Methodologically improved model of international competitiveness

Asomiddin Soatovich Yusupov

PhD in Economics, Associate of professor, Department of "Economics" Tashkent State University of Economics, Islam Karimov avenue 49, 100066 Tashkent, Uzbekistan,
Email: a.yusuf3101@gmail.com,

Abstract

It is known that the study of economic processes includes micro, macro, and an international level analysis of certain individual economic entities, that is, firms and industries (branches). While the process of studying and making decisions on the international economic behavior of specific individual subjects in order to maximize the satisfaction of unlimited needs in the context of limited resources is a research object and subject of the field of "international economy". The modern economic theories researched in the scientific article require wider use of mathematical instruments in the study of quantitative aspects of economic processes. One of the more widely used models in practice is the economic-mathematical model. An economic-mathematical model is a formalized classification of economic processes or phenomena, the composition of which is formed depending on the objective or subjective characteristics arising from the research purpose. Economic-mathematical models expressed quantitative aspects of economic processes through functions, equations, or inequalities. Modern economic theories, mathematical models, and functions (equalities or inequalities) used in the implementation of micro, macro, or international economic analysis of gross income increase in the article indicate the scientific basis, expediency, and relevance of the chosen topic.

Keywords: National Economies; foreign trade efficiency; estimation; versatile indicators system; micro; macro and international economic analysis; economic-mathematical models.

1. Introduction

A system of multifaceted indicators is used to evaluate the efficiency of foreign trade of national economies. In some economic literature, foreign trade turnover, the share of exports and imports in the gross domestic product are recognized as the first level indicators of the openness of the economy [24; 14; 15, 6-7; 20]. However, they do not always fully reflect the openness of the economy.

The international competitiveness paradigm is based on the concept of searching for internal opportunities for the development of the national economy and moving to active strategies of promotion (abandoning sluggish mechanisms) and this idea is called global oriented [22].

As stated in the theories of international competition, the role and effectiveness of global competitiveness in the development of national economies can be demonstrated through various models. However, in some standard models of economic growth, international competition is recognized as a zero-sum game and "politicians" try to achieve the goal through the use of taxes, subsidies, prices and a number of other regulatory levers.

In our opinion, it is appropriate to pay attention to other models in expressing the impact of international competitiveness directly on the economic stimulus of a country or firms.

2. Literature review related to the topic

Theoretical and practical aspects of the international economic efficiency have been studied in depth by the following foreign economists: R.Vernon [9], M.Porter [7], J.Saks [8], A.Warner [8], P.Krugman, K.Haynes, G.Myurdal and others.

CIS economists: A.Kireev [24], M.Osmova [14], F.Michurina[16], V.Sergeev, A.Evdokimov [15] proposed a number of indicators of international economic cooperation.

For example, M. Osmova recognizes the following system of indicators [14]:

- contribution of export in the volume of gross domestic product;
- contribution of industries in the total export value;
- the growth rate of specialized sectors compared to the growth rate of the country's industry.

Doi : https://doi.org/10.54216/JSDGT.030104

And A. Evdokimov highlights the following indicators [15]:

- export, import and foreign trade quota;
- the contribution of the country in international trade for individual goods;;
- foreign trade turnover per capita and others.

Theoretical and practical aspects of international competitiveness of foreign trade in Uzbekistan have been studied by the following scientists: B.Islamov [11], N.Sirojiddinov [12], J.Jalolov [12], Sh.Sharifkhodjaev, A.Yusupov [12], M.Yusupov [12] and others.

In our opinion, each indicator cited by the authors has an important place in expressing one or another aspect of the countries' foreign economic cooperation.

However, there are some gaps and a lack of study of the main foreign economic efficiency indicators in Uzbekistan, taking into account the new current situation and trends in the world economy determines the necessity and the relevance of the chosen topic in this scientific article.

