

Modern research on human capital has largely been shaped by Becker's work *Human Capital: A Theoretical and Empirical Analysis*. Becker considered human capital at the micro-level (enterprise level), defining it as the sum of the skills, knowledge and abilities of its employees and employees. Current researchers are studying the characteristics of human capital at the enterprise level and at the country level.

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ECONOMETRIC FORECASTING OF ACADEMIC MANAGEMENT IN THE FACE OF UNCERTAINTY OF HOSTILITIES

The study of the new theory of endogenated economic development, on the basis of which all assumptions are made in this study, was paid attention to in the late 80s of the last century by P. Romer and R. Lucas [9, 11], who identified and proved by empirical calculations all the main factors of economic growth of the state. These studies are considered early theories of endogenated economic growth on a long-term basis and name the following main determinants of growth: investments in real capital, human capital, taxes, and technology development. Their work was continued in the 90s by American researchers R. Barro, I. Salla y Martin and R. Levine,¹² who identified another component of the state's economic growth – financial development. [1, 3, 5-8].

This study attempts to study the impact of military budgeting productivity on economic growth using methods and techniques of economic and mathematical modeling. ³At this, the models of J. Battis and T. Koeli will be adapted [2, 4] in terms of transforming the stochastic model of productivity for use in countries in conditions of

¹ LEVINE, Ross. Finance and growth: theory and evidence. *Handbook of economic growth*, 2005, 1: 865-934.

² CAO, XingHua, et al. Does sustainable environmental agenda matter in the era of globalization? The relationship among financial development, energy consumption, and sustainable environmental-economic growth. *Environmental Science and Pollution Research*, 2022, 29.21: 30808-30818.

³ WOOLDRIDGE, Jeffrey M. Econometric analysis of cross section and panel data MIT press. *Cambridge, MA*, 2002, 108.2: 245-254.

uncertainty of hostilities, constant changes in budget and tax legislation and inflationary processes that take place in countries on the territory of which active hostilities are conducted. For the first time, an attempt is being made to assess the impact of each individual segment of the state's military budgeting on the productive efficiency of economic processes within the framework of the previously described theory of endogenous economic development. An attempt at such an approbation was made in his work by F. Norzad [10], but he did not take into account the peculiarities of countries with military economies, so in our study we will expand the possibilities of using the Battis and Koeli model under these conditions.

The theory of exchange and the theory of military conflict are equivalent branches of economic analysis and forecasting: the theory of exchange is based on contractual and mutual winnings, and the theory of military conflict is based on rivalry for superiority. Various analytical options for modeling such an equilibrium is noteworthy, for example, for actual hostilities or armed peaceful coexistence under conditions of economic stagnation as a result of the expectation of active hostilities. It can be shown that the choice between the deployment and curtailment of a military conflict is determined by purely economic advantages, including in academic management. The technology of econometric forecasting can then be considered a certain factor of economic activity of academic institution that suffers from the direct or indirect effects of hostilities, as productive forces everywhere compete for their livelihoods.

The deployment of hostilities and their curtailment (settlement) are usually interpreted as a dichotomy: it is believed that rival states are in a state of war or peace. On the other hand, there can be a multiplicity at the site of a dichotomy, and continuity at the place of discreteness. Quite often, solutions that look dichotomous on a short-term scale take on a continuous scale on a long-term scale. The unresolved part of the overall problem is the economic principles of preserving peace and predicting their consequences.

In such dichotomous models, the traditional problem arises of determining the next steps after the outbreak of hostilities, the continuation or end of the war. However, wars or other forms of conflict correspond to continuous models where current events are reflected by typical interactions of the parties with a balancing of cooperative and conflict activities. In strategic interactions, it is important to distinguish between moves, rounds and plays. During this draw, in Each bidding (bidding) each participant is allowed to make an offer. A move in the auction means the choice between participation and non-participation in the bid-or-pass of an individual player. Since winnings are generated after each draw is completed, playing with many draws means a number of distribution of winnings. All consecutive draws can have the same winning pattern as, for example, the inmate's recurring dilemma [8–10]. Within this draw, there may be a sequence of rounds,

which consists of the moves of bidding or negotiations of players. However, moves and rounds do not generate winnings until the end of the draw [11].

