Elena Y. Makeeva [a)], Irina V. Ivashkovskaya [b)], Liudmila S. Ruzhanskaya [c)], Konstantin A. Popov [d)]

[a, b, d)] National Research University "Higher School of Economics", Moscow, Russian Federation
[c)] Ural Federal University, Ekaterinburg, Russian Federation
[a)] https://orcid.org/0000-0002-5821-4496
[b)] https://orcid.org/0000-0003-1409-5250
[c)] https://orcid.org/0000-0003-1490-779X, e-mail: l.s.ruzhanskaya@urfu.ru
[d)] https://orcid.org/0000-0002-0328-6230

RELATIONSHIP BETWEEN REGIONAL SOCIO-ECONOMIC DEVELOPMENT AND CORPORATE RATINGS OF RUSSIAN COMPANIES[1]

The search for new sources of regional development is important due to the slowdown in economic growth and the need to shift the emphasis of industrial policy from the macro level to the level of regions and individual companies. In this regard, we consider the participation of companies in reputation ratings as a new source for increasing the investment attractiveness of regions. Additionally, we examine the relationship between corporate and regional ratings: corporate ratings demonstrate a company's compliance with the sustainable development goals, which, in turn, improves the socio-economic performance of regions. We revealed the positive influence of high corporate ratings on the socio-economic development of regions, opening a new area for interdisciplinary research combining corporate finance and regional economics. On the example of 130 biggest Russian public non-financial companies, we obtained several significant results that allow determining the impact of corporate ratings on the socio-economic situation of regions and corporate financial performance. The ratings include Sustainable development Index of the Russian Union of Industrialists and Entrepreneurs (RUIE), Environmental responsibility rating of the World Wildlife Fund (WWF) Russia, and Corporate social responsibility rating of the Association of Managers of Russia (AMR). The calculations showed that the participation of companies in the ratings of WWF Russia and RUIE positively affects the indicators sustainable development of regions where these companies are located. Simultaneously, the influence of companies' participation in the rating of WWF Russia is higher than the influence of participation in the RUIE rating. In addition, reputation ratings have a positive impact on the return on assets and market capitalisation of Russian companies. Thus, we proved that participation in corporate ratings leads to an increase in performance. However, the effects of participation in various ratings differ. For example, to increase its conditions and performance, a company should be a leader of the rating of RUIE and just participate in the rating of WWF Russia. The rating of AMR influences the market capitalisation the most. The obtained findings indicate the need for expanding the participation of Russian companies in corporate ratings and enable research in the field of sustainable development of companies.

Keywords: socio-economic development of regions, investment attractiveness of regions, rating of socio-economic development of Russian regions, sustainable development of (cities) regions, non-financial sector, corporate reputation, corporate social responsibility, environmental responsibility, corporate ratings, performance

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Introduction

The search for the factors that enhance economic and social development of Russian regions is of high relevance in state policy making. It is related to the need to improve people's quality of life as well as to increase the innovative component of socio-economic development. Thus, it is important to find new sources to attract investment in regions. However, the influence of investment projects of regional companies on the social medium and environment should be taken into account due to current requirements to the quality of economic growth. Therefore, the principles of sustainable business and corporate reputation gain particular importance.

[1]

Projects aimed at expansion and corporate business development with due consideration of the local communities' interests link corporate reputation to socio-economic development of the regions where a company operates. This line of activity as a part of corporate social responsibility encompasses additional investment of a company, including the social infrastructure creation. In this respect, we raise the issue of the impact of corporate reputation on performance of companies and sustainable development of regions of their operation as well.

In order to explain the relation between corporate and regional ratings, it is necessary to understand that corporate ratings enable external stakeholders including regional authorities to take decisions concerning further partnership with companies. Simultaneously, regional ratings are an evaluation of their socio-economic development, which is important for business when making decisions on investment, expansion of market outlets, etc.

The research interest in the role of corporate reputation in company's development and its environment's development has been increasing: according to the Scopus citation database, in 2015–2019 English-language scientific journals published over 3,000 papers examining the influence of corporate reputation on corporate financial performance. However, the issue of reputation influence on Russian non-financial companies' performance has been studied insufficiently, even though this line of research is of high significance for Russian companies as well as for industrial policy in regions. This problem acquires special relevance in case of macroeconomic uncertainty when corporate reputation is indicative of stability and may influence a company's competitiveness. From the point of view of progress in the theory and methodology of economic development study, assessment of effects of participation in reputation ratings for Russian non-financial companies and socio-economic development of regions where they operate allows us to propose a new approach to measuring regional development factors, as well as to substantiate the influence of corporate reputation on socio-economic situation in these regions.

In the first part of the paper, we review existing studies on the influence of corporate reputation on corporate performance and socio-economic development of regions of operation, examine existing regional and corporate ratings, and generate research hypotheses. In the second part, we describe the research methodology and samples of Russian companies and regions. In the third part, we present the results of regression models. The final part interprets the obtained results.

Literature Review

In order to answer the question whether companies' efforts to enhance their reputation may be considered as a factor of improving socio-economic situation in a region of operation, it is necessary to choose a method which measures the development of a certain region. In the first instance it depends on a great number of factors which should be considered: indicators of economic growth, quality of life, environment protection, human capital, innovation, etc. Besides, it is necessary to take into account regional differences in the economic structure, demographic structure, size. Two main approaches may be applied to assess regional socio-economic development: calculation of certain indicators and indices (Gross Regional Product, net savings, etc.) and use of regional development ratings compiled by specialised rating agencies and other institutions.

In this paper, we used ratings to assess regional socio-economic development and corporate reputation because these complex categories cannot be measured directly. As Russian industrial companies with divisions in regions are examined, we are limited by the regional ratings.

