

## POSSIBILITIES FOR ASSESSING THE ECONOMIC SUSTAINABILITY OF THE CONSTRUCTION ENTERPRISE

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### Introduction

The market conditions in which enterprises perform their manufacturing and economic activity are characterized by increasingly growing competition and dynamic environment. This places every business, the construction enterprise being no exception, in a position facing more and more demands and challenges which the business must cope with in order to survive in these circumstances. To stay in business, the construction enterprise has to be able to constantly adapt to the changing environment. For this reason achieving economic sustainability is gaining importance for the management of the construction company, as economic sustainability allows for attaining the major business goals. Economic sustainability is one of the most important factors to influence the functioning and development of the enterprise in the developing markets. A major issue connected with economic sustainability is its assessment, as there is still no uniform methodology to do this.

Therefore, the aim we set ourselves in the present study is to offer a method for assessing economic sustainability that could be used as an auxiliary instrument by the management of the construction enterprise when an analysis is made of the state of the business.

To achieve this goal, the following tasks are presented and solved:

- Defining the notion of economic sustainability;
- Analyzing various methodologies for assessing economic sustainability by identifying their strong and weak points.

### 1. The nature of the notion of “economic sustainability”

The idea of “sustainability” in itself is derived from “sustainable development” and is associated with the report of the Brundtland Commission<sup>1</sup>. The concept of sustainable development envisages economic growth that is capable of meeting the needs of the present without compromising the abilities of the future generations to meet their own needs. The measurements of sustainable development are social, economic, environmental and institutional. In this line of thought we could make the point that sustainable development calls for operating in a mode of optimal use of resources and achieving the highest economic, social and environmental end results. Sustainable development is synonymous with high efficiency and strong competitiveness<sup>2</sup>, as it generates cheaper and higher-quality products, as well as better working conditions.

<sup>1</sup> Van der Tak, C. M. Microeconomic Foundation for Sustainable Development, Amsterdam, 1992, p. 43.

<sup>2</sup> A company's competitiveness is its ability, through perpetual updating and improvement to generate and sustainably maintain competitive advantages resulting in high financial results in the long run. *Velev, M.I.* Assessment and analysis of company competitiveness. Sofia: Softrade, 2004 .

Sustainability is also closely connected with the term “economic equilibrium”, which in itself is an essential characteristic of the economic system in a situation where the interaction of divergent forces is mutually neutralized in such a way that the system’s properties being monitored remain unchanged. Economic equilibrium can be viewed in two ways: as static, i.e. a situation, a state of equilibrium, and as dynamic, i.e. an even and streamlined process of development. In this sense the notion is associated with the idea of system sustainability. If under external impacts upon the system the unchangeability of the system’s properties is retained, then we have sustainable balance<sup>3</sup>.

As for economic sustainability, it is a scientific category reflecting the state of the enterprise in the market conditions and guarantees it is purpose- orientated in its present and future progress. This category encompasses a set of the enterprise’s properties, including output, non-current fixed assets, resources, personnel and intellectual potential<sup>4</sup>.

As a result of studying the opinions of different authors<sup>5</sup> on the notion of economic sustainability, we can say that these opinions vary. In our view, some of them do not cover adequately the characteristics necessary for a sustainable state and the means for its achievement, while others are too complicated and cumbersome. This gives us ground, complying with the purposes of the current study, to assume that the economic sustainability of the construction enterprise can be characterized as a guarantee of its profitable manufacturing and economic activity by means of increasing the efficiency of the manufacturing resources used and production management, the healthy financial state of the business, the effective development of the manufacturing facilities and the social progress of employees under the conditions of self-funding in a dynamic external environment<sup>6</sup>.

Achieving economic sustainability is an important task for every enterprise operating in the conditions of a dynamic and highly competitive market. In our opinion every construction business must strive to achieve economic sustainability, as these results in a number of advantages such as:

<sup>3</sup> *Economic encyclopedia*. Sofia, Publ. house “Science and Art”, 2005, p. 294.

