bank not only gave it a go, but also did more. By using the currency intervention, purchasing US dollars at the «KASE» stock exchange, it did not stabilize the falling exchange rate of dollar, but raised it up to 155.5 tenge.

The fact remains that the National Bank did not conduct currency operations to strengthen the tenge. In January 2014, the National Bank could not sell $ 2.2 billion to maintain national currency, because according to the «News-Kazakhstan» information agency, that month gold and foreign exchange reserves of the National Bank fell by 0.65% or 0.16 billion dollars and assets of the National Fund rose by 0.85% or 0.61 billion dollars.
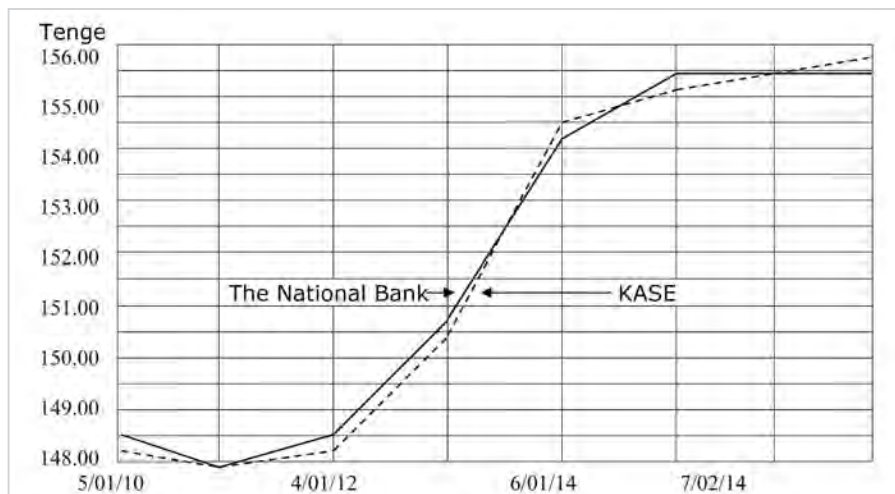

Fig. 1: **Dynamics of change in dollar's exchange rate**
Source: Developed by the authors according to the results of research

We should consider certain theoretical aspects of the currency exchange rate that prove the irrationality of the national currency devaluation. Many economists point out that the devaluation of the national currency has more negative effects than positive ones. In the short term, the artificial weakening of the currency is possible, but in the medium and long term the negative effects of such interference will dominate. The main negative effect is a long-term impact on the diversion of resources to the non-competitive sectors, which leads to a drop in value of investments and inefficient allocation of resources in the economy. Any kind of state support for business, expressed in the form of subsidizing, weakening of the national currency can create incentives for the development of inefficient enterprises or the postponement of their closure (Dornbusch, 1997; Mishkin, 1995).

To obtain the appropriate amount of foreign currency which is becoming «more expensive» in the context of the fall of the national currency rate, it is necessary to purchase another batch of imported goods, thus importers raise domestic prices. While maintaining the former rate of world prices for purchasing the required amount of dollars or Euros, it is necessary to gain (from the sale of previously purchased merchandise import) a greater amount of the national currency. As a result, domestic prices of imported goods increase (Hall, 2009).

If the trend towards devaluation of Kazakh tenge had a long-term nature, it would lead to the acceleration of inflation, which would affect the prices and hit the most vulnerable population groups. Residents of large cities, where developed network of large supermarkets mainly selling imported products are located, are the first to feel the «charm» of the growth of the dollar rate and the devaluation of tenge. The analysis of the domestic food market showed that the share of imported poultry products accounted for 49.1%; condensed and concentrated milk – 98.0%; butter – 65.5%; sausage products – 50.0%; sugar confectionery – 38.0%; flour confectionery products – 64.5%; canned vegetables – 88.4%. Moreover, more than 50% of imported products in Kazakhstan are brought from Russia (Smirnov, 2003).

Thus, there exist direct and revert links between the exchange rate of the national currency and fluctuations of domestic prices. The fall of the exchange rate of tenge pushes the price up, and the increased price, in turn, inevitably leads to the decline of purchasing power of the national currency and, accordingly, to the change in its exchange rate.