At present, a number of Russian ratings assess regional development as well as individual companies. Ratings have a variety of advantages as means of measuring performance of regional authorities and corporate management. In particular, this approach takes into account a large number of indicators that are statistically unreliable when taken individually [1]. Moreover, a lot of ratings comprise qualitative indicators which cannot be measured by quantitative methods. Therefore, these ratings have an advantage over numerical indicators.

The rating of socio-economic situation of Russian regions compiled by RIA Rating agency based on publicly available data about regions' development is one of the most representative regional ratings. Indicators subdivided into four groups are used in the rating: indicators of the size of the economy, economy performance indicators, public sector indicators, social indicators. A large number of numerical economic indicators taken into consideration is an advantage of this rating, while the absence of innovation implementation indicators as well as environmental ones is its drawback.

We should also mention the Sustainable development rating of Russian cities compiled by the SGM agency. The rating uses demographic indicators, social infrastructure development indicators, urban infrastructure development indicators, economic development indicators and environmental ones. To make this rating applicable to regions, we performed the distribution of the rating values for the largest cities among regions in accordance with their location. It was possible because the rating mainly includes 1–2 largest cities (regional centres) of each region.

The Russian Regional Innovation Development Rating compiled by the Institute for Statistical Studies and Economics of Knowledge of the Higher School of Economics since 2012 may be used to assess implementation of innovation in constituent entities of the Russian Federation. This rating includes over 50 quantitative and qualitative indicators demonstrating the regional scientific and technological potential, socio-economic conditions for research and development (R&D) and implementation of its results as well as innovation and export activity. Although it is difficult to use this rating for the evaluation of socio-economic development of a region in general, it may be combined with other ratings, for example, the National Investment Climate Index made by ASI since 2014. Over 40 indicators of the quality of regulatory, institutional environment, the infrastructure quality and small business support measures are taken into consideration in the rating. This rating has a drawback, as it presents only regional rankings without numerical indicators.

Recently, a group of environmental ratings emerged in Russia. They comprise the Environmental-Economic Index of Russian Regions of the World Wildlife Fund (WWF) in Russia and the Rating of the All-Russian Public Organisation Green Patrol. These integrated ratings take into account both qualitative and quantitative indicators of environment protection. Therefore, they may be combined with the ratings indicative of other aspects of socio-economic situation in regions.

In spite of significant advantages of ratings as a means of assessing regional development and corporate performance, they have a serious drawback. The problem is that various institutions apply different approaches to compiling ratings, directly affecting their results. This drawback was shown in the survey of Russian regional ratings above. Russian authors realised the limitations of the ratings' methodology and on multiple occasions offered other approaches to assessing the regional development differentiation. Thus, they suggested using an adjusted Gross Regional Product (GRP) per capita [2] or adding other socio-economic indicators to it, for example, the monthly income per capita, overall crime rate and economic crime rate [3]. Besides, authors proposed to use composite index indicators for assessing the socio-economic situation in a region in general, comprising as many welfare aspects as possible [4, 5]. However, for the purpose of this research, it is important to apply the indices publicly available and widely used in Russia and abroad by all stakeholder groups, indicating socio-economic development of regions. Besides, it is necessary to study corporate ratings related to reputation and social responsibility together with regional ratings for the purposes of empiric research and higher consistency of results. So, the influence of company actions aimed at the improvement of their rating on the assessment of socio-economic development of the regions where they operate may be monitored. Consequently, we describe below the indices used in this study.

Now we are going to consider corporate ratings indicative of corporate reputation that gives insight into company's ability to produce value for its stakeholders. Corporate ratings measure the company's status in regard to its employees and external stakeholders defining its competitive advantages and institutional environment [6]. Reputation may also be presented as a factor that determines stakeholders' actions relative to the company on the basis of an aggregated evaluation of its previous actions [7].

Many academic papers examine the dependence of reputation and corporate operations on social responsibility principles. They also interlink corporate reputation with socio-economic development of the region of operation. Therefore, paper [8] specifies "triality" of the social responsibility principles that encompass strategies of impact on the environment, society and economics in the regions of operation.

There are several approaches to explaining the influence of observance of corporate social responsibility (CSR) standards by companies on performance. The authors of papers [9, 10] think that socially responsible business facilitates improvement of perception of company's goods by consumers and loyalty to brands, thus enhancing the financial performance.

Other authors presume that companies with a strong reputation have to publish reports of higher quality. This has a positive impact on the quality of earnings and an indirect impact on corporate financial performance [11, 12, 13, 14].

A series of papers consider the influence of corporate reputation on company's market capitalisation. Bénabou and Tirole [15] state that observation of the CSR standards is represented by managerial efforts to improve their reputation in the minds of stakeholders by reducing shareholders' income. Philipp Krueger [16] notes that CSR measures should produce better results for companies with a larger debt and a lower liquidity because they are more reserve constrained and may accept only the projects with a positive NPV. In the author's opinion, it mitigates the agency problem when implementing CSR measures.

A paper by Wang and Chen shows that in developed stock markets, such as the USA, company participation in the CSR rating is a positive signal for investors and increases the stock value while in emerging markets (for example, Taiwan) such influence is insignificant [17]. Ankudinov and Borisov [18] revealed in their 2013 paper that the role of investment projects in socio-economic development of regions of operation had been underestimated. They used the example of Russian companies from primary industries. The authors think that managers' opportunism and high business risks cause such a result. At the same time, the authors of [19] demonstrated a positive influence of investment in observance of corporate social and environmental responsibility standards on evaluation of Russian companies by investors although this influence was significantly lower than the influence exerted on USA companies.

Kelchevskaya, Chernenko and Popova [20] see the impact of CSR and company transparency on its value as mitigation of corporate risks by means of improving reputation, reducing information asymmetry and raising investors' awareness. This results in reduction in expenditures for corporate capital and, consequently, decrease in the cost of investment. When the authors add risks into the scheme of influence of corporate reputation on performance, they follow the logic similar to the one of [21].