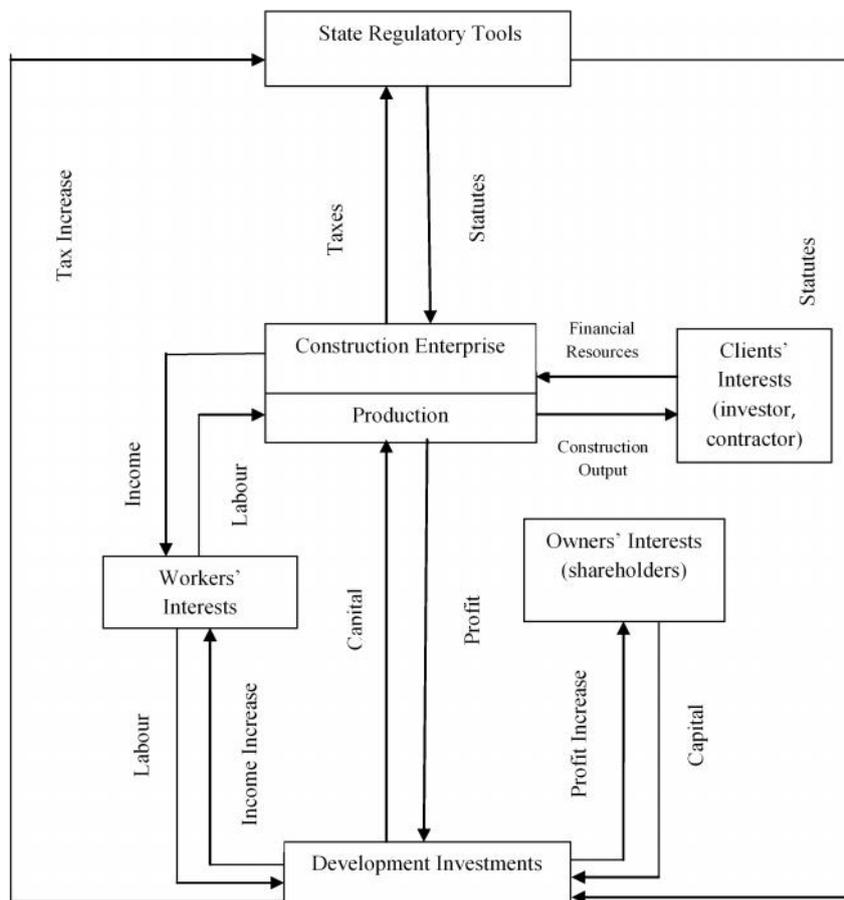
<sup>4</sup> *Kasarova, V.* Models and indicators for analyzing the financial sustainability of the company. E-document: [http://eprints.nbu.bg/637/1/FU\\_1\\_FINAL.pdf](http://eprints.nbu.bg/637/1/FU_1_FINAL.pdf)

<sup>5</sup> See: *Okladskiy, P.V.* Sootnoshenie ponqtiy ekonomicheskoy nesostoyatelnosti I ustoychivosti predpriyatiy// *Lesnoy zhurnal*, 2000, 5-6, s.176-180; *Zaharchenko, V.I.* Ekonomicheskaya ustoychivost predpriyatiya v perehodnoy ekonomike// *Mashinostroitel*, 2002, 1, s. 9-11.; *Bryanceva, I.V.* Ekonomicheskaya ustoychivost predpriyatiya: sushtnost, ozenka, upravlenie. Habarovsk: Habarovskogo gosudarstvennogo tehnikeskogo universiteta, 2003, s. 16-18; *Nikolov, E.* Ustoychivost na firmenata konkurentosposobnost// Summary of doctoral dissertation. Svishtov, 2009.

<sup>6</sup> The external environment is a set of the external conditions and limitations the enterprise operates in. Therefore it is a source of disturbing influences upon the manufacturing and economic activity of the construction enterprise. External factors are those components of the outside environment, which through their characteristics define the conditions and limitations in the operations of the company. They do not depend on, and are beyond the direct managerial influence. Depending on the sources of impact, the external environment factors can be classified into two groups: factors of direct impact (direct factors) and factors of indirect impact (indirect factors). The more important direct factors are: customers, competitors, suppliers, and those of indirect impact are: the overall political and economic situation, technological development, social and cultural relations, regional relations.

- Competitiveness of the enterprise and its output;
- Efficiency of the enterprise's operations;
- Flexibility in relation to the external environment;
- Adaptability of the enterprise;
- Risk management;
- Market stability of the enterprise;
- Economic security of the enterprise.

