The Influence of the Globalisation Factor on Premiums in Merger and Acquisition Deals of Electric Power Companies

I I Prosvirina[1], A V Sterkhov[2]

[1]Head of department, Graduate school for Economics and Management, South-Ural State University (national research university) (SUSU (NRU)), 76 Lenina av., Chelyabinsk 454080, Russia
[2]Senior lecturer, Graduate school for Economics and Management, Ural Federal University (UrFU), 19 Mira str., Yekaterinburg 620002, Russia

E-mail: irina.prosvirina@susu.ru

Abstract. The article proposes a method for assessing the influence of globalisation on premiums in merger and acquisition (M&A) deals of electric power companies. The independent variable in the research is a relative premium value, i.e., an excess of the amount paid in a deal (in view of the share) over the modeled enterprise value. The authors justify the use of the KOF index (in the context of six components making up the index) to assess the consequences of globalisation for the relative premium in M&A deals of electric power companies. The identified factors were quantified on the ground of a database including 1957 M&A deals over the period from 1997 to 2019. The authors proved the influence of the EURIBOR interest rate on the relative premium value in a deal. They confirmed the contradictory influence of the globalisation process on the relative premium value in M&A deals.

1. Introduction

Globalisation remains one of the main trends in the development of modern society. There are such realias of the present political situation in the Russian Federation that the imposition of mutual sanctions against many nations of the globe essentially means a movement towards closed economy (national self-sufficiency). The assessment of the globalisation consequences in this sense is important not only for evaluating political decisions, but also for the corporate governance practice.

This article assesses the influence of globalisation on the premium in M&A deals of electric power companies. This topic was chosen on several considerations. First of all, Russian companies are the subject of many M&A deals. Secondly, over the period from 1990 to 2006, the value of the KOF globalisation index for the Russian Federation increased from 46 to 72, which indicates that the country is actively involved in world economic relations. In this research, the authors verify the hypothesis that a decrease in the globalisation level can lead to a decrease in the value of electric power companies within the framework of M&A deals.

2. Scientific significance and literature review

The problem of the influence of globalisation on the M&A market has already been reflected in a number of theoretical and empirical studies.

Sarala [11] mentions the need to take into account the human factor in M&A deals. This work is a theoretical study. We develop the proposed approach including the level of social globalisation into a model and offering quantitative estimates for this factor.

The research carried out by Olcay [8] deals with the dynamics of indicators of a merged company after the deal; we, in turn, consider the process of the company value formation within the framework of the deal. In this study, we borrow the logic of identifying such dependent variables as the level of cultural differences and the company's participation in international links (in this case, the used specific indicators differ in the considered study and our study). The methodology of taking into account financial indicators as M&A deals is mentioned in the paper of Balashov [12].

The differences between developed and emerging capital markets are described in the paper of Skvortsova [13].

Park [9] addresses the issue of business social responsibility and concludes that M&A deals can lead to the distribution of social responsibility programs. In this paper, we seek to find evidence of this hypothesis, taking into account the level of economic and social globalisation in the model.

The research carried out by Maung [7] uses the logic of calculating premiums in a M&A deal based on the market response to the deal. This approach does not allow us to evaluate non-public companies. We use the logic of allocating variables related to the company and the market adopted in the aforesaid research.

The issues of assessing financial indicators in M&A deals were considered in the papers of Amel-Zadeh [2], Dhaliwal [5], Rahman [10], Baker [4], Alhenawi [14], Sterkhov [15].

Summing up the literature review, we would like to note that some of the aforesaid studies are theoretical, which indicates a high interest in this topic and provides for practical confirmation of the models presented in them.

3. Research methodology

The research carried out by the authors is aimed at establishing the relationship between the size of the premium in M&A deals and the country's involvement in world economic relations (the level of globalisation). The empirical base of this research includes 1957 mergers and acquisitions conducted between 1997 and 2019. The authors obtained the information in the Zephyr database, as well as from the KOF Swiss Economic Institute website.

