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Impact of ESG Ratings on Companies' Financial Performance: Evidence from Asia

Yulia Martynova
Kramp, LLC, Pricing Specialist,
yulia.martynova@kramp.ru, ORCID

Irina Lukina
Financial university under the government of the Russian Federation,
Ufa branch, Ufa, Russia,
Irina-ufa@bk.ru, ORCID

Abstract

ESG ratings have emerged as a critical instrument for investors to evaluate the long-term risks and ethical dimensions of companies. These ratings quantify companies' performance in environmental, social, and governance aspects. Nevertheless, variations in ESG ratings persist across nations owing to distinct regulatory regimes and rating agency methodologies. Despite extensive scholarly attention to the influence of global ESG factors, Asian ratings have been barely scrutinized. The research aims to assess the influence of ESG ratings on the financial performance of companies in Asia, with particular focus on South-West Asia (Turkey, Israel, and Saudi Arabia) and South-East Asia (China, Hong Kong, Singapore, and Malaysia). The study, which gathered data from 276 firms over a five-year period (2018–2022), employed STATA software to conduct panel data regressions, with return on assets, return on equity, and price-to-book value serving as dependent variables. First, the results of hypothesis testing show that ESG ratings have a positive effect on financial performance in South-West Asia, but not in South-East Asia where they have a negative effect. Second, in South-West Asia, one of the environmental, social, or governance (ESG) factors has a more notable influence and results in positive financial ratios, while in South-East Asia, there is no influence from the ESG factors. The study found that ESG ratings have varying effects on financial performance in South-West and South-East Asia, which may be attributed to differences in the historical and cultural development of ESG issues. This study will aid in the development of ESG rating practices for Asian countries.

Keywords: ESG indicators, ESG rating, the impact of ESG ratings on companies' financial results, rating agencies, random effects models, fixed effects models

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Introduction

At present relevance of ESG ratings (*Environmental*, *Social and Governance* or ecology, social sphere and governance) has increased all over the world. They have become an important instrument for investors and customers who wish to assess business immunity to long-term risks as well as ethical and social aspects of goods and services manufacture. In recent years many large corporations took measures to improve their ESG performance in order to meet increasingly demanding requirements. This process was especially important during the COVID-19 pandemic.

One of the main advantages of using ESG ratings is that they enable investors to evaluate a wide range of factors which may influence business success including the impact on the environment, relations with employees and society, observance of human rights and governance rules. ESG ratings are of particular importance for the companies operating in the industries with the greatest environment pollution: metallurgy, processing industry, pharmaceuticals, mining etc. As a rule, the companies leading in reduction of greenhouse gas emissions and transition to low-carbon technology have higher ESG ratings.

However, ESG ratings are not a universal instrument and differ from country to country because some countries have stricter regulatory and standards systems while others – less strict ones. Apart from that, some rating agencies focus on specific areas or criteria while others apply a broader approach.

The main purpose of the present research is defining the influence of ESG ratings on financial performance of Asian companies taking into consideration the differences in cultural aspects of South-East and South-West Asia.

In order to analyze panel data of 276 companies we used *STATA* program package. The data covers the time interval of 2018 to 2022.

Review of Studies Dedicated to ESG Ratings

The problem of influence of ESG ratings on corporate financial performance was addressed in many academic papers of recent years. Almost all studies dealing with ESG ratings and corporate social responsibility apply the same methodology, that is, a wide range of data, especially from developed countries where the level of information disclosure is higher than in emerging countries. But at present similar studies of Asian countries have become relevant.

First, we are going to consider the studies about a positive influence of ESG ratings and a wide disclosure of information about ESG indicators, efficiency and risk factors, corporate governance on corporate financial performance.

One of them [1] proves that there is a positive dependence between ESG indicators and net dividend income in the previous period. First of all, it is important for investors who study company reports. Apart from that, it was established that return on equity (ROE) improves due to an increase in estimate indicators of the social component.

Another research [2] analyzes the correlation between companies' financial performance and their ESG ratings during political turmoil in Egypt. The authors trace the dependence of the company's market value on ESG ratings and make the conclusion of their significant influence on financial performance of Egyptian companies when the country goes through tough times.

The authors of the research dedicated to investors' market response to publication of sustainable development reports [3]determined that environmental and social reporting and open access publication of data are conducive to achievement of higher ROE and return on invested capital (*ROIC*). At the same time, corporate governance is not a significant factor which is able to influence financial performance.

Papers [4, 5] where the authors studied data from the USA and China provide positive estimates of influence exerted by ESG indicators. Their main conclusion is that improvement in transparency of ESG indicators correlates with an increase in the corporate stock price. In particular, they have revealed that it is of special importance for high-risk companies.

The ESG rating and individual ESG indicators were also studied in banking. It turned out that in banks influence of ESG indicators on financial performance was more pronounced than in the industrial sector [6].

Some authors [7–8] assert that advantages and components of ESG indicators may improve corporate financial resilience.

