

BUSINESS UNITS' ECONOMIC SUSTAINABILITY AND ITS ADAPTIVE PECULIARITIES

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Abstract. The article is devoted to economic sustainability concept and to peculiarities of its application to business units functioning. It's proving in the work, that combination of interests is a necessary feature in the process of economic sustainability increasing and growth of profit, oriented to formation of capital, considerable for declaring at integrated reporting. The author grounds the necessity of balance microeconomic models usage, based on the identification of tendency of interaction and interdependence in the development of economic, social and environmental processes, happening during business units activities and effective management decisions making in the field of economic sustainability concept development.

Keywords: economic sustainable development, business unit, capital, balance microeconomic model.

DOI: <http://dx.doi.org/10.23856/2104>

Introduction

Reformation of Russia economy, transition of the whole country economic system to market economy have not reached the desired level of sustainable development almost in every sector of economy. However, it found out the number of problems in the management system. It causes the development of new mechanisms and tools for their solving. Their effective application will enable business units to reach the certain level of sustainable development. It's important to combine business units interests in profit growth with environmental, social and financial components in distinguish competitive advantages.

Improvement of sustainable development concept requires considerable change in the priorities, as for economy as a whole, so for its separate fields and sectors (complexes), and reconsideration of structural investment policy according to these priorities. New methodology is required, which would not be based on the volume of used natural resources, as current, but would be oriented on final results. It is known, that sustainable development is inevitably affects environment that is why every economic sector should do something in order to minimize negative effects on it. Producing goods and services has a big influence on the environment.

Theoretical and empirical base of research

In modern conditions of economic relations transformation and so called relational capital formation, it is impossible to manage without a balanced combination of environmental, social and economic development. That is why micro- and macroeconomic factors of environmental, economic and social influence should be considered in creating of the sustainable development policy. Optimal combination of these factors is important. It

means that we have to find such a concept of sustainable development, which will let us define reliably the effectiveness of implemented strategies and the influence of economic policy on the environment.

Today sustainable development does not have generally acknowledged definition. It has been actively discussed for a long period of time. It became a sign of socio-economic development for many countries including Russia. Nevertheless, the majority of experts agree sustainable development should consist at least of three components:

- Hicks-Lindahl concept of maximum income is the reason to include economic component in the sustainable development concept. According to Hicks-Lindahl concept, maximum income can be produced on condition of maintaining the aggregate capital, due to which the income is produced;
- Social component is based on fair distribution of welfares and the necessity of human capital maintenance.
- Environmental component is based on unity of biological and physical systems within the framework of natural capital increasing.

Each component can be formed as a capital, used by business units for revealing and declaring competitive advantages to stakeholders.

Every group of business unit partners has its own focus of interest in maintaining a special type of capital. Moreover, a long-term competitive policy is formed with an accent on increasing a definite type of capital, according to made priorities in satisfying partners' interests.

We consider International Integrated Reporting Framework to be the latest development in capital concept. It is created by International Integrated Reporting Council – a global coalition of investors, standards developers, accountants and regulative organs. According to the standard capitals are stocks of value that are increased, decreased or transformed through the activities and outputs of the organization (International Integrated Reporting Framework, 2013). The ability of an organization to create value for itself enables financial returns to the providers of financial capital. This is interrelated with the value the organization creates for stakeholders and society through a wide range of activities, interactions and relationships (International Integrated Reporting Framework, 2013). Therefore, business units have freedom in usage of capital categorization and in declaration it in the integrated reporting. In our opinion, a special feature of capital, declared in the framework, is representing it as a variable category in continuous turnover.

Studying types of capital, marked out in the framework, we should pay out that they represent opportunities for business units to implement in every sphere of their productive, social and environmental activity: financial, manufactured, intellectual, human, social and relationship, natural capital.

Financial capital is a pool of funds, available to an organization for use in the production process obtained through financing, generated as a result of operations or investments.

Manufactured capital – physical objects that are used by organization in the production including those that created by other organizations (roads, port, bridges, water treatment facilities, etc.)

