# «ԼՂՀ (ԱՐՑԱԽԻ) 25-ԱՄՅԱ ՊԵՏԱԿԱՆՈՒԹՅԱՆ ՁԵՌՔԲԵՐՈՒՄՆԵՐՆ ՈՒ ԱՐԴԻ ՄԱՐՏԱՀՐԱՎԵՐՆԵՐԸ»

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## ՆՅՈՒԹԵՐԻ ԺՈՂՈՎԱԾՈՒ

# «25-ЛЕТИЕ ГОСУДАРСТВЕННОСТИ НКР (АРЦАХА): ДОСТИЖЕНИЯ И СОВРЕМЕННЫЕ ВЫЗОВЫ»

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## Խմբագրական խորհուրդ

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սարդական գիտաժողովի նյութերը:

В сборнике включены материалы международной молодёжной научной
конференции «25-летие государственности НКР (Арцаха): достижения и современные
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# THE ROLE AND NECESSITY OF FORECASTS IN THE MODERN TIMES OF ECONOMIC CHALLENGES

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The world economy continues to develop with disproportionate rates and under significant uncertainties, which obliges to assess the potential impact of possible risks and deviations from forecasts. Today we stand in front of such changes, without which it would be difficult to avoid serious economic challenges and to anticipate all the possible risks. The main directions for maneuvering the challenges are

• Active involvement in integration processes,
• The development of internal resources,
• Accurate macroeconomic forecasts.

In general, the forecasts of economic situation are important for several reasons. First, the existence of an efficient economy, ensuring economic growth and increasing incomes of the population are very important goals for economic policy. Macroeconomic predictions not only give the information about the accomplishment of the above introduced goals, but also provide overall imaginations about economic environment, which are important for the formation of government policy, strategy and other aspects. In other words, macroeconomic projections give a picture of the real environment in which it is necessary to operate[1]. The second major justification for economic forecasts is that the national economy has a great impact on the country's financial resources and thereby present a basis for assessing the risks associated with the possible increasing workload of the budget in the future. In general, the main purpose of prediction methods is  observation of the potential development of this or that event. The forecast is especially urgent for primary problems of countries and societies, systematic assessment of the current situation and for formation of ideas about future developments. Today forecasting problem is other: it supports the development of scenarios and the scientific justifications of decisions. There are different classifications of forecasts[2]. According to the duration of the forecasts, they can be operative (per year), short-term (1-5 years), medium term (5-15 years)

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[1] **Harutyunyan, G.,** about  making any forecasts, Yerevan, 2011, page 98.
[474] **Федотова Л.,** Анализ содержания – социологический метод изучения средств массовой коммуникации, Москва, с. 125.

and long-term (15 years or more). We can also differ searching and normative types of forecasts.

The essence of surveying forecast is that there are made judgements about potential developments of the research object, based on the study of its past and present.

The normative forecast assumes the definition of the necessary aims and means for the object's desired changing in the future. It is more common to separate two types of methods for prediction: experimental or intuitive and formal. Each of these has its own species.

1) Intuitive or experimental
- Individual (interview, the construction of scenarios, analytical records)
- Collective (brainstorming, commissions method, Delphi method, the target tree).

2) formal
- Extrapolation (simple extrapolation, the method of least squares, the method of averages, smoothing method, harmonic balance method, autoregression method)
- Structural (structural, imitative, network, statistical modeling methods, based on a regression equation, based on the equalization systems);
- Economic-mathematical methods (deterministic, linear-dynamic, nonlinear, stochastic (probabilistic) methods).

In RA and NKR are used intuitive methods of forecasting. In particular, personal interviews, expert-analytical methods and focus group discussions with experts (as well as brainstorming, commissions method; on the contrary almost not used Delphi method).

Of course, deeper and more comprehensive is investigated the present, the more accurate projections will be[1]. As the methodological basis of forecasting serves the principle that all events taking place in the world have some causal mechanism.

