

FINANCIAL STABILITY AND ITS IMPACT ON THE MARKET VALUE OF AN ENERGY COMPANY

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ABSTRACT

In the context of the upcoming restructuring of an energy company in Tajikistan, the problem of assessing its market value, identifying the factors and conditions that determine it becomes particularly relevant. The article is devoted to the study of the impact of financial soundness indicators. In the conditions of low effective demand and significant volumes of external borrowing accumulated in the power industry, the authors of this article performed a quantitative assessment of the degree of influence of the system of indicators of financial stability on the market value of an energy company in Tajikistan. Methods of economic and mathematical modelling were used as a research tool. The results of the study indicate a pronounced dependence of the market value of the energy company on the indicators of its financial stability. The authors justify the need to manage the market value of a domestic energy company.

Keywords: stock market, business assessment, financial stability, econometric analysis, energy company.

1 INTRODUCTION

The total potential reserves of hydroelectric resources, amounting to 527 billion kWh, are currently used only at 3.5–4%. In the total structure of electricity production in Tajikistan, the share of hydroelectric power plants is about 96%. Significant external investments in the assets of hydroelectric power plants and electric grid enterprises determine the need not only for an adequate assessment of the market value of the energy business, but also for effective management of this value. The problem is compounded by the accumulation of significant amounts of foreign debt in this strategically important sector of the country's economy. The country's electric power industry is implementing debt agreements worth \$1,650 million. By concentrating a significant amount of foreign investment resources, the electric power industry should accordingly make a significant contribution to its maintenance. This determines the special importance of searching for mechanisms to increase the economic and financial stability of the country's electric power industry.

The authors of this article set a task to investigate the relationship between the financial soundness indicators of an energy company and its market value. The urgency of this task is related to the upcoming restructuring of the energy company and the presence of a number of factors that destabilize its financial stability.

2 PURPOSE AND OBJECTIVES OF ASSESSING THE MARKET VALUE OF THE ENERGY BUSINESS

The negative domestic experience of privatization of state property in industry at an undervalued cost in the first years of sovereignty led to the deindustrialization (destruction of the industrial sector) of the country's economy. The lack of a stock market, an appropriate regulatory framework and expert appraisers in the country has contributed to the development of negative processes in this area.

The market value of the energy business is a real estimate of the company's value at a given time and the need for reliable information about it is constant. The market value is



calculated based on the current market situation, so it will change when market conditions change. The availability of data on the market value of a business indicates its manageability and the company's ability to attract external financing.

Market value assessment has a multi-purpose character. This indicator is important for operational and strategic management of the company, justification of investment decisions, making purchase and sale transactions, insurance and taxation, and restructuring. The restructuring of the power industry in Tajikistan provides for the separation of independent energy companies from the holding.

Research results show that the market value indicator taken in isolation cannot serve as the only criterion for evaluating the performance of an energy enterprise. Indicators that characterize the company's long-term potential, including its financial stability, are particularly important for these purposes.

3 FINANCIAL STABILITY AND ITS DETERMINING FACTORS

Financial stability is an integral part of the overall stability of an energy company in a changing internal and external environment. As a comprehensive indicator, it characterizes the balance of financial flows and the availability of funds to support its activities for a certain period of time, guaranteeing constant solvency, including servicing internal and external borrowings, without reducing the reliability of energy supply.

The risk of reducing the financial stability of the energy holding in Tajikistan is caused not only by low effective demand for electricity, low energy consumption culture, weak energy management, but also, to a greater extent, by imperfect capital structure. A significant share of the funds raised entails an unbalance of the company's positive and negative cash flows by volume.

The development and implementation of financial sustainability management strategies are complex and time-consuming tasks, which, unfortunately, at domestic energy enterprises, as a rule, were not performed at the appropriate level [1].

The most important task of energy business managers is to ensure its financial stability and manage the processes of increasing its market value. Making timely and reasonable management decisions to improve the financial stability of an energy company or an individual power plant can neutralize threats and increase its market value. And the restructuring of the energy company will not entail the development of negative processes.

The purpose of this study is to show that financial stability is not only one of the factors that regulate the market value of an energy company, but also a complex indicator that is necessary when performing analytical calculations to determine and manage its market value. The system of indicators of financial stability allows one to quantify the stability of each element of the energy company's assets, as well as its property as a whole.