Almost in all studies considered below the authors use the company size as the control or command variable. Thus, in the research of influence of ESG indicators and green investments on financial performance using 115 British and 90 German firms [9]as an example the authors applied regression analysis and revealed a positive influence of environmental conduct on financial performance and found out that large companies were more productive and innovative than small ones.

The purpose of another paper [10] is analysis of the transparency level among the companies from the *S&P 500* index concerning ESG indicators. To perform it the authors used *MSCI ESG Research* databases and statistical analysis in order to study the dependence between the growth factors and transparency level of ESG indicators in the reports of companies included in the *S&P 500* index. For each company the reporting quality index was calculated. The authors found out that there were significant differences in the ESG indicators' disclosure level between industries and sectors. At the same time some industries are more transparent than others. They also pointed out that in general the quality and quantity of ESG reports improved as time passed.

Another paper [11] considers the issue of a relation between sustainable development (ESG) practices and debt instruments' value in European countries. The authors studied 348 credit organizations in 15 countries of the EU

for 5 years. This enabled them to reveal a positive relationship between the ESG governance quality and debt-related risk. Thus, a conclusion may be made that use of ESG is an important aspect for all commercial organizations because they may become more competitive due to a lower cost of capital and a better issue of securities.

We also should mention the paper in which the authors study a relationship between the level of ESG indicators' disclosure and financial productiveness of companies as well as consider the role of this relationship's management mechanism [12]. The authors established that the level of ESG disclosure was positively related to companies' financial productivity both before and after implementation of the integrated reporting framework (IR).

There is a series of studies which examine influence of corporate financial performance on ESG ratings. One of them [13] showed that the value of the ratio of the profitability factor to equity may have a positive impact on the ESG rating.

Now we are going to consider the negative or neutral influence of disclosure of company's ESG indicators, its corporate governance and social sustainability on economic performance.

The authors of two studies [14; 15] determined that governance and environmental sustainability indicators were related negatively or insignificantly to the equity value. However, the variable related to the social aspect of ESG showed either a neutral or slightly positive influence on the equity value. Nevertheless, in the model describing the complex behavior of ESG indicators they all produce a joint positive influence on the economic resilience and equity value.

Inconclusive results were obtained in one of the studies [16]. Its conclusions imply a mixed effect between various levels of ESG disclosure and corporate performance. The author observes a strong negative correlation between a high level of ESG disclosure and financial performance. But at the average disclosure level a positive dependence on ESG indicators is revealed.

Some other studies [17; 18] assert that the ESG rating produces a negative impact. Their authors provide a conclusion based on observations over 136 companies in France and their credit indicators from 2014 to 2018. They found out a positive relationship between the level of company's ESG disclosure and its creditworthiness. However, they also describe a negative influence of the level of ESG disclosure of the company's cost of debt. When a regression with ESG components was built a negative impact of the *E* factor on the total debt was revealed.

The authors of one more research [19] obtain negative or inconclusive results of ESG rating influence on financial performance. They assert that each ESG indicator separately has a very weak impact on financial performance.

When it comes to studies related to the Asian region we have to mention paper [20] which studies the role of socially responsible governance (ESG) during the financial crisis caused by the COVID-19 pandemic in China. This research showed that high ESG efficiency of a corporation may help to improve its financial performance during the crisis in comparison to the companies less responsible in terms of the environmental and social issues. It was established that portfolio managers inclined to deal with companies with high ESG ratings showed better results in the periods of macroeconomic shocks such as the financial crisis of 2008 and the COVID-19 crisis.

Research by O. Weber [21] provides an extensive coverage of Chinese companies and their pursuance of responsible behavior in terms of ESG. At present there is a great number of listed companies in China which publish ESG reports. It is expected that others will follow the lead of socially responsible companies because the demand of investors for ESG information grows.

Chinese ESG ratings were also studied in paper by S. Li et al. [22]. The authors examined the *MSCI*, *FTSE*, *CASVI* ratings and their influence on financial performance of the companies listed in the Shanghai Stock Exchange. They arrived at the conclusion that the higher the company's rating the lower the risk of decrease in the value of its shares.

In the research of the Indian securities market [23] the authors defined that the ESG reporting quality may have a significant influence on the company's success in the securities market. On the basis of the obtained results the authors make the conclusion that it is necessary to improve ESG reporting of all companies, especially the ones in the *S&P 500* index.

Comparative Analysis of ESG Ratings

ESG ratings are an estimate of the way in which companies fulfill their obligations in terms of social responsibility, environmental sustainability and corporate ethics governance. However, various ESG rating agencies may use different methodologies to calculate the rating.

So, *MSCI* – one of the largest ESG rating agencies with a wide coverage of companies in different parts of the world applies the methodology based on evaluation of risks and opportunities related to ESG factors. ESG ratings of *MSCI* are premised on general results of 35 individual indicators, over 1,000 control points of companies' ESG policy for 20 years, 80 geographical metrics, 150 program metrics, over 100 governance metrics.