Intellectual capital is referred to intangible assets, as many economists do. But “organizational capital” as a component of intellectual capital rises questions. It contains of “tacit knowledge, systems, procedures and protocols” (International Integrated Reporting Framework, 2013). But how should we estimate them?

Human capital represents people's competencies, capabilities and experience, and their motivations to innovate, including their ability to develop and implement an organization's strategy and to improve production processes.

Social and relationship capital – the institutions and the relationships giving the ability to share information to enhance individual and collective well-being. It represents a concept of an organization's social license to operate. That is totally new in our practice. Having analyzed companies' reports, which present integrated reporting, such item as an organization's social license to operate was not found.

Natural capital is currently studied by economists in bigger extent, represented in the framework as a common term in modern literature “all renewable and nonrenewable environmental resources and processes that provide goods or services that support the past, current or future prosperity of an organization” (International Integrated Reporting Framework, 2013). This definition is slightly reminds the Brundtland Commission definition of sustainable development introduced in 1987 (Nasheobshcheyebudushcheye) but only transferred from macro- to micro level.

Taking into account the multitasking of distinguished types of capital for declaring in the integrated reports, we can admit that not all types of capital can function at a company moreover some types of capital can have indirect influence. In this case the framework recommends not to mention this type of capital in the integrated report.

During categorization of capitals and their practical usage, the question occurs: how should a business unit separate its resources and competences into different types of capital???

It is obvious, that for any company, according to the framework, appearance of intellectual capital is the result of interaction with stakeholders. But companies identify it as human or relationship capital. The framework does not give any definite recommendation. It says business units can divide capital into different categories on the condition that capital should be used as a key point while making an integrated report. Any used capital or capital that is under influence of business unit should not be missed.

So in our opinion sustainable management should be considered:

- In community with the sustainable economy as a whole;
- From the point of the business unit, its structure, composed from different components;
- From the point of interaction of one business unit with another.

According to the International Integrated Reporting Framework and the necessity of defining a sustainable development optimal level for a business unit, which combines opportunities to maintain and increase capitals with different priority level, we suggest using a category of economic sustainability of business unit, based on a state value and identification of economic system transition signs from sustainable condition to unsustainable.

In this case, economic sustainability is business unit's feature, based on the estimation of external and internal influence on environment factors. As a result it will base the choice of tactic in the external environment, according to internal economic environment factors.

For effective adaptation of economic sustainability concept to peculiarities of business units functioning we need a special procedure of its realization. The procedure can consist of the next blocks: goal-setting, estimation of economic system factors influence; estimation and internal economic environment management; external economic environment estimation and forecasting of composite indexes; implementing the concept of business unit's economic sustainability.

Economic sustainability is formed under the influence of different factors. With time

influence of some factors is increasing, of other – decreasing, and this courses deviation from the set goal.

Today we have lots of tools for external and internal environment factors analysis. However, not every tool can be used for the business unit. Some of them is aimed at newly-formed business units, other do not maththe peculiarities of functioning in Russian realities (Gushko, Kulishov, 2016).

The analysis of currently implemented assessment tools for internal and external environment of business unit brings us to conclusion that almost every tool is single-minded, helps to study the influence of only internal or external factors or estimates only qualitative features, requiring additional mathematical tools.

We think SWOT-analisy to be the most appropriate. It helps to consider all factors of internal and external environment and to define their influence on achieving economic sustainability of business units in future.

Today it is a common belief that achieving economic sustainability is almost fully depends on formation of “correct” economy. If we consider sustainable development from the influence environmental point of view, it becomes clear that it should provide integrity of biological and physical natural systems. Business plays the main part in saving the world from environmental disaster. Business already understands that it is profitable to take care about environment. Growth caused by “green” production is the priority of many companies, but not everyone knows how to reach it.

According tothis approach it is necessary to carefully analyze the substitutability and complementarity of production factors (or different types of capital) from the standpoint of final results, the possibility of saving natural resources while maintaining and increasing the final yield of the product.