Neither in theory nor in practice, should there be a plan of devaluation of the national currency, i.e. an administrative schedule of decreeing prices in tenge for such goods as dollars and euros in a market economy (Weise & Charles, 2003; Pashkus, 1990). But the whole course of events confirms the authenticity of official intentions of the National Bank of Kazakhstan to plan the achievement of a unique record on the deliberate devaluation of money. This is a planned financial destabilization, besides the destruction of the economy of the state according to the schedule. However, in the current circumstances it turns out to be a reality. Moreover, the National Bank (the creator of the planned approach to the depreciation of the national currency) is contradicting the basic principles of modern market economy by trying to «scientifically» justify their «innovative» approach to the regulation of the currency market.

Firstly, there are unfounded declarations claiming that a strong tenge is killing the economy of the state. We emphasise that, there are no strong and weak currencies; from the perspective of political and economic science, there exist only more stable and less stable ones (Haslam & Lamberti, 2015). In this regard, there is another relevant question concerning the economy of dozens of countries such as Switzerland, Canada, South Africa, England where progressive development is inconceivable without maintaining relative stability of national currencies, namely without ensuring the stability in the monetary and financial sphere. Why are the economies of those countries not dead?

Secondly, those who determine the policy in the monetary and financial sector in times of crisis and only in times of crisis are not tired to prove a thesis, alleging the devaluation of the national currency is beneficial for exporters.

In such a situation, exports become more competitive with an increase in production and realization, the number of jobs and budget revenues, which recovers the economy. But if this is true for large, self-sufficient, diversified economies, then in the context of Kazakhstan, such assumption is impermissible. After all, in the structure of Kazakhstani export goods, a significant proportion is made up from imported components and raw materials. As a result, the momentary benefits of exporters will immediately be spent in connection with the increasing cost of production in the next production cycle, as there is being established a worse standard of price for production. In Kazakhstan, absolutely all producers of goods and services are both exporters and importers, who benefit from exports and inevitably lose from imports. Along with the assurances of the government that they are seeking to overcome the crisis, the economy of Kazakhstan is now at the stage of recovery, thus, we can assume that the devaluation of tenge may not be need.

There are non-monetary factors of inflation. The non-monetary nature of inflation could be explained with two reasons. Firstly, a sharp decline in the efficiency of using industrial potential, labour, and energy. Secondly, the incommensurability of price ratios formed under the influence of world and monopolistic prices, which leads to higher operating and capital expenses.

Methodology. The objective of targeted macroeconomic management is to achieve internal and external balance. Regulatory objectives are stated in Table 2.

The most important social objectives are to achieve full employment, reduction of unemployment, maintaining price stability by reducing the inflation rate on the basis of the comparable to the world average rate of economic growth. This could be seen as an element of the internal balance. The external side means maintaining such a balance of payments which may be financed by foreign capital inflows, ensuring exchange rate stability, which need not to be artificially maintained through foreign exchange intervention or currency restrictions.

There are two groups of economic policy instruments available for the state in order to achieve those objectives within the framework of an open economy. They are the demand management tools and the supply management tools. Demand management is considered to be the most effective macroeconomic policies and can be divided into policy changes and switching costs (Kireev, 1999) [12].

Also, there is a different approach to solving this problem originating from a different classification of inflation control tools. It shows that the government can use three basic types of policies to regulate the demand, which are monetary, fiscal and exchange rate policies. Foreign economic policy tools are particularly important for regulation under an open economy, so each of them can be regarded as an independent branch of economic policy (monetary policy, tariff policy, etc.) (Pashkus, 1990; Drucker, 2004).

Under the new conditions of increased vigilance on the part of the state, its readiness to respond quickly to the situation on the world markets in order to maintain macroeconomic equilibrium is required. In that regard, the role of fiscal, monetary and foreign exchange instruments of state regulation increases significantly. This regulation becomes a more complex art. It should be subtle and balanced to careless actions in any area which do not harm the economy. we recommend the following tools with regard to the fight against inflation (Fig. 2).