The Chinese ESG rating agency *SynTao* uses its own methods to compile corporate ESG ratings based on 14 categories: financial management, internal working conditions, risk management, broad participation in community issues, adherence to public interests, innovation capability, environment management, ethical aspects etc.

The Chinese financial information service *WIND* evaluates Chinese companies on the basis of *E*, *S* and *G* aspects. The *E* estimate indicates energy efficiency and amount of emissions, the *S* estimate shows the health and safety level, level of employees' rights and interests support and social responsibility and the *G* estimate manifests the quality of management of the company.

The Chinese agency *CSR* specializes in assessment of companies from China, Hong Kong and other Asia Pacific countries. Ratings for subsidiaries are compiled on the basis of the parent company's rating. 12 subcategories of efficiency are used, estimates obtained from various sources are compared and data correction is performed.

The international ESG rating agency *Refinitiv* which has united *Bloomberg ESG* and *ESG Analytics* uses over 630 various key indicators to evaluate ESG factors such as greenhouse gas emissions, share of women on the company board, level of concern with climate change etc.

The largest world agency of financial news *Bloomberg* also compiles ESG ratings using over 630 different indicators such as the complaint rate, the brand rating and mass media interest to the company.

The international agency *S&P Global* which consolidates *S&P Dow Jones Indices* and the ESG rating agency *Trucost* applies the *Trucost*'s methodology to assess environmental risks and opportunities as well as the opportunities of business management related to it. The estimates of *S&P Global* are based on over 1,500 key indicators in 61 subindustries.

The international ESG rating agency *FTSE* owned at present by the London Stock Exchange evaluates companies on the basis of ESG data collected from over 50 publicly available sources. Estimates of ESG factors are based on 14 topics (including climate-related risks, corporate ethics management and sustainable development), they comprise 300 indicators, 47 developed markets.

Large rating agencies *Sustainanalytics*, *RobecoSam*, *Moody's*, *Corporate Knights*, *Thompson Reuters* evaluate ESG indicators of companies all over the world. Several small local rating agencies should also be mentioned. They mainly assess the companies of South-East Asia: *CASVI*, *Biotech*, *Sino-Securities*.

In spite of different approaches of various ESG rating agencies to evaluation of ESG factors all of them take into consideration social responsibility, environmental sustainability and corporate ethics management when assessing companies.

We are going to consider in more detail the rating by *SynTao* because we will use it for comparative analysis in a regression.

The Chinese ESG rating agency *SynTao* developed its own methods to assess companies on the basis of factors of social responsibility, environmental sustainability and corporate ethics management. The agency evaluates over 5,000 companies including large government-owned ones, small local and foreign companies operating in China.

SynTao applies a set of indicators to assess companies' compliance with ESG regulations. At the first stage it evaluates the company's position in its industry, at the second – verifies compliance with internal rules and corporate standards and at the third – checks the company for conformance to industry-specific standards and international standards.

SynTao evaluates companies according to 14 indicators (6 social, 5 environmental and 3 governance ones): financial management, internal working conditions, risk management, broad participation in community issues, adherence to public interests, innovation capability, environment management, ethical aspects etc.

Each of the 14 indicators has a range of parameters (approximately 200). Then an industry-related model is constructed on the basis of these parameters (51 industry-related models in total). Based on the model and companies' weights a ESG rating is compiled (0 to 100). After evaluation it is transferred into a 10-letter scale (from *A*+ to *D*).

For analysis in a regression all letter values of the rating for each company will be transferred to numerical ones where *A*+ = 10 and *D* = 1.

Apart from the main final estimates *SynTao* also provides more detailed data for each evaluation parameter such as geographical data and macrodata. *SynTao* also offers ratings of products and services of a company separately.

SynTao compiles its rating on an annual basis and it is available only for subscribers but it is possible to collect information at its web site about companies from China and Hong Kong. It is one of the leading ESG rating agencies in China, it has important information on Chinese companies.

As long as we are going to consider various Asian regions in the present research we will use several different ratings.

On the basis of study of literature we have advanced two hypotheses.

Hypothesis 1. Influence of the ESG rating on corporate financial performance is positive for both considered Asian regions.

Hypothesis 2. Influence of one of ESG factors (environmental, social or governance) will be more pronounced in one region than in the other.

Methodology and Data

Since the present research is conducted on the basis of comparative analysis of two Asian regions we chose the countries which differ from each other greatly in terms of characteristics and geographical position. In South-West Asia we chose three countries rather extensively presented in the international rating of *S&P ESG Global*: Israel, Turkey and Saudi Arabia. In South-East Asia we chose four countries: Malaysia, Singapore, China and Hong Kong.

For this research we collected data manually vising official web sites of companies and using systems of information retrieval on corporate finance: *Google.Finance* and *Yahoo. Finance*. The data covers the time interval of 5 years: from 2018 to 2022. It encompasses the economy sectors to which the evaluated companies pertain. We chose large companies listed in Chinese stock exchanges (Shanghai, Hong Kong, Shenzhen), Singapore, Arab, Turkish and other stock exchanges.