We have to note that achieving economic sustainability is a complex process, requiring good knowledge on the part of the management of the construction company. In connection with this, we shall take the liberty to present an adapted model of economic sustainability, described in fig.1. The model includes all the cash flows that are essential



**Source:** Barkanov, A. S. *Ocenka ekonomicheskoy ustoychivosti stroitel'nogo predpriyatiya. M., Zhurnal «Ekonomika stroitelstva» 8, 2006, s. 36.*

**Fig.1. Model of the economic sustainability of the construction enterprise**

for manufacturing activities and reflects those areas of the manufacturing and economic activities, about which decisions are being made and which we consider the most important: these areas are investment, manufacturing and finance. The model is based on the unity of those three types of activity, as they ensure the necessary and sufficient condition for the economic sustainability of the construction enterprise.

The most important guidelines for increasing the economic sustainability of the enterprise to take into consideration are as follows: creation of a rational and reliable manufacturing programme, organization of the supply of raw materials and components, operational management of production, placement of the construction output, development of competitive output, production restructuring, efficient investment management.

## 2. Methods for assessing economic sustainability

One of the most important issues relating to the management of economic sustainability is providing the uniform methodology for its assessment<sup>7</sup>. Here we should note that among scientists and economists there doesn't seem to be an unanimous opinion about what definite economic results of the enterprise are to be viewed as indicators of economic sustainability. This is revealed in the various approaches to assessing sustainability. In order to assess the economic sustainability, at present mostly the methods of quantitative evaluation of the company's financial results are being used. For the purposes of the current study, we are going to examine certain methods, which will allow us to draw some conclusions.

According to A. Sheremet and E. Negashev the relation between material resources and the size of the company's own equity and borrowed capital forms the economic sustainability of the business. In their opinion ensuring all the resources necessary for the manufacturing, as well as their sources, define the essence of the economic sustainability<sup>8</sup>. In our opinion, however, apart from the optimal relation between the company's own capital and borrowed capital plus providing the necessary manufacturing resources, a number of other activities of the enterprise, such as the manufacturing process, marketing, etc, play a part. Therefore, in order to get a more comprehensive and accurate assessment of the economic sustainability, other substantial aspects of the company's activity should be examined.

An interesting method of assessing economic activity is devised by Y. Bogatin. The method is based on assessing the sustainability of the core activities of the enterprise. This method defines the overall economic sustainability of the company, which is a sum total of the sustainability of each of the subject's economic activities. The author identifies the following kinds of activities and on the basis of their analysis an assessment of economic sustainability is performed<sup>9</sup>:

<sup>7</sup> By assessing the economic sustainability of the construction enterprise we mean a number of activities aimed at defining the diversion of the economic system from the desired state where we achieve the system's effective functioning and development in relation to the objective at any given time, based on the realization of the system's inner capacity, despite the negative effects of various external and internal factors.

<sup>8</sup> *Sheremet A.D.* Metodika finansovogo analiza predpriyatiya. M.: YUNIGLOB, 1992, s. 73.

<sup>9</sup> *Bogatin Yu.V.* Ocenka proizvodstvenogo biznesa I investitsiy. Izdatelstvo: RGEA, 1998, s. 164.

- Organizational and technological activities;
- Supply and manufacturing activities;
- Marketing activities;
- Financial and economic activities.

The numerical value of the economic sustainability for each type of activity is defined by the degree of diversion of real results compared to balanced results<sup>10</sup>. The advantage of this method, in our view, is its complex character. The assessment of the economic sustainability encompasses various spheres of the enterprise's activities, which adds considerably to the comprehensiveness of the economic assessment. Nevertheless, we believe that this method is too difficult to apply in everyday practice.

It is obvious that those two approaches can only give a static assessment of the enterprise and do not reflect the dynamics of the company's development. They are also likely to be subjective, inasmuch as the choice of indicators to be included may be subjective. The principle of bringing together a group of individual indicators into one single integrated assessment of the enterprise's behaviour is an interesting one, though somewhat vulnerable in terms of methodology, as it mixes together individual indicators and deprives them of their individual significance.

In assessing economic sustainability mathematical methods can also be used. In this case indicators are defined and an economic-mathematical model is created, so that this model can, within a degree of accuracy, predict the likelihood of the business going bankrupt. The first attempt at developing a model by using financial ratios for predicting failures was made by W. Beaver<sup>11</sup>. Since Beaver a series of models have been developed<sup>12</sup> to solve the problem by analyzing a group of companies, examined on the basis of pre-selected qualitative characteristics (financial ratios). Most of the successful research in this field is implemented using discriminant multi-factor models, developed by means of multidimensional discriminant analysis. It is important to point out that all the authors of similar models recommend that they be used as supplementary tools of the analysis and not as the main one.