Since military action is almost always Pareto-ineffective, a settlement of a military conflict remains a desirable alternative. However, settlement agreements are useless without guarantees of their implementation. Bindings usually require a third party (enforcer) to be responsible for their implementation. The prospect of a long-term mutually beneficial association between all parties gives motivation for compliance with the relevant agreement, and therefore such an agreement can be considered binding. Since mutual obligations are characterized by a well-known last-period problem and other problems, in general, mutual obligations (say, marital) turn out to be quite fragile. In the absence of the aforementioned third party (for example, in the struggle for territories between animals or in the international rivalry of the strongest states), the chances of peace are significantly reduced. At the same time, the existence of binding agreements is not enough to exclude the possibility of conflict: despite the fact that the legal system is ready to implement the agreed settlements, legal proceedings remain a large branch of human activity. The bet in a military conflict can be life or death, as well as a certain prize [14]. The purpose of war may be the destruction of the enemy or the change of borders.

In traditional economic theory, perfect competition involves many buyers and many sellers of military goods and services. An ordinary monopoly in the military-industrial complex (hereinafter referred to as the military-industrial complex) means a situation with one seller and many buyers. Duopoly means a situation with two sellers and many buyers. There may also be a monopoly seller situation with several smaller sellers. Similar situations occur in the theory of military conflicts: bilateral monopoly corresponds to one-on-one military actions. The usual monopoly, including in the military-industrial complex, corresponds to the situation of the tyrant in relation to the subjects: the decisions of the tyrant can influence the choice of citizens (for example, the choice to rebel or submit), but each individual citizen does not hope to influence the decision of the tyrant as a result of significant investments in the repressive apparatus. If in an ordinary monopoly buyers are price holders, then in the model of pure conflict there is no exchange between citizens and a tyrant.

Alliances can arise in the presence of at least two strategic players [15]. One of the main types of alliances is an alliance of strategic players against passive players. If for some reason one of the strategic players goes over to the side of another strategic player, then an alliance will also arise (against a group of non-strategic players who have actually lost their leader). However, by default, alliances are combinations of some strategic players against others [16].

A classic example of a non-profit threat is the strategy of the so-called mutual assured destruction (MAD) aimed at deterrence of nuclear war: when a nation is subjected to a nuclear attack from the aggressor, it can be assumed that when it responds, the

aggressor also suffers a nuclear attack with a loss relative to the status quo. Although non-profit threats cannot be verified regarding sequential rationality, in some circumstances they can be trusted to a certain extent: when a party implements an obligation and its implementation cannot be changed (in other words, the party "burns all bridges"); when the existing interaction is associated with future opportunities, and not a response to the aggressor undermines the reputation and leads to significant losses; When an opponent can be considered sufficiently irrational or is actually so, a response to the aggressor (retaliation) occurs regardless of profitability considerations. Of course, any nonzero perceived (perceived) or subjective probability of such irrationality may be sufficient to deter an attack [18]

In order to model the optimal structure of the budgets of academic institutions in the face of uncertainty of hostilities, we note that the formation of large public or private budgets of academic institutions encourages states, as economic agents in a globalized world, to effectively use the additional funds they receive from the point of view of the state budget. , as the increase in the production and sale of military goods increases the overall GDP of those countries that sell such goods, and reduces the GDP of those countries that spend significant funds on the purchase of such military goods. This means, first of all, that the governing bodies of states should use their paramilitary incomes in such a way as not only to spend, but also to earn on them, and therefore to develop their own national economies in such a way that they provide more and better their services. Therefore, suppose that the revenues of the budgets of 4 academic institutions during the hostilities consist of the following the main sources are public, private and donations from international organizations or infusions from other countries. This assumption makes it possible to avoid excessive dollars and financial transfers to the budgets of academic institutions at the level of the state itself, on the territory of which hostilities take place. Also, the size of such budgets will be largely influenced by the application and implementation of economic sanctions in accordance with the decisions taken by certain countries or international organizations in a globalized world. By orming the political majority, they adopt regulations or amendments to laws that define the rules for replenishing the revenue base of the 5budgets of academic institutions, ideally, the

⁴ Ignacio Munyo · Leonardo Veiga Entrepreneurship and Economic Growth / *Journal of the Knowledge Economy* <https://doi.org/10.1007/s13132-022-01032-8> Accepted: 13 September 2022 Available from: https://www.researchgate.net/publication/364755511_Entrepreneurship_and_Economic_Growth [accessed Jan 15 2023].