For the present research we selected 276 companies: 99 ones from South-West Asia, 100 – from South-East Asia and 77 companies entered in the Chinese rating by *SynTao*

but not included in the *S&P* rating.

So, we have three data sets: 100 companies from South-East, 99 companies from South-West and one data set of 108 companies because the companies comprised by each hundred were added to the *S&P* rating. Therefore, we may build a regression model. In the second data set on South-East Asia the distribution by countries is as follows: 12 companies from China, 19 – from Hong Kong, 22 – from Singapore and 47 companies from Malaysia.

With regard to industry affiliation of the companies, these data sets represent almost all industries comprised by *S&P* and *SynTao* ratings. The largest number of companies represents the industrial sector (metallurgy, oil and gas, energy) – approximately 50 companies, services sector – 70. There are several companies (approximately 15) from pharmaceuticals and a lot of retailers (over 20).

We collected data on total assets, total equity and total debt for each of 276 companies and ratios of *ROA* (return on assets), *ROE* (return on equity) and *P/B*multiplier (*price to book value ratio* or the ratio of the current market capitalization of the company to its book value) for five years. We also collected accounting statements of companies (balance sheets, profit and loss statements, statements of cash flows).

Taking into consideration the fact that we collected data from public sources and did not process it in a uniform format as *Bloomberg* or *CSMAR* databases do, we collected additionally data on currency exchange rates as of each reporting date in order to represent the final assets in the same currency (US dollar). All values in the sample are presented in thousands. Logarithmic values were obtained from this data for *ROE*, *ROA*, total assets, debt to equity ratio (*D*/*E*), *P*/*B* multiplier. The logarithmic transformation allowed to smooth over abrupt jumps in dimensionalities. We also excluded financial companies from the sample. In case of missing data we used average values of the existing variables.

For the regression we chose the model specification with panel data:

$$ROA_{it} / ROE_{it} / \frac{P}{B_{it}} = \alpha + \beta_1 \cdot ESG_{it} + \beta_2 \cdot \mathrm{Ln}_{\mathrm{asesets_{it}}} +$$
$$+ \beta_3 \cdot Sales_{growthit} + \beta_4 \cdot Assets_{growthit} + \beta_5 \cdot Ln\left(D / E\right)_{it} +$$
$$+ u_{it} + \varepsilon_{it}, \quad (1)$$

where *ROA* is a natural logarithm of return on assets; *ROE* – a natural logarithm of return on equity; *P*/*B* – a natural logarithm of the correlation between the market value of a share to the book value of a share;Ln_*assets* (company size) – a natural logarithm of assets; *Sales_growth* – gain in revenues from sales; *Assets_growth* – gain incorporate total assets for a year; Ln(*D*/*E*) – gain in revenues from sales of the debt to equity ratio.

For the second regression according to the *S&P* rating we chose a specification just for one year – 2022 – because web sites of rating agencies provide available data on each of the *E*, *S* and *G* factors individually only for this year.

$$ROA_i / ROE_i / \frac{P}{B_i} = \alpha + \beta_1 \cdot E_i + \beta_2 \cdot S_i + \beta_3 \cdot G_i +$$
$$+ \beta_4 \cdot \mathrm{Ln}_{\mathrm{asesets_{it}}} + \beta_5 \cdot Sales\_growth_i +$$
$$+ \beta_6 \cdot Assets\_growth_i + \beta_7 \cdot Ln\left(D / E\right)_i +$$
$$+ u_i + \varepsilon_i. \quad (2)$$

Many researchers use return on assets, equity and market capitalization of the company as the dependent variable, however, the *P*/*B* multiplier may also be used as a dependent variable. The regressors for both models of this type of research are chosen in a standard way: ratios of leverage, growth in assets and sales as well as the company size which manifests itself as the amount of assets. Some variables will be taken in logarithms to balance the sample and mitigate fluctuations.

Table 1 presents descriptive statistics of variables.

Table 1. Descriptive statistics of variables for three models with the same ESG rating

Variable/ Country/Region	Number of observations			Mean value		
	South-West Asia	South-East Asia	China and Hong Kong	South-West Asia	South-East Asia	China and Hong Kong
ROA	495	500	540	0.050212	0.0567262	0.0361848
ROE	495	500	540	0.0809702	0.0685333	0.0543683
P_to_B	495	500	540	7.606808	3.70646	4.417796
ESG_score_SP/Syntao	495	500	540	13.86599	22.69	5.970926
Total_asset	495	500	538	9,403,572	1.19e+07	9,782,471
D_to_E	495	500	540	1.578362	3.865507	14.37889
Asset_growth	495	500	540	0.2439267	0.1125173	–0.9237176
Sales_growth	495	500	540	0.2575859	0.1262442	0.2167991