Based on the foregoing, the goals set by the Government, starting with macroeconomic regulation, can be described by

Tab. 2: **The objectives of macroeconomic regulation**

Internal balance	External balance
1. Full-time (2 … 3% friction unemployment)	1. Balance of payments equal to zero
2. Low inflation rate (2 … 3% per year)	2. Exchange rate stability
3. Acceptable growth	
4. Equitable distribution of income	

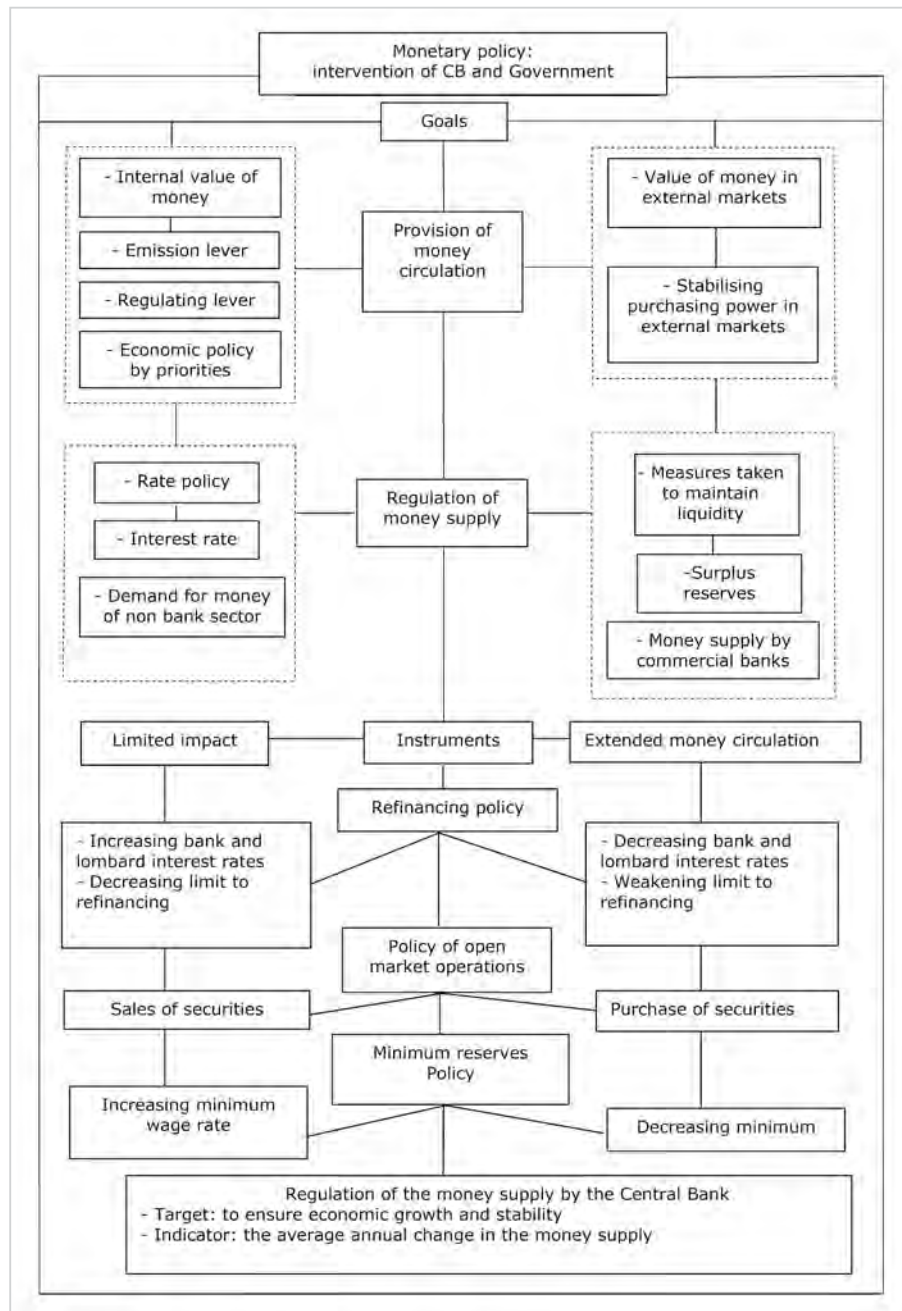Source: Developed by the authors based on [18; 20; 21]

Fig. 2: **Methods of inflation influencing through macroeconomic indicators**
Source: Developed by the authors

the model IS-LM-BP (Mundell-Fleming). The model IS-LM-BP is based on ideas expressed in the 30s and 40s of the twentieth century by J. Hicks and E. Hansen and subsequently developed by J. Fleming and Robert Mundell in relation to the international economy (Gerdesmeier, 2009) [7].