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<sup>10</sup> Balanced results are defined as the ideally possible, that is, the results achievable under the state of balance for each of the factors which influence the types of activity.

<sup>11</sup> *Beaver, W. H.* Financial Ratios and Predictions of Failure.//Empirical Research in Accounting Selected Studies, Supplement to Journal of Accounting Research, 1966, p.71-111. *Beaver, W. H.* (1968). Alternative Accounting Measures as Predictors of Failure. *The Accounting Review*, 43(1), p. 113-122. He compares indicators of 79 insolvent companies with the same indicators for 79 financially stable enterprises to find out that 5 years before failure strikes, the difference between the two groups of indicators is considerable and signs appear of the imminent crisis.

<sup>12</sup> For more details see: Fulmer's model: *Fulmer, John G. Jr., Moon, James E., Gavin, Thomas A., Erwin, Michael, J.* "A Bankruptcy Classification Model For Small Firms". *Journal of Commercial Bank Lending* (July 1984), p. 25-37; Springate's model: *Springate, Gordon L. V.*, "Predicting the Possibility of Failure in a Canadian Firm". Unpublished M.B.A. Research Project, Simon Fraser University, January 1978; Taffler's model: *Taffler, R. J.* (1977), "Finding those companies in danger using discriminant analysis and financial ratio data: a comparative based study city business school", City University Business School, London, Working Paper No. 3; *Taffler R. J.* Going, going, gone – four factors which predict. /R. J.Taffler, H.Tisshaw // *Accountancy*, March 1977, p. 50-54.

The best known and meaningful group of models for predicting the likelihood of bankruptcy is represented by the Z-models, developed by the American scientist E. Altman. The main objective of the researcher is to define the possibilities for differentiating the firms which are not threatened by insolvency from those of a high degree of probability of going bankrupt. Without dwelling in great detail on the models themselves<sup>13</sup>, we shall just make a note that using these models we should bear in mind the fact that they were developed within the framework of a particular, developed economy, in a certain time period and thus may not correspond to today's realities; the methodology for developing the models does not take into consideration industry differences, which may have a negative effect on their flexibility and adaptability. They should therefore be used as additional instrument of analysis and they should also be suitably adapted to the current economic conditions.

From the critical analysis that we have performed on these methods, we could identify certain important problems, which in our view should be taken into consideration during the developing of a methodology for assessing the economic sustainability of enterprises:

- The problem with the complex character of the assessment. Most of the suggested methods for assessing economic sustainability focus on one characteristic (mostly the financial side is considered when economic sustainability is assessed) and other important activities for the company's well-being may be ignored. As a result, the assessment can turn out to be incomprehensive and inaccurate.
- The problem with selecting normative values for the indicators that comprise the assessment. All methods of assessment share a common disadvantage – inadequate argumentation or lack of normative meanings of a given parameter to which actual results can be compared.
- The problem with the quantitative representation of the assessment. The quantitative representation of all values is connected with some of the essential problems of measurement, and namely the problem of uniqueness, adequacy, argumentation and generalization.

In the present study we shall take the liberty to suggest a methodology for assessing the economic sustainability of the construction enterprise by attempting to consider some of the problems mentioned. First of all, we believe that it is feasible to choose an assessment criterion which covers the essential and meaningful aspects of the manufacturing and economic activity of the construction company. Defining the essential activities largely depends on the size of the company and its positions on the market.

Examining the company's operations with economic sustainability in mind, we could identify three basic types of activity: financial activity, relations with customers and suppliers and organization of the company's own business processes. Over each

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<sup>13</sup> For details see: *Mishozhev, E. R.* Teoretiko-metodologicheskie problem izmereniya I obobshcheniya pokazateley ocenki ekonomicheskoy ustoychivosti predpriyatiya. Sp. Audit I finansoviy analiz, 2010, 4.

and every one of these activities there are influences exercised by both the company itself and the external environment the enterprise is functioning in. For this reason, in order to identify the common denominator for economic sustainability of the construction enterprise, it is necessary to systematize factors and identify indicators that characterize them.