Thus, according to PwC research group "The world economic growth in 2050" forecasts[2], 2050 will move quickly to developing countries. By 2020 E7- the Big Seven developing countries (China, India, Brazil, Russia, Mexico, Indonesia and Turkey) likely will go forward from the G7-Big Seven developed countries (US, Japan, Germany, Britain, France, Italy, Canada ). Global scenario will change as early as 2020, when China leading not by imitative as innovative methods, will outstrip the lead of global economy, the USA. According to forecasts, significant growth in global economy will have India. In 2030 this country will have 13 percent growth in the world GDP outstripping. Japan, and in 2050 the USA. It is also expected that by 2050 from the ranks of G20 will leave Australia and

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[1] **Тавадян А.А.** Пороги чувствительности постсоветской экономики, Международный научно-общественный журнал «Мир перемен», N2, Санкт-Петербург, 2013, с. 91.
[2] **Manly B.,** Multivariate Statistical Methods, Third edition, Chapman and Hall, 2005, p.65.

Argentina, which will create new integration opportunities for Vietnam and Nigeria. Until 2050 Great Britain will barely maintain its position in the list of 10 countries with the largest economies, occupying the 9th place according to GDP at market exchange rates and the 10th place by the index of purchasing power . EU, according to the forecasts of "next 100 years," report, will increase European segmentation, but this fact will not change the character of the European economic model. The greatest danger will face especially Germany. With the export-oriented economy, it will have serious losses, as each 5% reduction of export will lead to 2.5% dockage of GDP. Russia will confront the economic crisis because of the contruction of oil prices. In this active period of serious transformations the USA will still act as a superpower, whith developing relations with Great Britain, Northern Ireland and Allied military displaying outside the NATO framework.

Current geopolitical developments and the behaviour of international markets have unpredictable changes and hence the external economic situation of RA and NKR become a source for various challenges[1]. In NKR there are some risks conditioned with actual external and internal problems such as the internationally unrecognized status, imperfection of legislation and practice, the unstable regional situation. Among the main challenges can be underlined Azerbaijan's direct military threat against our country, especially recently started the four-day war against Artsakh, as a result of which, the economy suffered direct and indirect losses. According to the preliminary estimates the damage has reached about 779 million and related to the large scale aggression suffered more than 850 people. The major hurdle for the country is also a risk that the forecast is for the medium-term sector, while they are absent for long-term developments. But even for the medium-term programs forecasting methodology and researches are needed improvement.

In NKR in terms of realism for the operations of MTEF there can be identified some factors influencing the programmed fiscal scenario.

The most important of those can result in need to make corresponding revisions in expenditure programs. In this view, the forecasts underlying the MTEF contain certain risks. Therefore, a thorough analysis of the risks is especially initial with the description of the risks, potential risks,decision of their rising probability, outcome indicator's influence, as well as the operation of possible ways of overcoming these development risks.

In my opinion, the MTEF projections would be more realistic if they were adopted by budgetary rules to avoid future crises and to ensure economic development. At the same time, the application of budgetary rules would allow to reduce the foreign economic dependence of the state budget, to increase its stability and to balance the budget system. There should also be allotted an

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[1] **Shukla, G.P.,** Fiscal Regime for Mining Sector in Armenia, 2010, p. 58.

important role for application of scenario approach[1]. During the budget planning this approach will surely have a positive impact in terms of risks reduction, because, in our opinion, there are quite uncertain, risky problems in terms of our economic development. During the MTEF draftings it is important to ensure reliability of comprehensive medium-term macroeconomic forecasts, which will reflect the comprehensiveness of predictions. They must also disclose how the macroeconomic risks are during the fiscal indicators changes and whether these changes are taken into macroeconomic forecasts.

Overall, these following steps implemented in the MTEF draftings in NKR are:

• Sectoral planning
• Growth forecasts of large organizations
• Previous years' trends coordination
• Expert assessments
• Comparison of current year's actual and expected indicators

Thus, it is evident that the estimates substantiated by mathematical modeling elements aren't absent in the medium-term projections. Considering this fact, the following econometric model is observed:

$q_t = \alpha_0 + \alpha_1 m_t + \alpha_2 h_t + \varepsilon_t$, (1)

$q_t$ - the rate of economic growth in the t- th year,

$m_t$ - the growth rate of gross capital formation in the t- th year,

$h_t$ - the rate of growth of human capital in the t- th year,

$\alpha_1$, $\alpha_2$ -unknown parameters of the econometric model,

$\varepsilon_t$- random error of the model in a t-year,

t- an index which shows the year. Moreover, the model used for the 2005-2015 period. data.

To assess (1) econometric model we use the Dick-Fuller's test and revealed that all used series are non-stationary. For making these series stationar we must observe model with second-class differences. In addition, it can be considered that the economic growth rate this year may depend on the growth rates of previous years. Thus, it is appropriate to assess the following model, which describes these attachments more objectively.