Inflation and the corresponding price changes lead to changes in the balance of payments. Inflation differentials across countries affect the competitive position of the goods and services involved in commercial transactions. In the countries with excessive inflation, there exists a trend towards increasing imports and decreasing exports. We can identify the changes in the balance of payments which occur because of the differences in levels of inflation as the components of the mechanism that affects the price level (MacDonald & Whitestone, 2012) [16].

There are two economic policy instruments that can be used to achieve the internal and external balance by simultaneously changing costs (budget increase or cut) and switching costs (devaluation or revaluation). To some extent, the use of certain instruments of economic policy depends on the order

in which a country is placed within segments of the Mundell-Fleming chart (Table. 2).

To a certain extent, target macroeconomic regulation must always be associated with the management of inflation. Inflation control is a type of management, in which there are certain ways to foresee dangers of inflation, analyse its symptoms and negative consequences and develop measures to reduce the rate of inflation.

The term «inflation management» is relatively new. It is believed that the reason for its occurrence is in the reform of the command economy and the gradual entry of the CIS countries into the zone of deflationary development. Only few expected that the reforms would cause inflation accompanying this process. Now many people realize that only a new type of control is able to pull the economy out of the state of inflation. After all, inflation, no matter how high it is, will pass someday. The history and experience of economic development of many countries proves this prediction. Does this mean that this type of control is temporary or is it based entirely on its pragmatic value? Why should we study it to create a scientific concept?

The practice of other countries shows that such problems are not solved separately. They need to be managed holistically.

Trends in the development of management science lead us to the need to develop the concept of inflation management. Its pre-conditions are the concepts of cyclic development of control, motivation and others. Their complex is an evidence of a real danger of inflation in any, even the most successful, type of management.

Inflation, as noted previously, is an objective process in the socio-economic system. This view is consistent with the understanding that the functioning and development of the socio-economic system is driven by human activities. The desire to manage inflation effectively stems from a desire to expand its activities in the monetary sphere of humanity, and to some extent it is possible. We can assume that in the future people will generally exclude inflation from the development of socio-economic systems, and the current inflation characterizes only the current level of human development, lack of knowledge and inadequate control. This assumption seems to be logical. But the evolution of society and the economy in all periods of human history suggests otherwise. Despite the «human nature» of inflation, it cannot be avoided. Moreover, in many cases it is the human nature of inflation that causes its origin.

As the socio-economic system is developed, the increasing role of the human factor in its non-inflationary development is observed. This means that inflation is neither excluded, nor fought against, but being held steady, timely and, where possible, with painless solution to the problem.

Non-inflationary growth is not an absolute absence of inflation, but the presence of such an inflation rate, which is the pulse of successful development (according to the interests of humans). Only a human may have purposes and interests. They are the basis for the recognition of inflation and elaboration of control methods to reduce it. They are the basis for the recognition of inflation and managing its reduction.

The problems of inflation management are vast and diverse. The whole set of problems can be divided into three groups.

The first group includes problems of recognition of inflationary situations. To timely see the occurrence of high inflation, detect its first signs, and understand its character is not a simple matter. Reduction of inflation depends on that, as well as on other factors. It is necessary to create and launch a mechanism for reducing inflation. And this is also the issue of governance.

However, not every type of inflation can be prevented, many of them have to be gone through and overcome. This is achieved by controlling. It solves the problems of life in the period of inflationary economy, promotes the release of the inflation situation and the elimination of its consequences.

The second group of problems of inflation control is related to the key areas of the economy. These are primarily methodological problems. In the course of solving them, the mission and the purpose of management are formed; the ways, the means and the methods of management in terms of the inflationary situation are identified. This group includes a range of issues of financial and economic nature.