The deal modeled enterprise value calculated according to the following formula was chosen as the main variable:

$$EVM = Equity + \frac{Long-run}{Debt} + \frac{Short-run}{Debt} - Cash \qquad (1)$$

The dependent variable – a relative deviation from the modeled value, was calculated by the formula

$$EVR = \frac{EV-EVM}{EVM} \cdot 100\% \qquad (2)$$

where EV is the enterprise value (the amount paid in the deal divided by the acquired company share);

EVM is the modeled enterprise value (1).

We filtered out the deals, in which the EVR value exceeded 100% (approximately 1.5% of the sample).

The methodology of building the dependent variable is described in more detail in [14].

It should be noted that we consciously chose the modeled enterprise value, rather than the size of the equity capital. The amount paid in a deal taking into account the acquired company share (EV) most tightly depends on the modeled enterprise value (EVM) but not on the value of the company's total or net assets.

This is confirmed by regression equations, in which the independent variable is the amount paid in a deal, adjusted for the acquired company share, and the dependents in the three regression equations were the size of the modeled value (EVM), the company's total and net assets, respectively. The regressions were evaluated by the standard least squares method with a constant. In this case, the determination coefficient for the equation, in which we used the modeled enterprise value (EVM), is 95.32%; for the equation, in which we used the total company assets, - 77.02%; for the equation, in which we used the net company assets, - 68.01%.

We believe that this is caused by the fact that the buyer is not only interested in the company's assets but also in its called-up borrowed capital, since after the owner changes, the attraction of additional debt financing can be complicated. Besides, we can note lower business risks in electric power engineering, which means lower interest rates on debt financing.

4. Results and discussion

All the econometric models were assessed using the least squares method; besides, we made a correction for heteroskedasticity. The assessment data for intermediate models (Models 1-3) is shown in Table 1.

Table 1. Intermediate econometric models for assessing relative premiums in M&A deals.

	Model 1 Coefficients	p	Model 2 Coefficients	p	Model 3 Coefficients	p
ASSETSTL	-2.354428	0.0000	-2.641399	0.0000	-2.504970	0.0000
EBITT/EVM	0.558604	0.0000	0.574915	0.0000	0.603049	0.0000
TRT/EVM	0.417615	0.0000	0.443546	0.0000	0.484442	0.0000
COMPL_ANN	-0.017853	0.0002	-0.017199	0.0004	-0.017354	0.0003
COMPL_RUM	0.016097	0.0002	0.015669	0.0003	0.015808	0.0002
EU12MR	2.322291	0.0000	2.603132	0.0000	2.368702	0.0000
KOFGI			0.351913	0.0000		
KOFECGI					0.454341	0.0000
KOFSOGI					-0.359803	0.0061
KOFPOGI					0.176775	0.0133
C	-11.34197	0.0000	-38.38310	0.0000	-30.00566	0.0000
Adj. R^2	0.086428		0.106351		0.113615	

Model 1 includes the following variables:
- ASSETSTL is a variable of the total assets logarithm;
- EBITT/EVM is the ratio of the target company's EBIT to the target company's modeled value;
- TRT/EVM is the ratio of the target company's revenue to the target company's modeled value;
- COMPL_ANN is the duration (in days) from the moment of the official announcement of the deal to the moment of completing the deal;
- COMPL_RUM is the duration (in days) from the moment of the appearance of a rumor about the deal to the moment of completing the deal;
- EU12MR is the value of the EURIBOR interest rate (12 months) at the moment corresponding to the appearance of a rumor about the deal;
- C is a constant;

The logic of the presented model largely coincides with the logic previously published by the authors in [14]. The adjusted determination coefficient of model 1 is 8.64%, all the variables are significant. An analysis of this model allowed us to come to the following conclusions.

An increase in the total assets value (ASSETSTL) results in a statistically significant decrease in the relative premium value. The demand for companies with large assets is, most likely, less due to the restrictions on the capital market.

An increase in the EBITT/EVM and COMPL_RUM ratios predictably leads to an increase in the relative premium. These results are predictable in terms of standard financial management provisions.