$D(D(q_t)) = \beta_0 + \beta_1 D(D(m_t)) + \beta_2 D(D(h_t)) + \delta_t$ (2)

where: $D(D(q_t))$, $D(D(m_t))$, $D(D(h_t))$ - these indicators with the second-order difference

$\beta_0$, $\beta_1$, $\beta_2$, - the unknown parameters of the econometric model,

$\delta_t$- the random error of the model in t-year.

Now we can estimate (2) model by the method of the least squares to gain the following estimated model.

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[1] **Тевикян А.Р.**, Сценарный анализ, как перспектива долгосрочного прогнозирования социально-экономического развития Армении, Санкт-Петербург, 2013, с. 83.

$D(D(q_t)) = 3,24D(D(m_t)) + 0,6D(D(h_t))$ (3)

The free member is absent in this member, as the evaluation showed that it is not significant. Doing some arithmetic operations we can obtain the final model.

$q_t = 13,221 + 3,24m_t + 0,6h_t$ (4)

According to the results of (4) model, there can be made the following conclusions:

• In other equal conditions 1% increase in the growth rate of gross capital leads to a 3,24% increase in the rate of economic growth.

• In other equal conditions 1% increase in the growth rate of human capital, leads to 0.6% increase in average economic growth rate.

• Free member shows the average rate of economic growth.

Thus, the role of mathematical modeling mechanism in economic efficiency and realism is great and only using them in forecasts and projections can accurately reflect how far the program indicators are realistic.

*Նինա Բալայան*

## ԿԱՆԽԱՏԵՍՄԱՆ ԴԵՐՆ ՈՒ ԱՆՀՐԱԺԵՇՏՈՒԹՅՈՒՆԸ ՏՆՏԵՍԱԿԱՆ ՄԱՐՏԱՀՐԱՎԵՐՆԵՐԻ ԱՐԴԻ ԺԱՄԱՆԱԿԱՇՐՋԱՆՈՒՄ

**Բանալի բառեր`** *մակրոտնտեսական կանխատեսումներ, տնտեսական մարտահրավերներ, կանխատեսման մեթոդներ, մոդելի արդյունավետ գնահատում*

Հոդվածում դիտարկվել է տնտեսական վերափոխումների արդի ժամանակաշրջանում կանխատեսման արդյունավետ մեխանիզմների դերն ու նշանակությունը տնտեսության կայուն զարգացման և տնտեսական մարտահրավերներին խուսանավելու գործում: Այս համատեքստում անդրադարձ է կատարվել մեր երկրի առջև ծառացած տնտեսական մարտահրավերներին ու ռիսկերին: Մասնավորապես դիտարկվել է կանխատեսման մեթոդաբանության կատարելագործման անհրաժեշտությունը ՍԺՄՇ մշակման գործընթացում: Այդ առումով կատարվել են կոնկրետ առաջարկություններ:

*Нина Балаян*

## РОЛЬ И НЕОБХОДИМОСТЬ ПРОГНОЗИРОВАНИЯ В СОВРЕМЕННОМ ЭТАПЕ ЭКОНОМИЧЕСКИХ ВЫЗОВЫ

**Ключевые слова:** *макроэкономические прогнозы, экономические вызовы, методы прогнозирования, эффективная оценка модели*

В статье рассмотрена роль и важность эффективных механизмов прогнозирования текущей эпохи экономических реформ для устойчивого развития экономики и маневра экономических проблем. В этом контексте была сделана ссылка на экономические вызовы и риски, стоящие перед нашей страной. В частности рассматривалась необходимость совершенствования методологии прогнозирования в процессе разработки СПГР. В связи с этим, были сделаны конкретные рекомендации

*Nina Balayan*

## THE ROLE AND NECESSITY OF FORECASTING IN THE MODERN TIMES OF ECONOMIC CHALLENGES

**Key words:** *macroeconomic forecasts, economic challenges, forecasting methods, effective model assessment*

The article reviewed the role and importance of forecasting's effective mechanisms in the current period of economic reforms for sustainable economic development and economic challenges maneuvering.. In this context, it was referred to the economic challenges and risks facing our country. Particularly there was observed the need of improving the forecasting methodology of the MTEF in the process of drafting. In terms of it there were made specific recommendations.