3. Research methodology

Economists first of all begin by identifying and collecting evidence related to a particular economic problem. This process is sometimes referred to as *descriptive* or *empirical economics*. As a research methodology, the following methods were used effectively: In economic research, the method of induction is used when moving from some evidence to the theory, and on the contrary, when moving from the theory to some evidence, the method of deduction is used. *The analysis method* is used to study the process by dividing it into small parts and separate evidence. *Synthesis method* is used to combine some evidences, generalize and draw a final conclusion through interrelated studies. *Positive* or *descriptive analysis* is used to express an objective state of economic activity or a scientific interpretation of economic behavior. He is far from subjective evaluative observations and works with selected and theoretical facts. *Normative analysis* is used to propose a prescription for economic behavior based on subjective or evaluative observations of individuals. In the scientific article, algorithmic models and a block diagram were used in the modeling of findings.

4. Analysis and results

In some standard models of economic growth, international competition is recognized as a zero-sum game and "politicians" try to achieve the goal through the use of taxes, subsidies, prices and a number of other regulatory levers.

The analysis shows that in the conditions of the planned economy, the incentives of soft budget constraints on manufacturing enterprises do not work sufficiently, and it is evidence of its ineffectiveness compared to the market economy.

As the author of this concept Ya.Kornai said [19], soft budget constraints are one of the main factors affecting production efficiency, especially in the context of transition economies.

International competition and soft budget constraints are thoroughly explored as interrelated factors in Chen and Roland's model [23].

As stated in the model, the motivation process in firms and the future of effective decisions are integrally dependent on the trust in the government and the evaluation of the state's economic policy.

According to Chen, Roland, and N.Ya.Kalyuzhnova [18,60], Enterprises that use soft budget incentives in the form of subsidies usually do not worry about structural renewal and long-term perspective planning of activities.

In order to maintain the employment of the population, the government will continue to support enterprises through various means. As a result, the confirmation of the properties of the supposedly *"self-realizing wisdom"* is manifested. This mechanism was mentioned by D.Sors under the name of *"reflectivity"* [21] in the economy.

Thus, decisions made today - ***ex ante***, tomorrow, i.e. decisions made in the future and situations that may occur - begin to affect ***ex post***.

Conversely, what if the enterprise is deprived of the opportunity to receive budget loans or soft budget incentives, such as cheap or forgivable loans?

In such a situation, the government should conduct a strict fiscal policy and convince economic agents not to allow any *"favoritism"* in providing budget funds.

It can be said, that a special status for some economic entities in the conditions of guaranteeing a strict fiscal policy: the failure of special protection measures or special budget incentives, is an important guarantee of their competitiveness and success in the future.

As noted in economic literature, the only way to survive in pure competition condition is, without a doubt, to achieve operational efficiency through structural restructuring or renewal (i.e. innovation).

In our proposed sample model, two groups of enterprises are reflected: (1) successful and (2) problematic. Let's imagine:

- if the successful earn R1 profit for the state,
- problems respectively generate – R2 profit.

So it can be said that if:

- if the enterprise carries out structural renewal, the state's achievement is R_1;

Doi : https://doi.org/10.54216/JSDGT.030104

if the enterprise does not carry out structural renewal, the achievement of the state will be R_2. In this, $0 \leq R_2 < R_1$ (1) and satisfies the condition $R_1 \leq 1$ (2).

For example, in Uzbekistan there are such enterprises that have a monopoly position, and despite the fact that the prices of the services provided by them change 1-2 times every year, it is necessary to emphasize that they are actively supported by providing free subsidies from the state budget. Such enterprises include "Uzbekenergo", "UzAvtosanoat", "UzEltexsanoat" and heat supply organizations. In 2019 alone, in order to cover problematic debts to "Uzbekenergo" and heat supply companies nearly 700 billion soums were allocated from the state budget [26] and the that fact is a confirmation of this.

It is noted that this decision supposedly was made in order to provide financial support to the main sectors of the economy and timely implementation of mutual calculations in the conditions of the increase in tariffs for natural gas and electricity.

Approximately 354 billion soums of these subsidies were allocated to "Uzbekenergo" and its enterprises to cover a part of natural gas costs, and almost 360 billion soums were allocated to heat supply enterprises to compensate the losses caused by the application of reduced tariffs to the population.

However, since November 16, 2018, the price of 1 m^3 of gas for residential consumers in Uzbekistan was set at 320 soums, and the price of 1 kW of electricity was set at 250 soums. Moreover, starting from July 1, 2019, the price of gas was set at 350 soums, and the price of electricity was set at nearly 300 soums [26].