Variable/ Country/Region	Standard deviation			Minimum		
	South-West Asia	South-East Asia	Chins and Hong Kong	South-West Asia	South-East Asia	Chins and Hong Kong
ROA	0.0507271	0.0776179	0.0612072	–0.2521	–0.1363	–0.1792
ROE	0.1030046	0.2259983	0.0946869	–0.5412	–4.092347	–0.2598
P_to_B	57.49769	6.630098	7.043911	–674.4	–2.14	–19.3
ESG_score_SP/Syntao	14.31341	16.07877	1.371789	1	79	0
Total_asset	1.88e+07	1.842336	27,126.28	70,505.1	0	38.7495
D_to_E	10.52236	134.4021	2.099023	–77.258	–1537.72	0
Asset_growth	0.4466562	0.2191222	1.459495	–0.8609	–0.63	–4.60517
Sales_growth	0.552522	0.3476424	0.7094604	–0.937	4.1415	–0.8374

(Table 1 continued)

Variable/ Country/Region	Maximum		
	South-West Asia	South-East Asia	China and Hong Kong
ROA	0.2738	0.6687	0.9098
ROE	0.85	0.9882	0.9909
P_to_B	1,050	44.83	103.8
ESG_score_SP	66	79	9
Total_asset	1.31e+08	18.84	289,600
D_to_E	202.399	1,845.46	21.7
Asset_growth	6.405	1.46	2.750471
Sales_growth	5.82	4.1415	8.1027

Source: calculations in *Stata*.

Let us consider descriptive statistics of three data sets. In South-West and South-East Asia *ROA* equals 5% and 5.67%, *ROE* – 8% and 6.85% respectively. In both regions *ROA* is lower than *ROE*: in South-West Asia – by 1.6 and in South-East Asia – by 1.2. Return on assets is higher in South-East Asia and return on equity, on the contrary, is higher in South-West Asia.

Let us consider individually the third data set which comprises only companies from China and Hong Kong. Here *ROA* = 3.6%, *ROE* = 5.4%. A trend of exceedance of return on equity over return on assets by 1.5 can be seen.

Now we are going to consider the *D*/*E* ratio (leverage ratio) which has the normative value of 1–2 for medium-sized companies and may be higher for large companies. In South-West Asia the leverage amounts to approximately 1.5 which is within the normative value. However, in South-East Asia the average leverage value is 3.86 which exceeds the norm. But if we pay attention to total assets is becomes clear that in the sample from South-East Asia large companies prevail. In China and Hong Kong the average value of the leverage exceeds 14, i.e. the companies use more borrowed funds than their own. It should be noted that we have data for the past 5 years, during 3 years of which the COVID-19 pandemic took place. Most of all it hurt the Chinese economy because China imposed the strictest restrictions and quarantine. The Chinese government lifted all prohibitions only at the beginning of 2023. Therefore, the companies bought on credit and borrowed more in order to survive. At the same time the amount of assets only in Chinese and Hong Kong companies is a little higher than the amount of all companies from South-West Asia.

Further we are going to focus on the variables of "assets growth" and "sales growth". On average these values differ slightly for South-West and South-East Asia. In other words, in both regions sales growth is a little higher than assets growth. This indicates that, probably, the companies increment sales by means of increasing assets. However, if we compare the two regions it becomes clear that sales growth in South-West Asia exceeds the similar indicator of the South-East Asia almost twice (25.75% versus 12.62%).

This phenomenon may again be attributed to Covid restrictions of China and South-East Asia in general. In South-West Asia these restrictions were lifted as far back as 2022.

It is interesting to consider the data set for China and Hong Kong from this point of view. Thus, the average revenue growth amounted to 21.6%, however, the average assets growth went in the negative and equals –0.9, i.e. a lot of companies sold out their assets and went bankrupt.

Results of Hypotheses Verification

So, we are going to verify *hypothesis 1* stating that influence of ESG indicators on corporate financial performance is positive for both Asian regions. We will build three regressions for each of the two data sets from South-West and South-East Asia: for *ROE*, *ROA* and *P/B*. Since we use panel data we have to conduct tests for accuracy of data selection, that is multicollinearity and heteroscedasticity tests.

First, we have to decide which model will be used for South-West Asia: the random effects model or fixed effects model. For this purpose we will compare the models according to specifications with pooled regression applying three tests: the Wald test for the regression model with fixed effects, the Breusch – Pagan test for the random effects model and the Hausman's test to compare two regressions – with random and fixed effects.

The Hausman's test showed that it was better to apply the random effects models in two specifications: with *ROA* and *ROE*. However, the principal hypothesis is not rejected because *p-level* > 0.01. In the third specification with the *P/B* multiplier it is better to use the fixed variables model because *p-value* = 0. A modified Wald test was carried out for it. It detected heteroscedasticity. The Breusch – Pagan test for the three models showed that in two models with *ROA* and *ROE* it was better to use the random effects model than the pooled regression while in the third model with *P/B* – the fixed effects model. Consequently, the data is characterized by heterogeneity of observations, i.e. heteroscedasticity. This is a drawback of data collected manually.