Gizatullin explains the scheme of influence by the level of corporate governance in a company. The research revealed that the influence of CSR on corporate financial performance is positive when the corporate governance (CG) level is high, and is negative when the CG level is low. This confirms the hypothesis of a U-shaped influence of CSR and corporate reputation on its performance. Besides, the author pointed out that such research results may be indicative of "balancing" between interests of investors and shareholders (CG) and other, non-financial stakeholders (CSR) [22].

An important feature of the influence of reputation on corporate performance is not only positive but also negative consequences of maintaining a strong reputation and CSR of a company. They include the diversion of resources from the projects, which could have provided a positive NPV and increment the company value [16, 23], possible agency conflicts due to managers' attempts to improve their reputation using corporate resources [15, 18]. For this reason, a series of studies examined non-linear influence of corporate reputation and social responsibility on corporate financial performance [22, 24].

We assumed that regional branch offices and/or production facilities of companies included in corporate environmental and social responsibility ratings assist in moving the region up in socio-economic development and sustainable development ratings. This assumption was made because largest Russian companies have a lot of manufacturing and research facilities in various regions. Consequently, the degree of their social and environmental responsibility expressed in corporate ratings influences maturity of regions of operation. The results of preliminary graphical analysis represented in Figure below confirm it. In this paper, we will analyse company efforts to improve reputation by investing in CSR and gaining in corresponding ratings as a factor of regional socio-economic development.

In order to study the influence of corporate ratings on socio-economic development of regions, *Hypothesis 1* was suggested: *participation of companies in reputation ratings has a positive impact on indicators of socio-economic development of such companies' regions of operation*.

We presume that if there are leaders of reputation ratings in a region, the latter becomes more attractive for investment because companies making a significant contribution into regional development and enhancing a positive perception of business ecosystem in the region acquire more attractiveness.

While there are Russian regional ratings compiled only inside the country, the largest Russian companies are also included in world corporate ratings. The Dow Jones Sustainability Index is the most famous corporate reputation rating in the world. It consists of several indices of corporate economic,

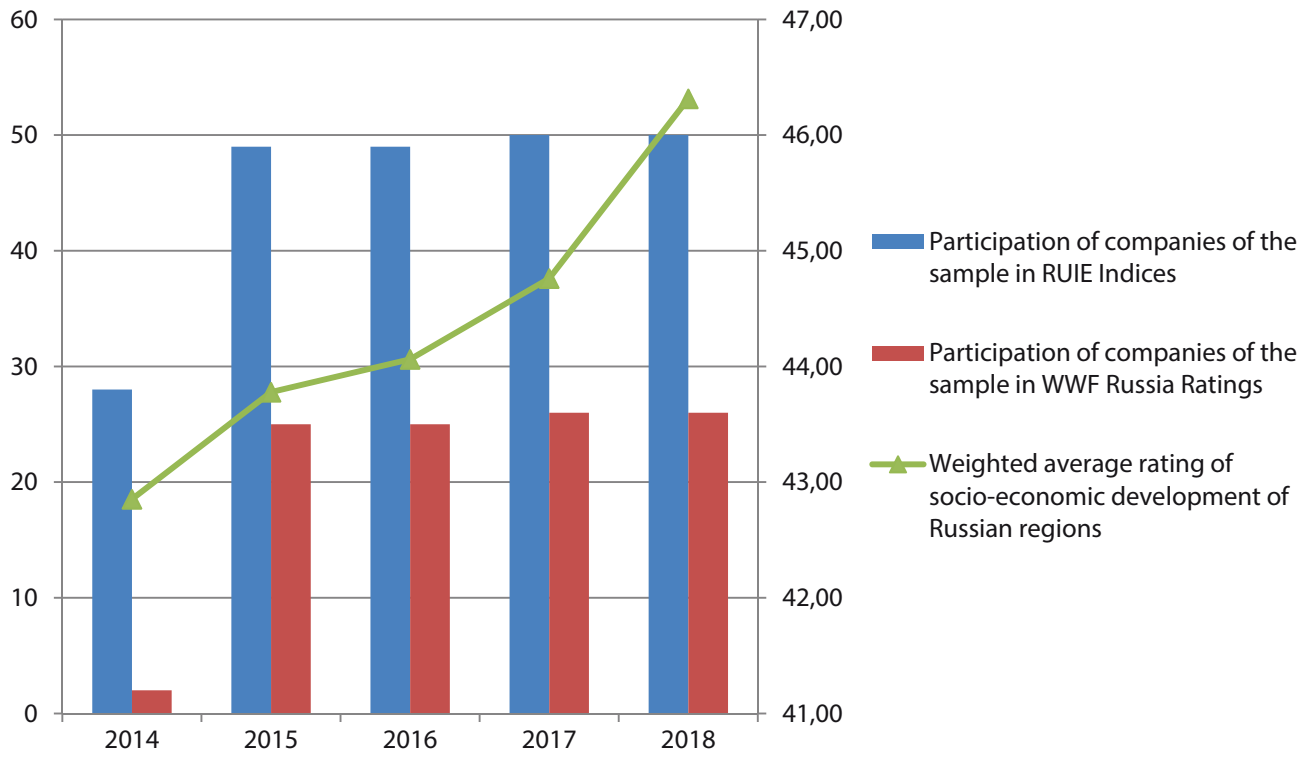

Fig. *Preliminary graphical analysis of the impact of the social and environmental responsibility of the largest Russian companies on regional development*

environmental and social responsibility[1]. This rating lists the largest companies from 61 sectors and is divided into several components depending on geographic location. The papers quoted above also mention such reputation ratings as Domini 400 Social Index and FTSE4Good Index. Domini 400 Social Index is compiled on the basis of USA companies, while FTSE4Good Index includes companies from the USA, Great Britain, EU and Japan.