⁵ Easterly, W., and R. Levine It's Not Factor Accumulation: Stylized Facts and Growth Models // *World Bank Economic Review*, № 15. - 2001. – P. 177-219.
Levine, R. Financial Development and Economic Growth: Views and Agenda // *Journal of Economic Literature*, № 35. - 1997. - P. 688-726.
Levine, R., Loayza, N., and T. Beck. Financial Intermediation and Growth: Causality and Causes // *Journal of Monetary Economics*, № 46. – 2000. - P. 31-77.

strategic goal is to maximize the well-being of the country or protect the country from military aggression:

$$v u(\omega + \bar{U}) + (1 - v) u(\omega + \underline{U}),$$

Where is determined taking into account the usefulness of the steps in the formation and use of academic budgets (\bar{U}, \underline{U}) , obtained in calculating the highest and lowest utility for them to improve the indicators of economic development U . Suppose that $u(\cdot)$ and grows and falls ($u'(\cdot) > 0$, $u''(\cdot) \leq 0$). w This is an index of the ratio of the level of academic budgets of IP to those collected in revenues from various sources in the military budget (the level of paramilitary, determined by the cost method). $w = \underline{w}; \bar{w}$ Accordingly, government policy, which is strategically aimed at economic participation in conditions of uncertainty in hostilities on the territory of the state and anywhere abroad, as well as participation in the application of international economic sanctions in a globalized world, and government policy, which has a strategy in any form of state participation in hostilities in conditions of uncertainty. Denote $\Delta w = \bar{w} - \underline{w} > 0$ for the degree of polarization of these strategic directions of economic development in a particular country and $w_0 = (\underline{w} + \bar{w})/2$ for the average level of distribution of spending/non-spending of financial resources on hostilities in conditions of uncertainty and globalization. Such parameters of allocation of levels of participation/non-participation of financial resources in military budgets of various types make it possible to determine how economic The policy in the past, which developed with the adoption of laws by certain political forces in the past, influenced the budget and tax policy in the formation of military budgets at the present stage and what is their impact on the GDP of each individual state.

The level of inconsistency of a certain government policy that influenced the formation of academic budgets in countries where hostilities take place is calculated by the function of social utility $u(\cdot)$ позначено за $r_u(x) = -u''(x)/u'(x)$ - That is, such a strategic direction of state policy has led to the inefficient use of financial resources collected for military operations at all levels of X government structures. This level of inconsistency of the strategy with the use of the function of social utility should be $r_u'(\cdot) < 0$ or $r_u''(\cdot) > 0$.

It should be noted that in conditions of uncertainty in the conduct of war or tangential participation in hostilities, any tax system of the country must be completely

Levine, R., and S. Zervos. Stock Markets, Banks, and Economic Growth // American Economic Review, № 88. – 1998. – P. 537-558.

Lucas, R. J. On the Mechanics of Economic Development // Journal of Monetary Economics, № 22. - 1988. – P. 3-42.

open and transparent. Then denote by $\hat{\theta}$ report of the formed and used financial resources of military budgets (their productivity in society) for a certain period. Let's denote the mechanism of openness of the authorities for their activities on and the creation and use of military and the openness of the tax system to payers for $\{\tau(\hat{\theta}), y(\hat{\theta})\}$. To simplify the recording of these parameters in the model we introduce such indicators as $\{\bar{\tau}, \bar{y}\}$, which mean indicators of the share of tax revenues τ a share of income from other private or international sources of income y to the budgets of academic institutions with a correspondingly high and low level of productivity of business entities in a given region regarding the function of public utility for a certain period. Then limiting the level of tax payments by business entities in a given region with high productivity (to what extent agents can be considered profitable at a certain level of taxation) can be written as:

$$\bar{U} = \bar{y} - \bar{\tau} - \psi\left(\frac{\bar{y}}{\bar{\theta}}\right) \geq \underline{y} - \underline{\tau} - \psi\left(\frac{\underline{y}}{\underline{\theta}}\right) = \underline{U} + \tilde{\phi}(\underline{y}) \quad (1)$$