Problems of inflation management can be represented with regard to the differentiation of control technologies. This is the third group of problems. It includes the most general form of the problem of inflation forecasting and possible behaviours of the socioeconomic system in an inflationary state,
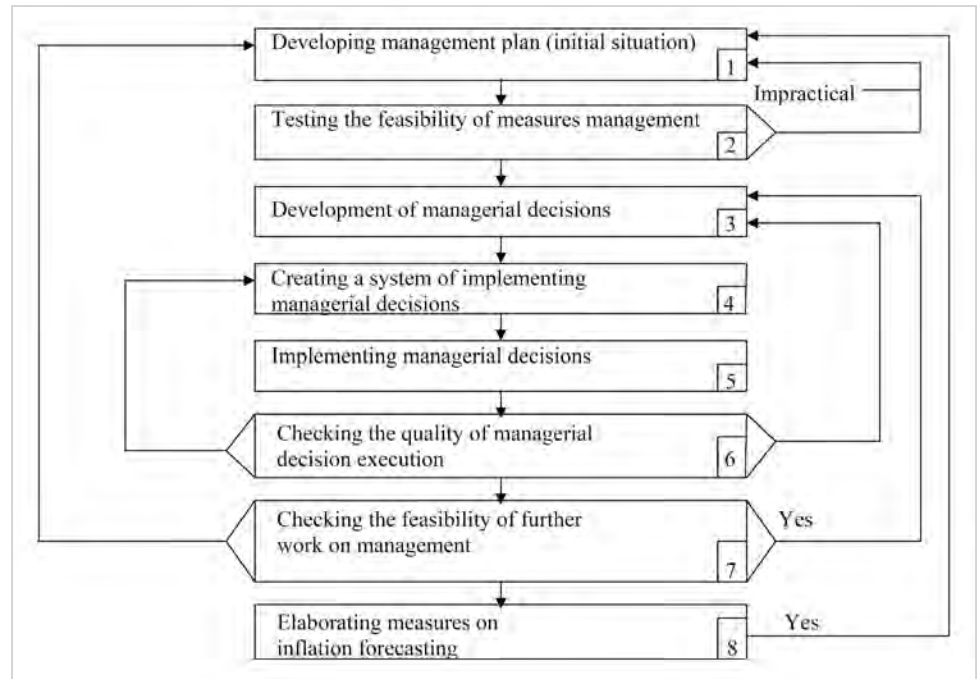

Fig. 3: **Block-diagram of inflation management technology**
Source: Developed by the authors

the problem of finding the necessary information and the development of management decisions. Therefore, the problem of analysis and assessment of inflationary situations are also important in the construction of the conclusions of any group of factors.

Inflation management, like any means of control, is characterized by a certain technological scheme. The specificity of inflationary pressure control reflects the specificity of its technology. This may have a significant impact on factors such as time pressure, weakening of manageability, conflicts of interest, a high degree of uncertainty and risk, complex interlacing problems, the pressure of the external environment.

Technological scheme of inflation management consists of eight blocks (Fig. 3). They characterize the reciprocating sequence of the various operations and their teams in developing and implementing management decisions and thus the best option to reduce the rate of inflation.

The essence of factor-oriented management is, firstly, to identify the key factors determining the essential parameters of the inflation flow, and, secondly, to address the determined factors to successfully achieve the goal. Hence, the nature of the effects can vary from a wide range of focused target short-term impacts on the «hot spots» to the application of a variety of complex, economic, organizational and other regulators to achieve financial stability, which are long flowing in time.

Unlike traditional approaches, factor-purpose management has a potential to more a realistic reflection of the inflation process, providing a thorough analysis of external and internal factors and their overall impact on the inflation process. An important advantage of the factor-target approach is to focus on strategic objectives, as well as on the desire to forestall adverse events or to weaken their effects on the initial stages of the emergence of inflation (Kenzheguzina, 2002) [14].

As one of the most promising approaches to the management of inflation we can use the methodology of factor-target regulation of the economy, developed by the Institute of Economics of the Ministry of Education and Science of Kazakhstan (Sachs & Larry, 1999; Fergusson, 2010) [19].

The system factor-target inflation management has a number of specific aspects of functioning. In this regard, it is useful to consider the basic concept of the methodology for developing approaches to the use of this system and its features.