However, we cannot use any of the above global ratings to evaluate Russian companies due to the lack or small amount of observations. For this reason, we have to use corporate ratings compiled by Russian organisations.

The Russian Union of Industrialists and Entrepreneurs (*RUIE*) monitors the observance by Russian companies of the sustainable development principles. Since 2014, the RUIE has been annually compiling two main indices of "Responsibility and Transparency" and "Sustainable Development Vector". The Responsibility and Transparency Index indicates the general quality of disclosure of SD/CSR information in reports of Russian companies[2]. The Sustainable Development Vector Index assesses performance and efficiency of company's socio-economic and environmental activity instead of the quality of SD/CSR reports. The final value of the index depends on the indicators, which show company's relationship with its employees, and on investment in staff development. The second important component is indicators of environmental impact. Besides, the extended list of indicators taken into consideration to calculate the index also contains a range of indicators of company's influence on socio-economic development of the regions of operation: the share of local suppliers in procurement, respect for human rights, social investment[3].

The Association of Managers of Russia (AMR)[4] compiles ratings of the most efficient managers of Russian companies. For the purpose of the present research, we chose TOP 50 of managers by corporate social responsibility, indicating company interest in CSR in general. The rating is compiled by poll of managers related to CSR of the companies operating in the Russian market.

[1] Dow Jones Sustainability Indices. Robeco Sustainable Asset Management. Official site. Retrieved from: https://www.robecosam.com/csa/indices/djsi-index-family.html (Date of access: 20.03.2020).

[2] Method of Compiling Corporate Sustainability, Responsibility and Transparency Indices. Sustainable Development Indices of the RUIE. P. 8. Retrieved from: http://media.rspp.ru/document/1/5/e/5e4f86401831cd0e2572c234e450ce66.pdf (Date of access: 15.03.2020).

[3] Ibid, p. 11.

[4] Association of Managers. Business Association of Russia. Retrieved from: https://amr.ru/ (Date of access: 15.04.2020).

The research also uses the corporate rating of WWF Russia related to transparency of environmental responsibility. Currently these ratings are made for the largest oil and gas[1], ore mining and metallurgical[2] Russian companies. In 2019, power generating companies were added to the rating[3].

Based on the above, we generated the following research hypotheses:

Hypothesis 2. Participation in reputation ratings has a positive and statistically significant impact on performance of Russian non-financial companies.

Hypothesis 3. Reputation ratings have a qualitative positive and statistically significant impact on performance of Russian non-financial companies.

Hypothesis 4. Participation in reputation ratings has a non-linear impact on the performance of Russian non-financial companies.

Hypothesis 5. Ratings comprising a wider array of corporate operations' aspects have a more significant impact on the performance of Russian non-financial companies.

Research Methodology and Description of the Model Specification

In order to study the influence of corporate ratings on regional ratings, we made several specifications of single-factor models indicated below. See description of used variables in Table 1.

Table 1

Description of "Region" model variables

Designation	Indicators
SocioEconomic	Indicator of the region in the rating of socio-economic situation of Russian regions in 2018
SustainableDevelopment	Indicator of the region in the rating of sustainable development of Russian cities (regions) in 2018
SocioEconomic_rating	The initial score of the region in the rating of socio-economic situation of Russian regions in 2018
Units_WWF	Number of branch offices of companies participating in the rating of WWF Russia in the region
Units_RUIE	Number of branch offices of companies participating in the rating of RUIE in the region
i	Designation of i region

$$SocioEconomic_i = \beta_0 + \beta_1 \times Units\_RUIE_i + \varepsilon_i \quad (1)$$

$$SocioEconomic_i = \beta_0 + \beta_1 \times Units\_WWF_i + \varepsilon_i \quad (2)$$

$$SocioEconomic\_rating_i = \beta_0 + \beta_1 \times Units\_RUIE_i + \varepsilon_i \quad (3)$$

$$SocioEconomic\_rating_i = \beta_0 + \beta_1 \times Units\_WWF_i + \varepsilon_i \quad (4)$$

$$SustainableDevelopment_i = \beta_0 + \beta_1 \times Units\_RUIE_i + \varepsilon_i \quad (5)$$

$$SustainableDevelopment_i = \beta_0 + \beta_1 \times Units\_WWF_i + \varepsilon_i \quad (6)$$

In order to study the influence of corporate ratings on Russian companies' performance, we chose Return on Assets (ROA) and market capitalisation normalised to corporate assets value (Market Cap/Assets) as explained variables.

The general specification of the research model (Rating 1) may be presented as follows:

$$FinPERF_{it} = \beta_0 + \beta_1 \times RUIE(D)_{it} + \beta_2 \times RUIE(D)_{it} \times RUIE_{it} + \beta_3 \times WWF(D)_{it} +$$
$$+4 \times WWF(D)_{it} \times WWF_{it} + \beta_5 \times AMR(D)_{it} + \beta_6 \times AMR(D)_{it} \times AMR_{it} +$$
$$+\beta_7 \times \frac{EBITDA}{Sales} \beta_8 \times LEV_{it} + \beta_9 \times \frac{Net\ CAPEX}{Sales} it + \beta_{10} \times \frac{R\ \&\ D\ Exp.}{Sales} it + \beta_{11} \times SIZE_{it} + \varepsilon_{it}, \quad (7)$$

[1] Transparency rating of oil and gas companies related to environmental responsibility. Retrieved from: https://wwf.ru/what-we-do/green-economy/ekologicheskiy-reyting-neftegazovykh-kompaniy-rf-sovmestnyy-proekt-wwf-i-kreon/ (Date of access: 20.04.2020).

[2] Transparency rating of ore mining and metallurgical companies related to environmental responsibility. Retrieved from: https://wwf.ru/what-we-do/green-economy/mining/ (Date of access: 21.05.2020).