Based onsuch interchangeability of the production factors and the necessity to identify the real needs in natural resources. It is necessary to evaluate the natural resources and products based on them as a single complex, as an integrated natural-product system. And from the standpoint of the final results of this system functioning to determine the required volume and efficiency of natural resources usage. The load on the natural foundation of the economy can be reduced significantly with an increase in the value of the final product consumption.

Search and implementation of environmental economy alternatives is extremely relevant. There are great opportunities to mitigate the environmental situation in Russia. We can find many options based on the inter-sectorial balances, or other economic instruments such as economic and mathematical models, that reflect the structure of inter-branch relations on usage and distribution of goods in the economy, reflecting the equilibrium state of relations between the sectors. The mathematical modelingchallenge is to learn how to describe theenvironmental systems dynamicsunder anthropogenic influence.

It is possible to solve the problem of optimizing the production, meeting certain environmental standards, with the help of balance microeconomic models. Considering environmental factors in microeconomic we need to turn to value terms in criterion function and to payments for exceeding pollution standards. Let p - the aggregate price of the products and components of the vector (1):

$$\bar{w} = (w_1, w_2, \dots, w_m), \quad (1)$$

are costs of pollution eliminationin case of exceeding the relevant standards(in violation of the third condition in (12)).Then the function of production release income $F(\bar{x})$

has the form (2):

$$P = p \times F(\bar{x} - \bar{w} \times \bar{\delta}), \tag{2}$$

where $\bar{\delta}$ – the vector of "activation" of payment sanctions for pollution elimination (3):

$$\delta_j \begin{cases} 0, z_j \leq z_j^*, \\ 1, z_j > z_j^*, \end{cases}, \quad J = 1, 2, \dots, m, \tag{3}$$

\bar{z} - the vector of pollution; z_j^* - components of the maximum permissible pollution(4):

$$\bar{z} = (z_1^*, z_2^*, \dots, z_m^*). \tag{4}$$

For simplicity, we assume that the normal costs of business units on the environment are included in the payment for natural resources, that is, the second term in the income function with a minus sign - a payment for excess load on the environment. In this case, we can consider a production function whose arguments are the resources \bar{x} , pollution \bar{z} , the maximum permissible limits z^* and payment for violations of environmental regulations \bar{w} (Intriligator, 2002.).

Output income optimization model, using the resource vector \bar{x} , with technology characterized by the production function F, is defined as follows: find the maximum of the function at an acceptable set of solutions of (5):

$$\begin{cases} \bar{x} \geq 0; \\ A\bar{x} \leq \bar{b}^T, \end{cases} \tag{5}$$

with a given restriction (4) on the vector \bar{z} .

In this model, there are both possibilities of production (given the matrix A and the vector of the restrictions coefficients and vector \bar{b} of resource restrictions) and regulations of technological influence on the environment and costs of excess consequences liquidation (vectors \bar{w} and z^*).

So we can see that with the "tough" environmental legislation producer would be forced to use advanced technologies to reduce anthropogenic waste – matrix coefficients C_p . This what countries with the developed economy have (Shelukhina, 2014).

Diversified economy balance models are used for modeling environmental and economic systems in microeconomics. Some models suggest to increase the gross output, so that the increase in output could be directed to remove or reduce environment pollution. However, such a formulation of the problem suggests used technologies to stay at the same level, this is reflected in the immutability in the cost matrix A.

Typically, the inter-branch balance matrices have a significant productivity reserves (Bunkina, 2002). In some cases, we have to spend more resources per unit of output, to increase intra-branch consumption (for example, the construction of treatment plants, waste treatment process) in order to minimize anthropogenic waste. This "weights" the coefficients of the direct costs matrix A, which leads to a reduction in its productivity reserve.

Let A – inter-branch balance matrix, \bar{x} – industries gross output vector, \bar{y} – final

consumption vector.