In such a situation, if the problem enterprises are not given any subsidies by the state, then this enterprise will try to structurally update and → R1 (→ is a sign of aspiration), as a result:

$$R_2 \leq R_1 \quad (3)$$ will be.

In the conditions of international competition, in order to fully fulfill this condition, the state subsidy will give way to foreign or private investment.

It can be said, that international competition:

- increases the credibility of the political commitments of the government;
- strengthens the strictness of budget restrictions for enterprises;
- fundamentally changes the mechanism of stimulating the behavior of enterprises, firms and companies.

According to Chen and Roland's research [17], intra-country and inter-country migration of capital depend not only on economic but also on political factors. The issue of developing the necessary infrastructure to attract foreign capital to the country is one of the more important areas of effective use of public finances than granting or subsidizing problematic enterprises for the government.

Naturally, in the context of strict fiscal policy (tax or budget constraints), governments engage in international competition to attract foreign capital (Ki) to their country and implements infrastructure spending (Gi) from the state budget as an incentive.

According to Chen and Roland, this function obeys the following model:

$$Y = F(K, I) \quad (4)$$

in which: K - is a capital; I - infrastructure; Y - gross revenue; F - is a functional relation between them.

This creates the following standard situations:

$$F_{GK}(G_k, G_i) < 0,\ F_K(K_i, G_i) > 0,\ F_I(K_i, I_i) > 0,\ F_{K,I}(K_i, I_i) > 0 \quad (5)$$

In this: K_i - foreign capital; G_i - public infrastructure spending; G_k - budget incentives; I_i - are infrastructure investment costs.

This model of increasing international competitiveness indicates a positive attitude of investors to change the production infrastructure.

Researches show that not only the sufficient creation of market infrastructures, but also the adequate development of the innovative economy play an important role in the inflow of capital into the country. In our opinion, based on the standard model of the production function,

$$Y = F(K, L, N) \quad (6)$$

we can express the production function of competitive industries as follows:

$$Y = F(K, I, Inov) \quad (7)$$

In this: K - capital directed to economic sectors; I - infrastructure spending on economic sectors; Inov - innovation costs to economic sectors.

According to the author's suggestion, I - infrastructure costs consist of two parts, ie: G - infrastructure costs directed directly from the state budget; I_{fk} - infrastructure expenditures to be financed by foreign investment.

Let the following symbols mean the derivatives of the production function $F(K, I, Inov)$: F_K, F_I, F_{Inov}.

In accordance with the economic essence of the production function and the determinants that make it up, the following standard conditions can be derived:

$$F_K(K_i, G_i, Inov_i) > 0,\ F_I(K_i, I_{fk,i}) > 0,\ F_{Inov}(K_i, Inov_i) > 0,\ F_{K,I,Inov}(K_i, I_i, Inov_i) > 0 \quad (8)$$

In this: K_i - foreign capital to be attracted to the i-th sector; G_i - state infrastructure spending on the i-th sector; $I_{fk,i}$ - Infrastructure costs to be financed by foreign investment in the i-th sector, $Inov_i$ - is the innovation costs to the i-th sector.

It can be seen that the total amount of capital directed to industries in the conditions of sufficient development of production infrastructure and innovative economy:

$$K = \sum K_i \quad (9)$$

Doi : https://doi.org/10.54216/JSDGT.030104

In the conditions of absolute elasticity of capital, let the share of investors leaving the country equal to $F_K K$. According to this:

$$F(K_i, I_i, Inov_i) - F_K K_i = GR \quad (10)$$

In this: $F(K_i, I_i, Inov_i)$ - production function of the i-th sector, $F_K K_i$ - Funds withdrawn by the investor on account of foreign investment in the i-th sector, GR - is the return on capital (or gross revenue) representing public finance spent on infrastructure, innovation and community benefits. An increase in capital also causes an increase in the income of the country. If it is,

$$F_{K,I,Inov}(K_i, I_i, Inov_i) = F'(K, I, Inov) \quad (11)$$

According to (9) and (10), the return on capital (or gross revenue):

$$\left\{ \begin{array}{c} K = \sum_{i=1}^{n} K_i \\ GR = \sum_{i=1}^{n} F_{K,I,Inov}(K_i, I_i, Inov_i) - F_{K,I}(K_i, I_i) \end{array} \right\} \quad 12$$

In this: i = 1……. n, n – number of sectors, K_i - foreign capital to be attracted to the i-th sector; I_i - infrastructure costs to the i-th sector; $Inov_i$ - innovation costs to the i-th sector; GR – is a gross revenue.