\bar{U} - the highest level of social utility of the state body in conditions of uncertainty in the conduct of hostilities;

\bar{y} , \underline{y} - respectively, the highest and lowest GDP of the region;

ψ - expenditures of capital and labor to obtain such income;

$\bar{\theta}$ - the highest productivity of business entities in conditions of uncertainty in the conduct of hostilities;

$\bar{\tau}$, $\underline{\tau}$ - respectively, the largest and smallest amount of taxes paid with a intended purpose for the formation of budgets of academic institutions;

$\tilde{\phi}(\underline{y})$ - це $\psi(y/\underline{\theta}) - \psi(y/\bar{\theta})$, which grows and transforms along with in while $\psi''(\cdot) > 0$ та $\psi'''(\cdot) > 0$.

$$v\left(\bar{y} - \psi\left(\frac{\bar{y}}{\bar{\theta}}\right)\right) + (1-v)\left(\underline{y} - \psi\left(\frac{\underline{y}}{\underline{\theta}}\right)\right) \geq v\bar{U} + (1-v)\underline{U} + b \quad (2)$$

Determining the optimal level of taxation to obtain the necessary income for the budgets of academic institutions in conditions of uncertainty in the conduct of hostilities

As already known, the two main doctrines of classical macroeconomics are neutrality and dichotomy. If we follow these principles, we might think that in the long run there is no relationship between military budgeting and real sectors of the economy. However, we have confirmed the fact that military budgeting and the real sector of the economy are interrelated and are factors influencing each other's development. Therefore, the question arises of the need to determine the interdependence between the productive efficiency of any processes in both the real and paramilitary sectors of the economy and the development of military budgeting itself. The military budgeting sector is a real sector

of the economy. And therefore, the economic growth of a particular country also depends on the productivity of military budgeting and its effectiveness. In this way, it is possible for the first time to note the possibility of the influence of military budgeting and its productive efficiency on the economic growth of a particular country in a globalized world economic system.

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EVALUATION OF THE EFFECTIVENESS OF MARKETING INNOVATIONS

At the present stage of functioning of enterprises, the dynamics of their development depends on the introduction of innovations in all spheres of activity. As a result, there is an objective need for the active use of marketing activities of innovations on the basis of a wider use of marketing tools. The versatility and variability of various methodological approaches to the assessment of marketing innovation activities of enterprises necessitates an integrated approach to determining the dynamics of innovation processes based on one of the integral criteria, in the which can be an indicator of the innovative activity of the marketing activity of the enterprise.

Therefore, it is relevant to develop methodological approaches to assessing the economic efficiency of marketing innovations and justify the choice of a strategy for innovative development of an enterprise [1-11].

In our opinion, innovation activity should be understood as intensity Innovative Activities Industrial of enterprises sentouch on the development and attraction of new technologies or improved Innovative products in the economic turnover. On the basis of traditional methods of analyzing innovation activity, it is customary to assess the development of the enterprise infrastructure in the field of R&D, as well as to determine their ability to measureq consolidation of innovations [1, 5, 10].

This approach is used mainly in the formation of reporting and statistical data on the state and development of innovative activities of enterprises. However, Evaluation of innovation and marketing Activity should also be used in the process of managing innovative development in the development of appropriate strategies. In this scenario, assign metrics Marketing activity will consist not only in assessing the innovative activity of the enterprise in introducing innovations, but also in analyzing its potential opportunities in the field of R&D, and in Activities structural elements interrelated with this sphere for the effective implementation of the innovative development strategy Enterprise. Evaluate Marketing activity and justify the choice of the strategy of innovative development of the enterprise is offered on the basis of calculation and analysis of the