Then the equation of inter-branch balance (6):

$$\bar{x} = A\bar{x} + \bar{y}. \tag{6}$$

Suppose, we need to increase inter-branch consumption to implement environmental activities. In this case, the new matrix of direct costs is the sum of the proir matrix A and some additives (Bergh, Nijkamp, 1991). Accordingly, the vectors of gross output and final consumption change as well:

$$\bar{A} = A + \Delta A, \quad \bar{x}^* = \bar{x} + \Delta \bar{x}, \quad \bar{y}^* = \bar{y} + \Delta \bar{y}. \tag{7}$$

For changed matrix \bar{A} inter-branch balance equation will be:

$$\bar{x} + \Delta \bar{x} = (A + \Delta A) \times (\bar{x} + \Delta \bar{x}) + \bar{y} + \Delta \bar{y}. \tag{8}$$

Aftercollectingterms, we get the equation for changing the gross output vector (9):

$$(E - \bar{A}) \times \Delta \bar{x} = \Delta A \times \bar{x} + \Delta \bar{y}. \tag{9}$$

Consider the particular case of matrix A change, when all its elements are increased in $(1 + \alpha)$ times, α satisfies the productivity of satisfies A (matrix $(1 + \alpha)A$ productive as well).

In other words, $\Delta A = \alpha A$, then the equation (8), taking into account equation (7) takes the form (10):

$$(E - (1 + \alpha)A) \times \Delta \bar{x} = \alpha(\bar{x} - \bar{y}) + \Delta \bar{y}. \tag{10}$$

This equation relates the change in gross output with changes in the consumption of resources and the final consumption vector. This way we obtain an expression for $\Delta \bar{x}$ (11):

$$\Delta \bar{x} = (E - (1 + \alpha)A)^{-1} \times \alpha(\bar{x} - \bar{y}) + \Delta \bar{y}. \tag{11}$$

Let's analyze expression (11). Since by the second productivity criterion of the matrix $(1 + \alpha)A$ matrix $(E - (1 + \alpha)A)^{-1}$ is positive, so even in the case of zero growth in final consumption vector gross output increases, since $\bar{x} - \bar{y} > \bar{0}$.

Recently, the environmental taxes and fines usually offset damage to the environment, which leads to higher prices of products. It is assumed that the volume of gross output and intra-consumption unchanged, ie, the matrix of direct costs A is unchangeable. Let's use the cost model of equilibrium prices. In matrix, it has the form (12):

$$\bar{p} = A^T \bar{p} + \bar{w}, \tag{12}$$

Where \bar{p} и \bar{w} - accordingly Industry products prices vector and the added value vector (Lazareva, 2011).

The funds allocated for the elimination of pollution will increase the components of value added vector \bar{w} . Let the vector $\bar{w}_{ec} > 0$ - environmental "load" in the form of taxes, fines, engineering and preventive measures costs and so on. Then the vector of prices for industries products including environmental costs is determined from the equation (13):

$$\bar{p} = (E - A^T)^{-1} \times (\bar{w} + \bar{w}_{ec}). \tag{13}$$

Thus, change in prices for industries production will be (14):

$$\Delta \bar{p} = \bar{p}^* - \bar{p} = (E - A^T)^{-1} \bar{w}_{ec}. \tag{14}$$

Since the components of the matrix $(E - A^T)$, due to the efficiency of the matrix A , are non-negative, then $\Delta \bar{p} > \bar{0}$. In this case, the resource consumption for output remains unchanged.

Currently, the experience gained in generalization of mathematical economy and environmental models, let us go to the construction of complex environmental and economic models. These models include blocks, describing economic and environmental processes; each of them necessarily contains equations that relate variables from environmental and economic sub-systems between them selves (Endres, Kverner, 2004).

Conclusions and suggestions

Business units' economic sustainability should be based on optimal correlation of environmental, financial and social components, considering stakeholders and business units' interests in maximum profit growth, leading to the possibility of creating and multiplication of different types of capital flows, reflecting the effectiveness of the production, social and economic activities. Without taking into account the mutual influence of environmental and economic factors, without the knowledge of modelling approaches based not only on optimization methods economic systems functioning, efficient short periods in microeconomic scale, but also on dynamic balance modeling techniques that enable us to display trends of interrelated processes of economic development, social and environmental systems, including trends, associated with a significant increase in negative effect of accumulation of anthropogenic environmental pollution, it is impossible to make a qualitative management decision in designing the economic sustainability concept.

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