The proposed algorithm for calculating this shows the following appearance (see Form 1.).

One policy: According to the **A** and **B** approach, the following is given:

A - "net budget incentives".

B - infrastructure and innovation development policy to attract foreign investment.

K - a capital;

I - infrastructure;

Inov - innovation.

n - number of sectors. i = 1, …, n;

Y - income to the state budget at the expense of sectors;

K_i - foreign capital to be attracted to the i-th sector;

I_i - infrastructure costs for foreign investment in the i-th sector;

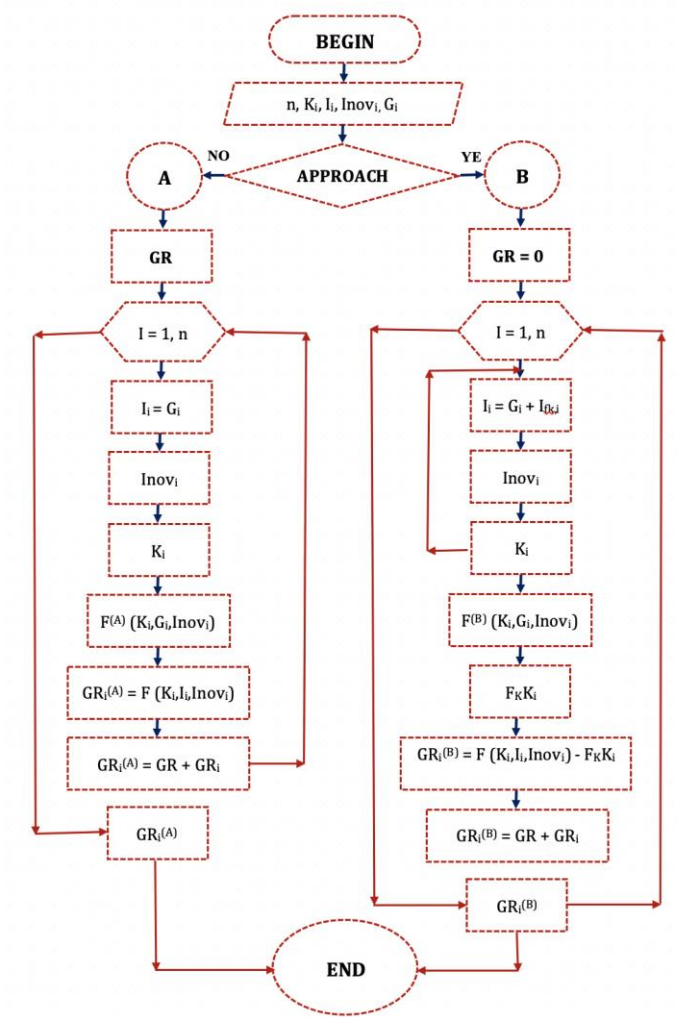
$Inov_i$ - innovation costs to the i-th sector;

$G_{k,}$ - direct budget incentives to be directed to the i-th sector;

G_i - direct budget expenditures for infrastructure to the i-th network;

Y' = GR - capital return (or gross revenue) to the state budget at the expense of industries.

Doi : https://doi.org/10.54216/JSDGT.030104



Fi 1: Algorithm on capital return or gross revenue increasing in an open economy.

Capital return or gross revenue increasing Algorithm in an open economy.

The essence of the model is that in the conditions of international competition and absolute mobility of capital, the state makes the following rational decisions that lead to the highest efficiency from the budget funds and an increase in the gross income of the country:

firstly, the government abandons inefficient budget mechanisms related to providing incentives or subsidizing inefficient enterprises, firms and companies;

secondly, taking into account the competition, directs the budget funds primarily to the necessary social and market infrastructures to attract foreign capital;