[3] Fuel power industry. Retrieved from: https://wwf.ru/what-we-do/green-economy/elektrogeneratsiya/toplivnaya-energetika/ (Date of access: 21.05.2020).

The model specification (Rating 1) will enable us to determine which of the following factors is of greater significance: the fact of participation in a rating or the value assigned by the rating. In addition, such specification may assist in defining a non-linear character of ratings' influence on financial performance.

Apart from the general regression (Rating 1) comprising all indicators, we created regressions where dummy variables of participation (Rating 2) and variables of rating values (Rating 3) were examined individually.

$$FinPERF_{it} = \beta_0 + \beta_1 \times RUIE(D)_{it} + \beta_2 \times WWF(D)_{it} + \beta_3 \times AMR(D)_{it} + \\ + \beta_4 \times \frac{EBITDA}{Sales} \beta_5 \times LEV_{it} + \beta_6 \times \frac{Net\ CAPEX}{Sales} it + \beta_7 \times \frac{R\ \&\ D\ Exp.}{Sales} it + \\ + \beta_8 \times SIZE_{it} + \varepsilon_{it}, \quad (8)$$

$$FinPERF_{it} = \beta_0 + \beta_1 \times RUIE(D)_{it} \times RUIE_{it} + \beta_2 \times WWF(D)_{it} \times WWF_{it} + \\ + \beta_3 \times AMR(D)_{it} \times AMR_{it} + \beta_4 \times \frac{EBITDA}{Sales} it + \beta_5 \times LEV_{it} + \beta_6 \times \frac{Net\ CAPEX}{Sales} it + \\ + \beta_7 \times \frac{R\ \&\ D\ Exp.}{Sales} it + \beta_8 \times SIZE_{it} + \varepsilon_{it}, \quad (9)$$

Explanatory variables, conventionally divided into basic and control ones, are presented in Table 2.

Control variables were chosen based on previous studies as in the case of adding the financial leverage and company size as control variables. Besides, EBITDA/Sales and Net CAPEX/Sales indicators were added in order to consider these important factors for non-financial companies in the model, thus enhancing its explanatory power.

Table 2

Indicators used in the econometric model

Designation	Indicators	Variable type	Notes
$FinPERF_{it}$	Indicators of corporate financial performance (ROA, Market Cap/Assets)	Dependent	Dependent variables
$RUIE(D)_{it}$	Dummy variable of company participation in the rating of RUIE	Basic	Takes on the value of 1 if a company participates in the rating and 0 otherwise
$WWF(D)_{it}$	Dummy variable of company participation in the rating of WWF Russia	Basic	Takes on the value of 1 if a company participates in the rating and 0 otherwise
$AMR(D)_{it}$	Dummy variable of company participation in the rating of AMR	Basic	Takes on the value of 1 if a company participates in the rating and 0 otherwise
$RUIE_{it}$	Individual indicator of the company in the rating of RUIE	Basic	Numerical indicator showing a company's rating position
WWF_{it}	Individual indicator of the company in the rating of WWF Russia	Basic	Numerical indicator showing a company's rating position
AMR_{it}	Individual indicator of the company in the rating of AMR	Basic	Numerical indicator showing a company's rating position
EBITDA/Sales	EBITDA profitability indicator in % of revenue	Control	Indicates efficiency of corporate business operations
NetCAPEX/ Sales	Corporate capital expenditure net of depreciation normalised to revenue	Control	Indicates impact of the rate of capital investment on business development
R&D Exp./Sales	Corporate expenditure for R&D normalised to revenue	Control	Indicator of the rate of investment in R&D
LEV_{it}	Ratio of total debt capital to equity, %	Control	Indicates financial performance of a company aimed at capital structure optimisation
$SIZE_{it}$	Company size	Control	Calculated as a logarithm of revenue

Translation

Description of the Sample

For the purpose of the research, we collected data on 136 Russian public companies in the period from 2014 to 2018 (5 years), obtaining 680 observations in the initial sample from Bloomberg and Capital IQ databases. In the sample consisting of 136 companies, power generating companies prevail (31 %); they are followed by ore mining and metallurgical companies (17 %), transportation and infrastructure firms (11 %), oil and gas companies (10 %).

Analysis of the initial sample of 680 observations revealed serious variations of ROCE, ROE, Net CAPEX/Sales. We also conducted preliminary graphic analysis of the distribution of observations that showed several cases of outliers, which could decrease the explanatory power of the model and significance of coefficients. We decided to eliminate such outliers and reduced the sample to 640 observations on 130 companies. Descriptive statistics of the sample after eliminating outliers are presented in Table 3.

According to Table 3, just in 35.31 % of cases companies participate in the ratings of RUIE, in 16.25 % in the ratings of WWF and in 7.97 % in the ratings of AMR. A more detailed description of company participation in the ratings is shown in Table 4.

The largest number of companies participate in the rating of RUIE. It may be due to the fact the authors compile the rating considering a larger number of companies; additionally, this rating is more diversified. At the same time, the ratings of WWF (environmental responsibility) and AMR (CSR) are more contemporary and make a more thorough analysis of corresponding fields.