The coefficients for the COMPL_ANN and COMPL_RUM variable can be interpreted as follows: the longer the time interval from the moment of the announcement of the deal to the moment of its completion, the lower the premium, and the smaller the time interval from the moment of the appearance of a rumor about the deal to the moment of the official announcement of the deal, the higher the premium. We believe that the faster the official announcement of the deal is made, the more interested the buyer is in acquiring the company, and the higher premium it is ready to pay. The longer the formalization of the deal (the time interval from the official announcement to the completion of the deal), the larger the buyer's opportunities for bargaining and, accordingly, the lower the premium.

The presence of a significant positive coefficient EU12MR indicates that the *condition of the world financial markets is a significant factor of the relative premium in M&A deals* (even when the seller and the buyer are in the same country). Indeed, in many cases, deals are financed by the borrowed capital, therefore, the increase in the weighted average capital cost will result in that only potentially more profitable projects will be financed. Besides, the allocation of capital in the debt market (the level of interest rates on which depends on the EURIBOR level) and conducting deals in the M&A market are, in many cases alternatives, for the investor.

An increase in the EURIBOR interest rate by 1 percentage point leads to an increase in the relative premium in M&A deals by an average of 2.32 percent (according to model 1).

To assess the influence of the globalisation factor, we supplemented the model with variables, which reflect various components of the KOF index. The KOF index is calculated by the KOF Swiss Economic Institute and is a measure of economic, political and social globalisation [6]. The index was chosen for the following reasons: a vast time base (since 1970); availability of data in the public domain; presence of 12 components in the index allows us to decompose globalisation factors. The index structure and the description of the variables included in its components are presented in [1].

In *Model 2* (as compared to Model 1), we added the KOFGI variable, which is the Globalisation Index (KOF) value. The adjusted determination coefficient of model 2 is 10.63%, which is higher than that of model 1. All the factors of model 2 are significant, the signs coincide with those obtained in model 1.

Analyzing the value of the coefficient at the KOFGI variable, we can note that when the globalisation index grows by one percentage point, the premium in M&A deals increases by an average of 0.35 percent. Considering the increase in the globalisation index of the Russian Federation, for example, over the period from 2001 to 2016 it grew by 7 points, it can be noted that the growth of economic, social and political globalisation can lead to a significant increase in the relative premium in M&A deals of electric power companies.

The positive influence of the country's involvement in the global economy on the public welfare was noted even in absolute and comparative advantage concepts. In our opinion, building of decomposition of the factors influencing globalisation is of theoretical and practical importance. To this end, we built *Model 3,* in which the KOFGI variable was replaced by 3 variables: KOFECGI (the economic globalisation level), KOFSOGI (the social globalisation level) and KOFPOGI (the political globalisation level). These three variables are included in the KOFGI index, each with a weight of one third.

An analysis of model 3 allowed us to establish that the replacement of the KOFGI globalisation index with its three components made it possible to increase the determination coefficient to 11.36% while preserving the significance and signs of all the variables that are simultaneously included in model 2 and model 3.

The coefficients of the variables KOFECGI (the economic globalisation level) and KOFPOGI (the political globalisation level) are positive. The coefficient of the KOFSOGI variable (the social

globalisation level) is negative. In our opinion, such a result is non-trivial and allows us to conclude that globalisation can contradictorily influence premiums in M&A deals. On the one hand, the growth of economic and political globalisation is connected with such factors as a growing availability of international financing, increased foreign investment, closer cooperation of the country with international organisations. On the other hand, the growth of social globalisation strengthens the deamnds of employees and other interested parties from the standpoint of wages and emissions, which leads to an increase in business costs and, consequently, a decrease in the readiness to acquire a company in a deal.