4 ECONOMIC AND MATHEMATICAL MODELING OF THE IMPACT OF FINANCIAL STABILITY OF THE ENERGY BUSINESS ON ITS MARKET VALUE

The study of the impact of financial soundness indicators on the market value was performed for the energy company "Barki Tojik" and its separate structural element – hydroelectric power station. Methods of economic and mathematical modeling were used as a research tool. The introduction of a random component into an economic model leads to the fact that the relationship of its other variables ceases to be strictly deterministic and becomes stochastic, which is observed in reality, as is known, about a specific economic object. The adequacy of the model makes it possible to assess the parameters of the operation of a power



company (hydroelectric power station) and formulate recommendations for making management decisions [2].

Objective of the Research 1. The Open Joint-Stock Holding Company (OJSHC) “Barki Tojik” was chosen as the object of research. It deals with the operation of power stations and networks, generation, transmission, distribution and sale of electric and thermal energy. OJSHC “Barki Tojik” consists of 24 Joint-Stock Energy Facilities, ten of which are enterprises of distribution networks.

The effective indicator in the model is the value of company’s net assets. The value of a company’s net assets is a key indicator of the performance of any commercial organization. It characterizes the excess of the company’s assets over its liabilities, both short-term and long-term, i.e., it allows one to assess the level of solvency of the enterprise [3].

Table 1 shows a list of financial indicators of the energy company “Barki Tojik”, which are independent variables (X_i) in the model.

Table 1: Indicators of econometric analysis.

Designation	Variables	Measure unit
Y	Net asset value	million soms.
X₁	Autonomy ratio	%
X₂	Financing ratio	%
X₃	Investment ratio	%
X₄	Capitalization ratio	%
X₅	Financial stability ratio	%

The significance of each selected financial indicator and its impact on the market value of the energy company was assessed based on the construction of an econometric model using MS Excel.

Table 2 shows the reporting data on the financial indicators selected for the study of the energy company “Barki Tojik” and the results of their extrapolation.

Table 2: Source data for building an econometric model. Compiled according to the data of the energy company “Barki Tojik” [4].

Period of observations	Y	X ₁	X ₂	X ₃	X ₄	X ₅
2011	1,206.5	0.38	0.63	0.38	1.60	0.81
2012	1,366.2	0.37	0.58	0.37	1.74	0.79
2013	1,528.2	0.22	0.27	0.22	3.66	0.55
2014	1,725.5	0.43	0.46	0.47	2.14	1.00
2015	1,843.3	0.37	0.40	0.48	2.45	0.93
2016	2,047.0	0.41	0.42	1.36	2.40	0.71
2017	2,183.7	0.40	0.39	3.58	2.54	0.51
2018	2,378.9	0.47	0.43	4.24	2.32	0.58
2019	2,511.8	0.45	0.40	-3.19	2.49	0.31
2020	2,711.6	0.51	0.42	-3.38	2.36	0.36

In order to exclude multicollinearity of variables, the correlation matrix presented in Table 3 was constructed.

Table 3: Correlation matrix.

	Y	X ₁	X ₂	X ₃	X ₄	X ₅
Y	1					
X ₁	0.70	1				
X ₂	-0.45	0.28	1			
X ₃	-0.21	-0.17	0.01	1		
X ₄	0.21	-0.53	-0.95	-0.02	1	
X ₅	-0.70	-0.25	0.41	0.34	-0.39	1

Using the “Analysis Package” add-in in the “Regression” mode allowed the evaluation of the parameters of the econometric model. The value of the multiple coefficient of determination R^2 shows that 99.3% of the total variation of the performance indicator is explained by the variation of indicators X_i , which is a good sign that the indicators selected affect the value of net assets, i.e. the market value of the energy company.

After checking the significance of the coefficients, the linear multiple regression equation takes the form

$$Y = 4604.04 + 3685.29X_1 - 5140.06X_2 + 2.47X_3 - 557.34X_4 - 831.68X_5 + \varepsilon. \quad (1)$$

This is confirmed by calculations (Table 4).

Table 4: The obtained significance coefficients.

	Coefficients, b_i	P-value
Y-intersection	4,604.04	0.07
X₁	3,685.29	0.02
X₂	-5,140.06	0.03
X₃	2.47	0.81
X₄	-557.34	0.18
X₅	-831.68	0.01

If the probability P is less than the significance level $\alpha = 0.05$, then the hypothesis of the significance of the corresponding regression coefficient is accepted. Table 4 shows that only the coefficients b_5 , b_2 , b_1 , corresponding to the variables X_5 , X_2 , X_1 , are significant. It can be concluded that the most significant is the coefficient of financial stability X_5 , while the coefficients of autonomy X_1 and financing X_2 are relatively less important. The investment coefficients X_3 and capitalization X_4 are insignificant. The Variance analysis showed that the significance of F is equal to 0.000223, which is less than $\alpha = 0.05$. Therefore, the regression that has been constructed is generally significant.