In order to evaluate the influence of corporate ratings on indicators of Russian regions' development, we drew a sample of 85 Russian regions for 2018. These regions were included in the regional socio-economic situation ratings and in the rating of sustainable development of cities (regions). Besides, we made a region-company matrix, which defined the presence of branch offices and manufacturing sites of each of 130 largest Russian public companies included in the sample in each Russian region. Using this matrix, we assessed the presence of companies from the sample in each region and revealed

Table 3

Descriptive statistics for the sample of Russian non-financial companies

Variable	Number of observations	Mean value	Standard deviation	Minimal value	Maximum value
ROA	640	0.0387	0.108	–0.7	0.5
Market Cap/Assets	640	5.3780	18.6252	0	135.29
EBITDA/Sales	640	0.2008	0.169	–0.69	0.76
CAPEX/Sales	640	-0.1648	0.122	–0.48	0.4
Net CAPEX/Sales	640	0.0798	0.138	–0.7	0.32
Leverage	640	0.006	0.097	–1.11	0.73
R&D Exp./Sales	640	0.0027	0.021	0	0.22
Size	640	10.9745	1.839	5.8	15.92
RUIE(D)	640	0.3531	0.4783	0	1
RUIE	640	0.2115	0.346	0	1.358
WWF(D)	640	0.1625	0.3619	0	1
WWF	640	0.1600	0.4120	0	1.8558
AMR(D)	640	0.0797	0.271	0	1
AMR	640	0.0503	0.191	0	1

Table 4

Participation of the sample companies in the ratings by years

Year	Ratings of RUIE	Ratings of WWF Russia	Ratings of AMR	Observations per year
2014	28	2	0	124
2015	49	25	9	128
2016	49	25	14	129
2017	50	26	15	129
2018	50	27	13	130

Translation

the number of companies (branch offices) included in the ratings of WWF Russia and RUIE in these regions. This matrix showed that more companies participate in the rating of RUIE than in the rating of WWF because in Russia environmental responsibility is not as widespread as in developed countries. While on average in each of 85 considered regions there are approximately 2–3 branch offices and divisions of companies participating in the rating of WWF Russia, there are as much as 9 branch offices participating in the rating of RUIE.

Since various ratings of regions have different systems of assigning points, a transformation was made to harmonise them. Depending on their position, the regions were assigned points from 1.18 to 100 (1.18 was assigned to the 85th position, 100—to the 1st position) at intervals of 1.18.

Econometric Analysis Results

3 specifications of the model (Region 1), (Region 2) and (Region 3) were evaluated in order to reveal the influence of company participation in the ratings of RUIE and WWF on the position occupied by the regions of their operation in the rating of socio-economic situation of Russian regions. These models are indicative of the influence of company participation in the ratings of RUIE and WWF Russia on the results obtained by the regions of their operation in the ratings of socio-economic development (rating position and the initial score) and sustainable development, respectively. Detailed results of creating regressions are presented in Table 5.

According to Table 5, participation of companies present in the region in the ratings of WWF Russia and RUIE has a positive influence on the region's position in the rating of socio-economic development. At the same time, the influence of companies' participation in the rating of WWF Russia is somewhat higher in modulus than the impact of participation in the rating of RUIE. It may be due to the fact that the rating of WWF Russia takes into account a wide array of factors related to company's impact on both the environment and society. At the same time, the regressions indicative of the influence of the rating of RUIE on ratings of regions have a greater explanatory power. This may be due to the fact that a wide array of factors is taken into consideration when compiling this rating and the same factors are taken into account for ratings of regions. These factors encompass workforce productivity, relationship with employees (including labour remuneration and social protection), investment in the regions of operation, etc. Explanatory power of regressions varies from 41.91 % to 53.73 %, which is an acceptable although a low result. However, a part of these regressions has the heteroscedasticity problem. Besides, a weak point of the above regressions is the addition of just one explanatory variable. The regressions created for the rating of sustainable development of Russian cities (regions) are also indicative of a positive impact of companies' participation in the ratings of RUIE and WWF Russia on indicators of sustainable development of the regions of operation. However, these regressions have a very low explanatory power, meaning that this factor poorly explains the sustainable development results of the regions.

Rating models were evaluated in order to reveal the influence of corporate ratings on corporate performance. The specification (Rating 1) comprises dummy variables of participation as well as numeric variables of companies' results in the ratings. The results of regressions free from multicollinearity and heteroscedasticity problems are presented in Table 6.

The obtained results are interesting from the point of view of interpretation. First, the coefficients of regressors indicate a significant non-linear influence of the rating of RUIE on ROA. While, under otherwise equal conditions, participation in the rating reduces corporate ROA by 5.16 pp, a gain in the rating by 1 point entails ROA's growth by 3.44 pp. Considering that a standard interval in the rating of

Table 5

Regression testing of the rating of socio-economic development of Russian regions

	Socio-Economic (1)	**SocioEconomic_ Rating (2)**	**SocioEconomic_ Rating (3)**	**Sustainable Development (5)**	**Sustainable Development (6)**
Units_WWF	—	5.0175***	—	—	5.9474***
Units_RUIE	5.0425***	—	3.3552***	4.1172***	—
CONST	2.7139	28.6617***	9.3808***	11.4988	35.6848***
R-squared	41.91 %	42.34 %	53.73 %	27.94 %	20.54 %
Heteroscedasticity	Yes (***)	No	Yes (**)	No	No

Translation

Table 6

ROA and Market Cap/Assets panel regression results, specification (7)

Explained variables	ROA	Market Cap/Assets
RUIE(D)	–0.0516**	–1.4551
WWF(D)	0.0216	6.8974***
AMR(D)	–0.0031	–0.5044
RUIE(D)×RUIE	0.0343*	3.4154*
WWF(D)×WWF	0.0109	0.5396
AMR(D)×AMR	0.0186	10.4408**
EBITDA/Sales	0.5091***	14.0564***
Leverage	0.0140	–2.3236
Net CAPEX/Sales	0.1156**	7.2343*
R&D Exp./Sales	0.1429**	–2.6456
Size	0.0091*	–3.2742***
CONST	–0.1487**	37.1036***
R-squared	32.44 %	43.60 %
Multicollinearity	No	No
Heteroscedasticity	No	No
Autocorrelation	No	No

RUIE is significantly less than 1, a positive impact of a gain in the rating is greater in modulus than a negative impact of participation.