For the three specifications we conducted *vif* tests for multicollinearity which showed its absence among the variables. The autocorrelation test also showed its absence in the model specifications.

Table 2. Results of the regression for the data on South-West Asia

Variable	ROA	ROE	P/B
ESG_score_SP	0.006955	0.0055647	–0.0113683
Sales_growth	0.0030538	0.0030065	–0.0027773
Ln_assets	–0.2523723	–0.1743416	–0.3946621
Ln_Debt_to_eq	–0.017689	–0.0160256	0.130985
Asset_growth	0.0004874	0.0003273	–0.0003442
_cons	4.879144	4.123832	7.553831
Permissible value of p-value			
ESG_score_SP	0.008	0.048	0.000
Sales_growth	0.000	0.000	0.000
Ln_assets	0.000	0.001	0.000
Ln_Debt_to_eq	0.449	0.524	0.043
Asset_growth	0.404	0.599	0.336
_cons	0.000	0.000	0.000
R-squared			
Within	0.1017	0.0927	0.3462
Between	0.2596	0.1188	0.1155
Overall	0.2263	0.1128	0.1439

Source: calculations in *Stata*.

Now we are going to evaluate results of the obtained regressions (Table 2). The variable of ESG indicators turned out to be significant in all three specifications unlike the leverage and assets growth variables. It can be observed that the ESG rating has a positive impact on *ROA*, *ROE* but produces a negative impact on *P/B*. And although this influence is insignificant (totally 0.007 and 0.0055) it does exist, hence, hypothesis 1 may be confirmed partially.

As for other variables the sales growth predictably exerts a positive influence on profitability but a negative influence – on the shares' price to book value ratio (however, this influence is insignificant – approximately 1%). The dependence on the assets logarithm, i.e. the company size, is negative for all three specifications. It means that the bigger the company, the larger its assets (both current and non-current) the lower its profitability. This is quite applicable to the large companies, data on which we have collected. In order to increase profitability it is necessary to drive up profits or asset turnover instead of the amount of assets.

It should also be stated that in all model specifications the R-squared is low. It is due to unnormalized data because companies have been selected manually. In the best specification $R^2 = 0.25$. It means that just 25% of the variance of corporate financial performance is attributed to the model, however, the purpose of the present research is to determine the relationship between the two factors: ESG indicators and financial performance. And we have managed to determine it.

Conclusion: for South-West Asia the hypothesis of a positive influence of ESG indicators on financial performance of companies is partially confirmed. At the same time the ESG rating has a positive impact on the profitability ratios and has a negative impact on the correlation between the market and book value of shares.

Now we are going to consider companies from South-East Asia (Table 3). Similar to the previous stage of

analysis we conducted tests in order to choose the random effects and fixed effects model. Exactly in the same manner as with South-West Asia we chose the random effects models for specifications with *ROA*, *ROE* and the fixed effects model for *P/B*, the *vif* test did not detect multicollinearity. Heteroscedasticity also was present in this data, autocorrelation was not revealed. We applied the robust transformation to the fixed effects model. It decreases the *p-value* but does not manifest itself in the ratios.

Table 3. Results of the regression for the data on South-East Asia

Variable	ROA	ROE	P/B
ESG_score_SP	–0.0056281	–0.0045036	–0.0029694
Sales_growth	0.0067906	0.0070549	–0.0013241
Ln_assets	–0.0201658	–0.0251241	0.000559
Ln_Debt_to_eq	–0.0526155	–0.0509342	0.0042058
Asset_growth	0.0026339	0.0023344	0.0012329
_cons	1.610765	1.900533	0.6292191
Permissible value of p-value			
ESG_score_SP	0.002	0.015	0.012
Sales_growth	0.000	0.000	0.398
Ln_assets	0.154	0.078	0.938
Ln_Debt_to_eq	0.033	0.044	0.917
Asset_growth	0.034	0.062	0.420
_cons	0.000	0.000	0.000
R-squared			
Within	0.2093	0.2170	0.0305
Between	0.1142	0.1140	0.0036
Overall	0.1342	0.1303	0.0001

Source: calculations in *Stata*.

In all three cases the impact of ESG indicators on financial performance turned out to be negative (ratios of –0.0056, –0.004, –0.0029). It means that the higher the corporate ESG rating the less revenue it earns. Probably, it implies that it is necessary to invest more in development of ESG principles. This manifests itself in profitability. As for other variables, in the third specification the ratios of assets and sales growth, leverage and the total assets logarithm (i.e. the company size) are statistically insignificant. The total significance of R^2 model is also rather low which has been explained above. So, in South-East Asia hypothesis 1 is not confirmed. In other words, in the Asian market the rating by *S&P ESG Global* has a negative impact on corporate financial performance.