The resulting econometric model uses the following variables related to the KOF index (according to the methodology for calculating this index):

- KOFECGIDFRT – Economic Globalisation, de facto;
- KOFECGIDJRT – Economic Globalisation, de jure;
- KOFSOGIDFRT – Social Globalisation, de facto;
- KOFSOGIDJRT – Social Globalisation, de jure;
- KOFPOGIDFRT – Political Globalisation, de facto;
- KOFPOGIDJRT – Political Globalisation, de jure;

We decided not to carry out a deeper detailing (which would include 12 factors instead of 6), since a further increase in the number of variables led to a decrease in the adjusted determination coefficient. The final model is presented in Table 2.

Table 2. The final econometric model of assessing the relative premium in M&A deals.

	Coefficients	p	Coefficient Variance	Centred VIF
ASSETSTL	-2.158325	0.0000	0.041998	1.441721
EBITT/EVM	0.625663	0.0000	0.004483	18.32003
TRT/EVM	0.529821	0.0000	0.006615	18.71351
COMPL_ANN	-0.014745	0.0025	2.38E-05	6.026347
COMPL_RUM	0.013229	0.0019	1.81E-05	6.014914
EU12MR	2.598202	0.0000	0.155969	1.189486
KOFECGIDFRT	0.082528	0.2258	0.004639	1.896488
KOFECGIDJRT	0.334542	0.0000	0.005968	4.277003
KOFSOGIDFRT	-0.887939	0.0000	0.017503	4.449338
KOFSOGIDJRT	0.544010	0.0001	0.020481	4.279797
KOFPOGIDFRT	-0.649237	0.0000	0.020384	6.912718
KOFPOGIDJRT	0.689096	0.0000	0.018598	7.731607
C	-23.96202	0.0111	88.89831	NA
Adj. R2		0.153630		

An analysis of the final model (Table 2) allows us to make the following conclusions. The adjusted determination coefficient of this model is 15.36%, which is higher than in model 3 (11.36%). In general, the inclusion of the KOF index in the model allowed us to increase the adjusted determination coefficient from 8.64% to 15.36%, i.e., almost twice. Taking into account the sample size (1957 observations), a multicollinearity test (VIF) indicates its absence. The results of the Ramsey test confirm that the form of dependence is chosen correctly.

For convenience, the coefficients of the final model are interpreted in Table 3.

Table 3. Interpretation of the coefficients of the final model.

	Coefficient sign	Interpretation
KOFECGIDFRT (Economic Globalisation, de facto)	Not significantly different from zero	A partial influence of this factor was probably taken into account in the variable EU12MR (debt market conditions)
KOFECGIDJRT (Economic Globalisation, de jure)	Positive	A decrease in tariff regulation, growing involvement of the country in capital transactions leads to an increase in a demand for assets within the framework of M&A deals
KOFSOGIDFRT (Social Globalisation, de facto)	Negative	The growth of population migration flows leads to a decrease in the labor market tension and a decrease in wages, which increases the company's cash flows; The increasing use of international patents and high-tech products reduces the attractiveness of electric power engineering as an industry with a lower use of new technologies
KOFSOGIDJRT (Social Globalisation, de jure)	Positive	An increase in the equality of men and women, consolidation of civil rights, as well as an increase in the human capital contribute to growing labor costs, which leads to a decrease in the income of capital owners
KOFPOGIDFRT (Political Globalisation, de facto)	Negative	The growing number of foreign embassies and participation in peacekeeping missions contribute to the observance of human rights and freedoms, which means an increase in business expenses both for labor and the environmental sphere, which leads to a drop in the free cash flow
KOFPOGIDJRT (Political Globalisation, de jure)	Positive	The growing participation in international organisations, the increasing number of international treaties and international trading partners means a movement towards free trade

5. Conclusions

The analysis allowed us to come to the following conclusions.

Globalisation is a significant factor determining the premium in M&A deals. At the same time, various manifestations of the globalisation process influence the M&A market in different ways. The study has shown that the growing involvement of the country in the global financial markets, the increasing free trading manifestations in global trade, lowering the restrictions on capital transactions, growing equal rights for men and women, assurance of civil rights, the country's participation in the activities of international organisations and ratification of international agreements are examples of factors ensuring the growth of relative premiums in M&A deals.