Second, a positive impact of company participation in the rating of WWF Russia and high ranking in the ratings of RUIE and AMR is characteristic of market capitalisation; simultaneously, the rating of AMR exerts the highest influence in modulus.

Third, models are indicative of a significant positive impact of EBITDA/Sales and Net CAPEX/Sales variables on indicators of ROA and market capitalisation.

The next important stage of analysis was creating panel regressions in specifications (Rating 2) and (Rating 3). The most significant results are shown in Table 7. A time lag was also added to the models of this specification due to the assumption that effects of ratings or control variables may lag in time.

Table 7

ROA and Market Cap/Assets panel regression results, specifications (8) and (9)

Explained variables	ROA (+ lag) (2)	ROA (+ lag) (3)	Market Cap/Assets + lag (2)	Market Cap/Assets (Rating 3)
RUIE(D)	–0.0124 (–1 year)	—	6.6660*	—
WWF(D)	0.0390 (–1 year)**	—	11.9599***	—
AMR(D)	–0.0102 (–1 year)	—	2.1004	—
RUIE(D)×RUIE	—	0.0176 (–1 year)	—	6.0327***
WWF(D)×WWF	—	–0.0028 (–1 year)	—	1.9848*
AMR(D)×AMR	—	0.0028 (–1 year)	—	10.9530***
EBITDA/Sales	0.5133***	0.5129***	12.4895***	15.0170***
Leverage	0.0458 (–1 year)	0.0451 (–1 year)	–4.0058 (–1 year)	–2.3896
Net CAPEX/Sales	0.1693 (–1 year)***	0.1707 (–1 year)***	4.0155 (–1 year)	6.6095*
R&D Exp./Sales	0.1996 (–1 year)*	0.2073 (–1 year)*	10.3365 (–1 year)	–3.5244
Size	0.0041	0.0024	–3.7070***	–3.4911***
CONST	–0.0909	–0.0743	39.1550***	38.9955***
R-squared	55.25 %	53.29 %	44.74 %	43.08 %
Multicollinearity	No	No	No	No
Heteroscedasticity	No	No	No	No
Autocorrelation	No	No	No	Yes (*)

Translation

The models obtained in Table 7 have a sufficient (although not very great) explanatory power. These models lead to several conclusions. A more significant influence of companies' participation in the rating of WWF Russia is characteristic of ROA; this is the only significant factor when the time lag is added. Just as in regressions of specification (Rating 1), the impact of participation was negative for the rating of RUIE and positive for the rating of WWF. Besides, time lag models have a greater explanatory power.

Influence of all reputation ratings is significant for the models with Market Cap/Assets. Apart from that, unlike in ROA models, both variables of participation in ratings and numeric variables of the results are significant here.

Interpretation of Empiric Research

The conclusion on a positive influence of participation in reputation ratings of the companies operating in a region on socio-economic development of such region is a new result for Russian studies dedicated to regional development. The suggested hypothesis was confirmed. Therefore, we can make the following three conclusions. First, investment of companies in reputation in a broad sense, indeed, causes growth in prosperity of a wide range of stakeholders living in the territory of the company's operation. Leaders of corporate ratings in the region are also growth drivers of socio-economic development of territories and may be chosen as the main partners of regional authorities for the implementation of the development strategy. Second, the research revealed a mild interest of business in investment in environment preservation. Evaluation results showed that even participation of a company in environmental programmes has a positive impact on the investment rating of the region. Regional authorities have to engage in a dialogue with the companies implementing environmental programmes to achieve investment advancement of the region. Third, it appears that actions taken by companies to improve their positions in the ratings of RUIE and WWF Russia have a positive effect on company employees (investment in staff development) as well as on social environment (participation in social programmes, financing of the construction of social infrastructure facilities, environment preservation and remediation) in the regions of operation.

As for the justification of investment in reputation for companies, we also obtained important new results.

First, we revealed a positive and statistically important influence of the ratings of RUIE (Responsibility and Transparency and Sustainable Development Vector) and WWF Russia (Transparency of environment responsibility) on ROA of Russian non-financial companies. Besides, the influence of the rating of RUIE was non-linear and J-shaped. In case of a company's participation in the RUIE with low results, such participation had a detrimental effect on corporate financial performance, both on ROA and market capitalisation. However, if a company occupied high positions in the rating, its influence on financial performance was positive. It may be related to the fact that there is a large number of participants in the rating of RUIE, meaning that the participation alone is insufficient for a positive evaluation by stakeholders. Besides, there are various expenditures related to company participation in this rating, therefore, it is justified only in case of top results. Unlike the rating of RUIE, a more serious and significant impact of participation rather than that of top results on ROA of Russian companies is characteristic of the rating of WWF Russia. It improves the value of company's efforts in the minds of investors and stakeholders in general.

Second, a positive and statistically significant influence of participation in ratings on market capitalisation of Russian non-financial companies was revealed. Higher ratings have a more significant in modulus impact on market capitalisation than just participation in ratings. However, it holds for the ratings of RUIE and AMR, while a more significant influence of participation in the rating is characteristic of the rating of WWF Russia, as in ROA regressions.

Third, the research found out specific features related to a possible time lag of ratings' influence on financial performance of Russian companies. This effect was observed for market capitalisation. However, the regressions, where ratings were taken into consideration without a time lag while a series of control variables (Net CAPEX/Sales, Leverage, R&D Exp./Sales) were considered with a lag, had a higher quality and greater explanatory power.

Thus, Hypotheses 1, 2, 3 have been confirmed; Hypothesis 4 was partially confirmed (for the rating of RUIE); Hypothesis 5 was not confirmed: the ratings of RUIE, covering the widest range of corporate business lines, have a smaller in modulus impact on corporate performance indicators than the ratings

of WWF (in case of ROA) and AMR (in case of Market Cap/Assets). This is testimony to the fact that we have revealed a positive influence of reputation ratings on a range of financial performance indicators of Russian non-financial companies.