In our opinion it is feasible for assessing economic sustainability to be performed for a group of indicators, which correspond to concrete factors and characterize essential aspects of the manufacturing and economic activity of the construction business. Besides, analytical indicators must correspond to the following requirements: economic argumentation, validity and objectivity, possibility for formal representation, concrete character and lack of ambiguity of the end results as well as possibility for the indicators to change in time. In Table 1 we have suggested, by way of example, analytical indicators for each of the essential activities of the construction enterprise.

**Table 1**

**Example analytical indicators**

Essential activities	Group number	Indicators in the group
Financial	Group I	Relation between manufacturing costs and the volume of construction and assembly work; Ratio for the realization of construction output.
Relations with customers and suppliers	Group II	Market share; Customer satisfaction
Organization of in-company business processes	Group III	Execution of business processes; Efficiency of business processes.

Here we have to note that apart from the concrete factors, it is necessary to also take into consideration the specific factors which play a part in the construction industry. These can be acquiring the land that will function as a construction site, the different place for the realization of the construction output, the participation of various companies (as subcontractors) in producing the end product of construction, the longer production cycle, etc.

Based on the above assumptions, assessing the economic sustainability may be performed by means of the following algorithm:

1. The source information about the construction enterprise is presented as a set of vectors  $\overline{P}_i$ :

$$\overline{P}_i = (p_{i1}, p_{i2}, \dots, p_{in}),$$

where  $i$ -group number of indicators, referring to a certain factor of influence over sustainability;

$n$ - number of analyzed indicators in the  $i$ -th group.

2. The set of vectors  $\overline{Q}_i = (q_{i1}, q_{i2}, \dots, q_{in})$  represents the normative values of the indicators that concern all the enterprises in the construction sector for a certain time

period  $t$ , which reflects the dynamics of the macroeconomic environment. Normative values are constant, or only seldom change.

3. The unification of the grouped indicators may be executed according to the formula:

$$y_{ij} = \frac{p_{ij}}{q_{ij}}, \quad (1)$$

or

$$y_{ij} = \frac{q_{ij}}{p_{ij}}, \quad i = 1, 2, \dots, s; \quad j = 1, 2, \dots, n. \quad (2)$$

Quotient  $y_{ij}$  defines the degree of approximation to the best value of  $j$ -th indicator in  $i$ -th group. Formula (1) is used for indicators whose growth is related to improving the overall indicator for economic sustainability, and formula (2) – in the opposite case.

4. The overall/common indicator for the economic sustainability of the construction enterprise is defined according to the formula:

$$Y = \sum_{i=1}^s \sum_{j=1}^n \lambda_i \mu_{ij} y_{ij},$$

where  $Y$  – the economic sustainability of the construction enterprise;

$\lambda_i$  – priority of  $i$ -th group of indicators ( $\sum_{i=1}^s \lambda_i = 1$ );

$\mu_{ij}$  – priority of  $j$ -th indicator in  $i$ -th group ( $\sum_{j=1}^n \mu_{ij} = 1$ );

$y_{ij}$  – quotient of the relation between the value of  $j$ -th indicator in  $i$ -th group for the analyzed enterprise, and the same indicators for all the enterprises in the construction sector, defined according to formula (1) or (2).

### Conclusion

Economic sustainability is an essential characteristic of the construction enterprise, which guarantees the rational organization of the manufacturing and economic activities of the company. Assessing economic sustainability can be performed using various approaches to grant plausibility and validity to the resulting data. The indicators reflecting economic sustainability may vary widely, but they should allow for the specific features of the environment the company operates in and also take into consideration the peculiarities of the manufacturing and economic activity of the enterprise so that high efficiency and long-term sustainability is achieved.

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OF THE CONSTRUCTION ENTERPRISE**

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**Abstract**

Economic sustainability is an important characteristic of each enterprise, including the construction enterprise. In the present study there is made an attempt to deduce some of the main issues connected with the assessment of the economic sustainability of the construction enterprise. For that purpose there is clarified the nature of economic sustainability and are discussed various methods of assessment, revealing their strong and weak sides. There is made an attempt at providing some basic guidelines, which the author believes ought to be followed in the development of a reliable methodology for assessing economic sustainability.

**Keywords:** *economic sustainability, assessment, construction enterprise.*

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