The conceptual idea of the system of factor-target inflation management may be presented as a generalized scheme (Fig. 4), which reflects its main features such as the presence
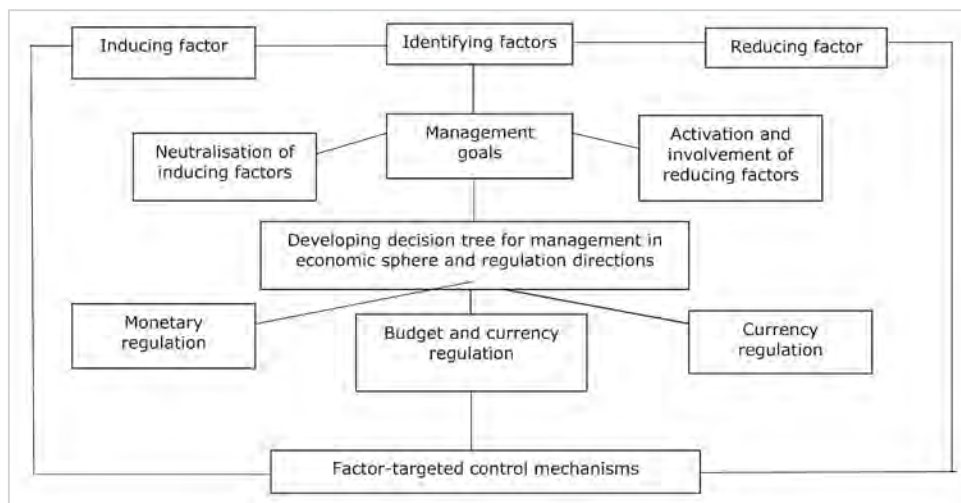
Fig. 4: **Diagram of factor-target inflation management**
Source: Developed by authors of the study

where:
IM – Import (million US dollars);
E – the nominal exchange rate (KZT / USD);
E_{xp} – budget expenditures (billion tenge);
MO – ready money in circulation (billion tenge);
D_{STB} – deposits in second-tier banks (billion tenge);
I_{REF} – the average refinancing rate (%).

5. Conclusions

One of the major methodological foundations of the factor-target management is to ensure the integrity and consistency of the internal logic of inflation control in the framework of this approach. Other basic postulates related to the use of the methodology of factor-oriented management include:

at the management stages of analysis, planning and implementation of measures on the basis of the factors determining its state, systematization (on a hierarchical basis) of the objectives of management and their close relationship with economic factors, on the one hand, and with measures of influence relevant to these factors, on the other.

A conceptual idea of the factor-target inflation management can be represented as a generalized scheme (Fig. 4) which reflects its main features – the presence of analysis at the stages of management, planning and implementation of measures on the basis of factors which determine its condition, based on a hierarchical structure of the objective control and its close relationship with economic factors, on the one hand, and the effects of these measures, on the other (Kenzheguzina, 2002) [13].

The factor-targeted approach has a great potential in the management of inflation and can be used in different countries. Due to its basis, we can forecast the inflation rate for the coming years by using the proposed multi-factor correlation and regression model:

$$\pi = 40,837 \, GDP^{1,255} \cdot IM^{-0,866} \cdot E^{-0,929} \cdot E_{xp}^{0,179} \cdot MO^{-0,113} \cdot D_{STB}^{0,205} \cdot I_{REF}^{0,468}$$
$$(R = 0,997; \, \varepsilon = 0,031 < 11,570),$$

- the proactive management based on preventive identifying factors that may affect inflation in the future;
- the development of management measures based on the need to affect the causes of inflation, rather than on the effects of these processes;
- structuring of factors of inflationary processes and the objectives of management focused on the allocation of priorities of economic policy and based on the principle of maximizing the impact of managerial actions;
- foreseeing of side effects of managerial measures with regard to other sectors of the economy and taking into account the effects of data in planning managerial activities;
- the complexity of the implementation of mechanisms allowing for the coordination and unity of action of different functional areas of management.

The anti-inflationary management cannot be considered as a goal itself. It is merely a tool to achieve a more important social goal – macroeconomic stabilization. Accordingly, macroeconomic stabilization itself means that the system generates its internal anti-inflationary immunity, the ability to dampen internal shocks and adapt minor structural changes without significant inflationary consequences.

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