The development of international tourism and high-tech industries can lead to a decrease in the relative premium in M&A deals of electric power companies, since capital has traditionally played a bigger role in electric power engineering as a production factor. The growth of international labor migration and vigorous activities to protect the citizens' rights also statistically lead to a decrease in the relative premium due to the fall of free cash flows.

The resulting model creates promising areas for further research. Thus, the model can be built for other industries. Besides, the model built for deals, in which the target company and the company initiating the deal are located in different states, will be of interest.

References

[1] 2018 Globalisation Index: Structure, variables and weights https://ethz.ch/content/dam/ethz/special-interest/dual/kof-dam/documents/Globalisation/2018/Structure_2018_2.pdf

[2] mirAmel-Zadeh, Geoff Meeks 2019 Bidder earnings forecasts in mergers and acquisitions *Journal of Corporate Finance* vol 58 pp 373-392

[3] Yasser Alhenawi, Sudha Krishnaswami 2015 Long-term impact of merger synergies on performance and value *The Quarterly Review of Economics and Finance* vol 58 pp 93-118

[4] Malcolm Baker, Xin Pan, Jeffrey Wurgler 2012 The effect of reference point prices on mergers and acquisitions *Journal of Financial Economics* vol 106 Issue 1 pp 49-71 https://doi.org/10.1016/j.jfineco.2012.04.010

[5] Dan S Dhaliwal, Phillip T Lamoreaux, Lubomir P Litov, Jordan B Neyland 2016 Shared auditors in mergers and acquisitions *Journal of Accounting and Economics* vol 61 Issue 1 pp 49-76

[6] KOF Globalisation Index https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html

[7] Min Maung, Myles Shedden, Yuan Wang, Craig Wilson 2019 The investment environment and cross-border merger and acquisition premiums *Journal of International Financial Markets, Institutions and Money* vol 59 pp 19-35

[8] GökçenArkalıOlcay M, Atilla Öner, Ali BahadırOlcay 2019 A conceptual view of exergy destruction in mergers and acquisitions *Technological Forecasting and Social Change* vol 143 pp 336-352

[9] Kathleen Marshall Park, OlimpiaMeglio, Svante Schriber Building a global corporate social responsibility program via mergers and acquisitions: A managerial framework, Business Horizons vol 62 Issue 3 pp 395-407

[10] Mahabubur Rahman, Mary Lambkin 2015 Creating or destroying value through mergers and acquisitions: A marketing perspective *Industrial Marketing Management* vol 46 pp 24-35

[11] Riikka M Sarala, EeroVaara, Paulina Junni 2019 Beyond merger syndrome and cultural differences: New avenues for research on the "human side" of global mergers and acquisitions (M&As) *Journal of World Business* vol 54 Issue 4 pp 307-321

[12] Balashov A I 2015 The evaluation of the influence of financial parameters on the value of M&A deals of pharmaceutical companies *Economic Analysis: Theory and Practice* **22** pp 15-26

[13] Skvortsova I V 2018 Peculiar features of M&A deals of innovative companies in developed and emerging capital markets *Journal of Corporate Finance Research / Corporate Finance* **4** vol 12 pp 86-98

[14] Sterkhov A V The assessment of premiums in M&A deals of electric power companies in a wide range of assets XX April International Scientific Conference on the Problems of Economic and Social Development https://events-files-bpm.hse.ru/files/3F238E4A-406A-4B50-8A7A-85DCAB320B79/%D0%A0%D0%B0%D0%B7%D0%B2%D0%B5%D1%80%D0%BD%D1%83%D1%82%D0%B0%D1%8F%20%D0%B0%D0%BD%D0%BD%D0%BE%D1%82%D0%B0%D1%86%D0%B8%D1%8F%20%D0%B4%D0%BB%D1%8F%20%D0%9D%D0%98%D0%A3%20%D0%92%D0%A8%D0%AD.docx

[15] Sterkhov A V 2013 An analysis and assessment of financial indicators as factors of the cost of M&A deals in high-tech industries *Bulletin of UrFU. Series: Economics and Management* **2** pp 134-144