Thus, in South-West Asia the hypothesis was partially confirmed while in South-East Asia it was rejected completely. This result demonstrates the difference between the conduct of business principles in the south-west and south-east of Asia. While in South-West Asia participation in such ratings helps a company to raise new investments as well as increases profitability (as we have shown graphically above), in South-East Asia it is vice versa: the higher the *S&P* rating the lower the company's profitability. Although this influence is highly insignificant, is exists anyway. While in South-West Asia (Saudi Arabia, Turkey, Israel) participation in the *S&P ESG Global* rating and high scores is beneficial for a company, i.e. it enables the company to become more attractive and competitive, in South-East Asia (Malaysia, Singapore, China, Hong Kong) high scores in the *S&P* rating, on the contrary, reduce profitability and, probably, will scare investors away.

In order to understand whether it is beneficial for East Asian companies to pursue the ESG agenda at all we will try to use the same regression to evaluate the data set only for China and Hong Kong (108 companies) applying the *SynTao* rating because it is more or less similar to the *S&P*'s evaluation methodology. First, we are going to conduct tests with previous data sets.

For specifications with *ROA* and *ROE* the tests showed that it was better to use the random effects model while in the *P/B* specification – the fixed effects model. As with other data sets heteroscedasticity exists. It was verified by means of the modified Wald test. However, in this data set multicollinearity is present. According to the *vif* test the

ESG_score_Syntao and Ln_assets variables show a seriously inflated variance (values exceeding 20). Therefore, we decided not to take into consideration the Ln_assets variable in the model. The Pearson correlation matrix shows that the coefficient of correlation between these two parameters is positive and exceeds 0.5 and this is indicative of a significant relationship. Reasoning from this we may say that the bigger the company size the higher the rating.

Results of the regression using China and Hong Kong as an example and applying the *SynTao* rating are presented in Table 4.

Table 4. Results of the regression using China and Hong Kong as an example and applying the *SynTao* rating

Variable	ROA	ROE	P/B
ESG_score_SynTao	–0.1218916	–0.0985843	–0.046679
Sales_growth	0.0176976	0.1792735	–0.0024066
Assets_growth	0.1111184	0.1272014	0.0247313
Ln_Debt_to_eq	–0.0405298	–0.0196879	–0.00475
_cons	–2.189225	–2.046264	1.182562
Permissible value of p-value			
ESG_score_SynTao	0.023	0.054	0.025
Sales_growth	0.856	0.015	0.915
Assets_growth	0.466	0.366	0.630
Ln_Debt_to_eq	0.401	0.676	0.830
_cons	0.000	0.000	0.000
R-squared			
Within	0.0004	0.0104	0.0098
Between	0.0821	0.0556	0.1382
Overall	0.0315	0.0281	0.1095

Source: calculations in *Stata*.

Table 4 shows that in each specification the ESG rating is significant at different confidence levels. In the specification with *ROA* and *P/B* the significance level belongs to the confidence range of 5% while in the specifications with *ROE* the confidence level of 10% is permissible. At the same time, the influence of ESG rating on *ROA*, *ROE* and *P/B* is negative as is the case with the *S&P* rating. The rest of the variables in this model are statistically insignificant. Only the sales growth entails *ROE* growth by 0.179. But this is predictable because return on equity is directly related to the company's revenue.

Thus, the results of this model support the conclusions for the *S&P* rating on a negative influence of the ESG rating on corporate financial performance. It is not advantageous for East Asian companies to put effort into development of ESG principles and participate in ESG ratings. Probably, for companies it is related to greater expenses, so it is easier for them not to get involved in implementation of ESG principles and participation in the ranking scores of international and local agencies.

Now we are going to verify *hypothesis 2* stating that in one of the verified regions influence of any ESG factors on corporate financial performance will be more pronounced than in the other region. In order to verify this hypothesis we will use two subsamples of the same data. Since the expanded ESG ratings on individual factors exist only for 2022 the new samples will comprise just 99 observations from South-West Asia and 100 observations – from South-East Asia.

Table 5. Descriptive statistics of variables for two regions for 2022

Variable	Number of observations		Mean value		Standard deviation	
Region	South-West Asia	South-East Asia	South-West Asia	South-East Asia	South-West Asia	South-East Asia
ID	99	100	50	50.5	28.72281	29.01149
Company	0	0				
Country	0	0				