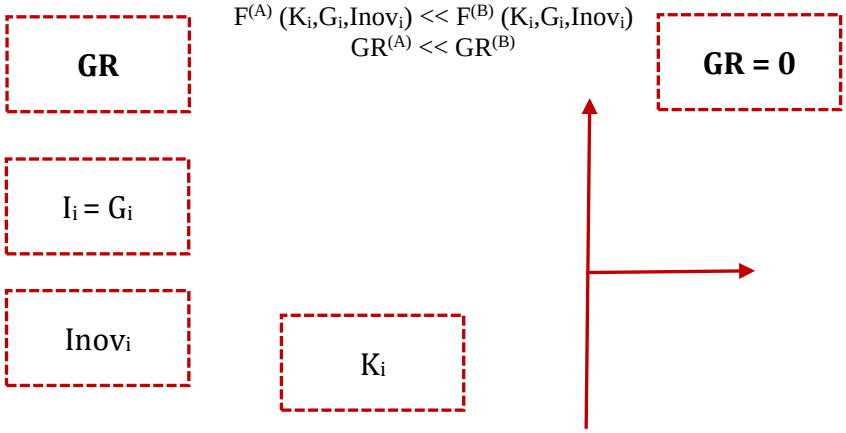
thirdly, public and private enterprises and households are financially supported for the interests of society;

fourthly, in the conditions of global competition, supporting the innovative economy will become an important direction of effective use of budget funds.

According to the given terms of the model:

$$F^{(A)}(K_i,G_i,Inov_i) << F^{(B)}(K_i,G_i,Inov_i)$$

$$GR^{(A)} << GR^{(B)}$$



Doi : https://doi.org/10.54216/JSDGT.030104

This indicates that the capital return provided to the state budget by the sectors according to approach A is much smaller than the increase in gross revenue provided according to approach B.
As a result, inefficiently operating enterprises will be forced to solve the problem of restructuring or structural renewal or the local government will be compelled to transfer inefficient state-owned enterprises to other forms of ownership.
The competitive environment is manifested not only in the processes occurring at the scale of national economies, but also in the international trends of economic development.
As the leading trends in the world economic system: it is necessary to emphasize the presence of globalization and integration processes. These are important factors affecting not only the competitive environment, but also the level of international competitiveness of national economies.

5. Conclusions and Suggestions

The review of theoretical formal models of international competition allows to come to the following conclusions::

- the efficiency of using public funds increases;
- the opportunities of using political rent are limited;
- incentive for structural restructuring and renewal of economic agents (enterprises, organizations, firms and companies) increases;
- the ground is created for the stimulation of the innovative economy and the modernization of the country.

Methodologically improved model of the foreign trade efficiency indicators system allows to correctly evaluate the export potential of the country.
After all, international competitiveness, exactly, is inextricably linked to the formation of market competition environment in economy and the improvement of the efficiency of its infrastructure and institutional provision.