Thus, the results of modelling show that the value of net assets of an energy company is influenced by the coefficients of its financial stability, autonomy and financing. Therefore, the financial stability of the company plays an important role in assessing the market value of the enterprise.

Objective of the Research 2. Open Joint Stock Company “Sangtudinskaya HPP-1” was accepted as the second object of research on the impact of financial stability on the market value. The choice is justified by the fact that this power station is isolated from the energy company “Barki Tojik” in the system of electric energy sales and the calculation of its financial stability indicators is a function of HPP managers. The installed capacity is

670 mW. 75% of the shares of the HPP belong to JSC IRAO (Russian Federation), 25% to the Government of the Republic of Tajikistan.

In this example, existing reporting practices of OJSC “Sangtudinskaya HPP-1” and data available for research in the period 2009–2018 were used.

The financial stability of an electric power plant reflects the liquidity of its assets in comparison with its liabilities by maturity: the current liquidity ratio and the term liquidity ratio. They were accepted as independent variables (X_i). The model uses the value of the organization’s net assets corresponding to the variable Y as a performance indicator (Table 5).

Table 5: Indicators of econometric analysis.

Designation	Variables	Unit of measure
Y	Net asset value	million soms.
X₁	Current liquidity ratio	%
X₂	Term liquidity ratio	%

Table 6 shows the data of OJSC “Sangtudinskaya HPP-1” [5], on the basis of which the analysis was carried out.

Table 6: Source data for building an econometric model.

	Y	X₁	X₂
2009	2653	1	2.03
2010	2 851	0.91	0.75
2011	3 180	2.32	1.57
2012	3 193	3.07	1.51
2013	3 198	3.56	0.96
2014	3 216	10.05	4.51
2015	3 242	33.06	16.46
2016	3 391	9.57	9.25
2017	3 449	3.51	3.43
2018	3 593	1.4	1.34

According to Table 6, the correlation matrix shown in Table 7 was constructed.

Table 7: Complete correlation matrix.

	Y	X₁	X₂
Y	1		
X₁	0.17	1	
X₂	0.21	0.95	1

Regression statistics showed that the value of the multiple coefficient of determination R_2 is equal to 5.8%, which indicates a weak relationship between the features.

The variance analysis shows that the significance of F is 0.812133, which is greater than $\alpha = 0.05$, so the regression is insignificant.

Table 8: The obtained significance coefficients.

	Coefficients	P-value
Y-intersection	3138.31	5.59E-08
X ₁	-10.21	0.77
X ₂	30.65	0.66

The P-value is more than $\alpha = 0.05$, which indicates that the current and term liquidity ratios are statistically insignificant.

After checking the significance of the current and urgent liquidity coefficients, the linear multiple regression equation takes the form

$$Y = 3138.31 - 10.21 X_1 + 30.65 X_2 + \varepsilon. \quad (2)$$

The impact of current and term liquidity ratios on net assets is insignificant. Our research has shown that it is impossible to assess financial stability using a small number of variables for econometric analysis, which are taken from the reports of OJSC “Sangtudinskaya HPP-1”, which has a significant share of foreign capital. Obviously, the availability and use of complete information about the financial stability of this HPP in calculations will allow building a regression of higher accuracy and justify the factors that affect its market value.

5 CONCLUSIONS

This study allows one to draw the following conclusions:

1. When assessing the market value of an energy business, it is particularly important to take into account the system of indicators of its financial stability.
2. When updating and adding to the database, the results of the econometric study change.
3. Economic and mathematical modeling of the impact of indicators of financial stability, autonomy, financing, investment, capitalization on the value of net assets of the energy company showed a regression with high accuracy and allowed us to justify the most significant coefficients.
4. Economic and mathematical modeling of the impact of financial stability indicators of OJSC “Sangtudinskaya HPP-1” on its market value indicates some opacity of its financial statements. To obtain reliable research results, the number of analyzed indicators must be at least four.

In general, the importance of financial stability indicators of the Barki Tojik Energy Company has been proved as well as the need to take them into account when evaluating and managing its market value.

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