The research also produced several interesting results when dealing with control variables that require interpretation. EBITDA/Sales variable turned out to be the most significant one. It is indicative of corporate operating performance. Its influence was always the highest in modulus. This result may be testimony to a synergetic effect of reputation and operating performance. NetCAPEX/Sales is also an important control variable. The reason is that companies from capital intensive sectors (metallurgy, oil and gas, power industry) for which investment in purchase and upgrade of fixed assets is of special importance prevail in the sample. Apart from that, the results indicate investors' proneness to consider company's active investing as a positive signal proving potential for growth and development.

A negative impact of financial leverage is characteristic of the models where market capitalisation is the dependent variable. It may be due to the fact that investors perceive a large debt as a negative signal. Increase in debt entails an increase in financial risks for companies [25] and decrease of the cash flow that may be used to pay dividends [26]. However, for the majority of regressions, the influence of financial leverage was statistically insignificant. This may be related to the imperfection of the debt market and preference by Russian companies of the pecking-order concept, i.e. adding debt to internal sources of financing.

It is important to note a multidirectional impact of the company size on its financial performance. For ROA, a positive influence may be explained by a positive effect of the scope, which entails the improvement of operating activity performance. At the same time, a negative influence of this indicator is characteristic of the market capitalisation regressions, possibly due to specific features of the sample. A significant part of the sample consists of oil and gas companies (approximately 60 % of revenue). Their capitalisation depends on such factors as oil prices, news of investments in new projects, change in terms of export shipments and taxation and this has a great impact on investors' expectations concerning future cash flows.

Conclusion

The research revealed a positive influence of participation and position in reputation ratings of Russian public non-financial companies on socio-economic development of regions of companies' operation and on financial performance indicators. The obtained results enabled us to define a new source of enhancing investment attractiveness for Russian regions, which are simultaneously of interest to local communities and authorities as well as to companies. Thus, there is a built-in mechanism in the interrelation of regional socio-economic development and company's efforts aimed at corporate social responsibility: companies do not need external encouragement for participation in corporate ratings because they get a significant positive effect of performance indicators.

We have achieved some results that determine the novelty of this paper. First, it is the first research of interrelation of corporate ratings and ratings of regional development. Second, for the first time we used data of Russian public non-financial companies for which there are almost no studies of the influence of corporate reputation on performance. Third, just a few previous studies of Russian companies applied limited samples and focused on the observation of CSR standards by a company instead of ratings. At the same time, ratings represent the evaluation of corporate performance by external experts and a range of stakeholders use this evaluation. Thus, this research is an important step to understanding the influence of perception of Russian companies and reputation on their performance and on the performance of the region of their operation.

Finally, in this paper we studied the influence of several ratings on various indicators of companies' and regions' performance. Therefore, we make a conclusion on significant differences in this influence, first of all, due to differences in ratings, their scopes of study and methodology.

Another important result of this research consists in considering the fact that companies operating in the region work for improvement of their reputation as a factor of enhancement of regional socio-economic development. It also appears that raising of companies' and regions' positions in corresponding ratings is a "self-maintaining" process: improvement of company's reputation through investment in CSR entails improvement of socio-economic situation and region's development enhancing its attractiveness for business. This opens up new opportunities for study of relations between corporate

management, which makes decisions on participation in corporate ratings and CSR investment, and regional authorities.

This paper has answered all research questions posed at the beginning of the study and verified all hypotheses. Nevertheless, this research has several limitations. Despite the fact that the sample comprises all largest Russian non-financial companies, it is smaller than samples of similar studies of developed countries (first of all, the USA). The second limitation is the industry affiliation of companies. Third, the research encompasses only non-financial companies leaving out banks and financial organisations. Finally, the issues related to the study of the impact of certain investment projects related to sustainable development and CSR on regional socio-economic development including GRP, quality of infrastructure, environment, urban environment, etc., are left open. These limitations leave room for further study of this topic.

This research of the influence of reputation ratings on performance of Russian non-financial companies and indicators of development of their operating regions confirms a positive influence of reputation improvement on both companies and regions, offering opportunities for future research on this topic. Therefore, this paper is important from the theoretical and practical perspectives.

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About the authors

Elena Yu. Makeeva — Cand. Sci. (Econ.), Associate Professor, Deputy Head of the School of Finance, Faculty of Economic Sciences, National Research University "Higher School of Economics"; Scopus Author ID: 2005442401; https:// orcid.org/0000-0002-5821-4496 (11, Pokrovsky Boul., Moscow, 101000, Russian Federation; e-mail: emakeeva@hse.ru).

Irina V. Ivashkovskaya — Dr. Sci. (Econ.), Tenured Professor, Head of the School of Finance, Faculty of Economic Sciences, Head of Corporate Finance Center, National Research University "Higher School of Economics"; Scopus Author ID: 35603441700; https://orcid.org/0000-0003-1409-5250 (11, Pokrovsky Boul., Moscow, 101000, Russian Federation; e-mail: iivashkovskaya@hse.ru).

Liudmila S. Ruzhanskaya — Dr. Sci. (Econ.), Associate Professor, Head of the Academic Department of International Economics and Management, Graduate School of Economics and Management, Ural Federal University; Scopus Author ID: 56646526700; https://orcid.org/0000-0003-1490-779X (19, Mira St., Ekaterinburg, 620000, Russian Federation, e-mail: l.s.ruzhanskaya@urfu.ru).

Konstantin A. Popov — PhD Student of Doctoral School of Economics, National Research University "Higher School of Economics"; https://orcid.org/0000-0002-0328-6230 (11, Pokrovsky Boul., Moscow, 101000, Russian Federation; e-mail: kpopov@hse.ru).