References

[1] Decree of the President of the Republic of Uzbekistan “On the Strategy of development for new Uzbekistan for 2022 – 2026”, January 28, 2022 No. UP-60 https://kun.uz/en/news/2022/01/28/president-mirziyoyev-approves-development-strategy-for-next-5-years
[2] Uzbekistan presented the first National Report on achieving the Sustainable Development Goals at the UN ECOSOC High-Level Political Forum. The Ministry of Economic Development and Poverty Reduction of the Republic of Uzbekistan //https://mineconomy.uz/en/info/3188/21/07/2020
[3] The concept of complex socio-economic development of the Republic of Uzbekistan until 2030.
[4] Shavkat Mirziyoyev delivers speech at Tashkent International Investment Forum, guarantees favorable conditions for investors. https://kun.uz/en/news/2022/03/24/shavkat-mirziyoyev-delivers-speech-
[5] Planet Info- The 1st International Investment Forum in Tashkent. Expectations and prospects //https://www.planet360.info/en/1st-international-investment-forum-in-tashkent-expectations-and-prospects/
[6] Trade Multilateralism in the Twenty-First Century: Building the Upper Floors of the Trading System through WTO Accessions/Edited by Alexei Kireyev and Chiedu Osakwe, 2017.ISBN:9781108367745.
[7] Porter M. Konkurentnaya strategiya: Metodika analiza otrasley i konkurentov / Maykl Porter; Per. s angl. – 3-e izd. – M.: Alpina Biznes Buks, 2007.
[8] Sachs J.D., Warner A.M. //The Global Competitiveness Report. 2000. //http://web.mit.edu/
[9] Vernon, R. “International Investment and International Trade in the Product Cycle.” Qwarterly Journal of Economics, Vol. LXXX, May 1966, PP. 190-207.
[10] Madiyarova D.M. Ekonomika integratsii. Monografiya/ pod red. Madiyarovoy D.M. - Astana, 2016. IP «Bulatov A.J».
[11] Islamov Bakhtiyor. Systemic Transformation and Sustainable Development: Case of Uzbekistan. Part I Monograph, Jakarta, Gumadarma University Press, 2016.
[12] Yusupov A.S. Tashqi savdo raqobatbardoshligini oshirish strategiyasi. Ilmiy monografiya, -T.: «PRINTUZ», 2020. - 214 b.
[13] Subetto A. Globalizatsiya kak forma ustanovleniya novogo mirovogo poryadka, mirovoy finansovoy kapitallokratii – tupik istorii chelovechestva // dialog i vzaimodestvie sivilizatsiy Vostoka i Zapada: al'ternativi na 21 vek: Materiali 4-y Mejdunar. Kondratevskoy konf. 15-16 maya 2001 g. M: MFK, 2001.
[14] Osmova M., Glushyenko G. (red.). Globalizatsiya mirovogo xozyaystva. Uchebnoye posobiye./Uchebniki ekonomich. f-ta MGU im. M.V. Lomonosova, Infra-M, 2015. 389 s.
[15] Yevdokimov A.I. Mejdunarodniye ekonomicheskiye otnosheniya. 2-ye izdaniye. /Pod red. Yevdokimova A.I. – M.: "Prospekt", 2013. -s. 6-7.
[16] Mejdunarodnaya ekonomika [Tekst]: uchebnoye posobiye / F.Z. Michurina [i dr.]; pod red. F.Z. Michurinoy; M-vo s.-x. RF; FGBOU VPO Permskaya GSXA. – Perm: Izd-vo FGBOU VPO Permskaya GSXA, 2012. -s. 501.

Doi : https://doi.org/10.54216/JSDGT.030104

[17] Mehrdad Vahabi. Soft Budget Constraint and Economic Theory. University Paris 8., September 2003.//http://mpra.ub.uni-muenchen.de/17651/
[18] Kalyujnova N.Ya. Konkurentosposobnost regionov v usloviyax globalizatsii. M.: TEIS, 2003. -s. 60.
[19] Kornai Yanosh. Sosialisticheskaya sistema. Politicheskaya ekonomiya kommunizma. Per. s angl. - M.: NP «Jurnal Voprosi ekonomiki», 2000. -s. 672.
[20] Bunkina M.K., Semenov A.M., Semenov V.A. Makroekonomika: Uchebnik. – 3-ye izd., pererab. i dop. – M.: Izdatelstvo «Delo i Servis», 2000. – 512 s.
[21] Soros D. Krizis mirovogo kapitalizma. /Per. s angl. - M.: INFRA-M, 1999. - XXVI, 262 s.
[22] Kuklinski A. Regional policy and the information society //Competitiveness of regions in Polish and European perspective /Ed. By R. Domansky. Warsaw, 1999. P. 102.
[23] Yingyi Qian and Gérard Roland. Federalism and the Soft Budget Constraint.The American Economic Review Vol. 88, No. 5 (Dec., 1998), pp. 1143-1162.;
[24] Kireyev A.P. Mejdunarodnaya ekonomika. V 2- ch. – Ch. I. Mejdunarodnaya ekonomika: dvijeniye tovarov i faktorov proizvodstva. Uchebnoye posobiye dlya vuzov. – M.: «Mejdunarodnыye otnosheniya», 1997. - 416 s.
[25] Kornai Ya. Put k svobodnoy ekonomike. Strastnoye slovo v zashitu ekonomicheskix preobrazovaniy., M.: Ekonomika, 1990. – VIII + 149 s.
[26] Gosbyudjet videlit "Uzbekenergo" i teplosnabjayushim organizasiyam svishe 700 milliardov sumov na pokritiye dolgov//https://podrobno.uz/cat/economic/gosbyudzhet-vydelit-uzbekene/

Doi : https://doi.org/10.54216/JSDGT.030104