Variable	Number of observations		Mean value		Standard deviation	
Region	South-West Asia	South-East Asia	South-West Asia	South-East Asia	South-West Asia	South-East Asia
Industry	0	0				
Year	99	100	2022	2022	0	0
ROA	99	100	5.606566	5.75	5.817006	7.131662
Ln_ROA	99	100	1.380442	1.272211	1.015046	0.9170197
ROE	99	100	8.799596	14.84	10.01262	14.84943
Ln_ROE	99	100	1.759904	1.471442	1.05349	0.9786752
P_to_B	99	100	3.724949	2.915	4.338663	5.558312
Ln_P_to_B	99	100	0.9352828	0.4506	0.9469385	0.9947984
Sales_growth	99	100	47.74141	16.956	74.5861	31.04795
ESG_score_SP	99	100	20.79798	31.45	18.07128	18.61539
Ln_assets	99	100	15.20302	14.9808	1.283856	2.123766
Total_assets	99	100	9,976,050	9,191,453	1.90e+07	1.31e+07
Total_assets	99	100	9,976.05	9,191.453	19,032.32	13,119.11
D_to_E	99	100	1.107545	1.348279	1.565311	1.850767
Ln_Debt_to~q	99	100	–0.6333232	–0.477865	1.671484	1.823456
Asset_growth	99	100	26.50242	7.40825	36.01511	14.24616
E	99	100	18.63636	30.8	21.32903	19.61344
S	99	100	21.71717	37.48	18.05436	34.60264
G	99	100	23.52525	35.31	15.0532	16.1074

(Table 5 continued)

Variable	Minimum		Maximum	
Region	South-West Asia	South-East Asia	South-West Asia	South-East Asia
ID	1	1	99	100
Company				
Country				
Industry				
Year	2022	2022	2022	2022
ROA	–9.34	–7.61	27.38	43.91
Ln_ROA	–1.89712	–0.5276327	3.309813	3.782142
ROE	–17.43	–68	48	98.82
Ln_ROE	–1.049822	–0.4004776	3.871201	4.59
P_to_B	–16.65	0	20.45	44.83
Ln_P_to_B	–1.609	–1.43	3.018	3.8
Sales_growth	–83.2	–65.94	453.1	120.85
ESG_score_SP	1	1	66	79
Ln_assets	15.2	10	18,679	17.92
Total_assets	141,510	43,243.2	1.29e+08	6.04+07

Variable	Minimum		Maximum	
Region	South-West Asia	South-East Asia	South-West Asia	South-East Asia
Total_assets	141.51	43.2432	129,459.6	60,400
D_to_E	–4.294	0	9.821	9.93
Ln_Debt_to~q	–7.059	–7.418581	2.285	2.29556
Asset_growth	–14.63	–25.18	139.04	59.02
E	0	0	74	87
S	0	1	65	84
G	5	6	69	75

Source: calculations in *Stata*.

First, we are going to consider descriptive statistics of the variables for two regions (Table 5). The average *ROA* in South-West Asia is positive and equals 5.6%, ROE – 8.79%, in South-East Asia *ROA* equals 5.75%, *ROE* – 14.84%. Exceedance of *ROE* over *ROA* is a positive sign of competitiveness because the company uses its own and borrowed funds. Exceedance of *ROE* over *ROA* almost 3 times in South-East Asia is due to larger crediting of these companies in comparison to South-West Asia which is most likely caused by the Covid restrictions of 2022. It is also confirmed by the mean sales growth in 2022 in South-West Asia by 47% and in South-East Asia – just by 16%.

The correlation between the debt and equity in both regions is permissible: 1.1 and 1.34 respectively. The mean assets growth in South-West Asia is 26% while in South-East Asia – just 7.4%. However, it should be noted that on average the estimates for the *E*, *S*, *G* factors are lower in South-West Asia (18–23) than in South-East Asia (30–35).

Now we are going to evaluate regressions for these two regions. When we built the regression for South-West Asia we revealed that in the *vif* test the values of the three variables of *E*, *S*, *G* exceed the permissible 5 points, i.e. there is multicollinearity. In this relation we may construct the Pearson correlation matrix and ensure that the correlation between these factors exceeds 0.8 and 0.9 points which is of great significance and indicates a direct relationship between these factors: the greater, for example, the *S* and *G* factors the greater the *E* factor. Therefore, these variables cannot be called independent, while they should be independent by definition and according to methodology of the *S&P ESG Global* rating.

As the purpose of the present research is to study the influence of three variables on financial performance we are going to build a regression for each of these factors for three financial ratios. As long as in the model the results of other variables are insignificant we may ignore them. At the 10% confidence level *E* has a positive impact on *ROA* and *P*/*B*. The influence is described by the ratios of 0.0079 and 0.0076. Also at the 10% confidence level we may see the impact of the *S* factor on *P*/*B* (the influence ratio of 0.01). At the 5% confidence level the *S* factor produces a positive impact on *P*/*B* (0.012). This means that *E*, *S* and *G* factors exert an insignificant but positive impact on financial performance.

When we constructed a regression using data on South-East Asia multicollinearity was not detected. We conducted the Breusch-Pagan and White tests for heteroscedasticity and they showed that the zero hypothesis about heteroscedasticity is not rejected, *p-value*> 0.05. Hence, there is no heteroscedasticity in data. However, all ratios in the regression are insignificant. Even if we try to build separate dual regressions the individual *E*, *S*, *G* factors turn out to be insignificant again. Thus, they do not influence separately the dependent variables. They do it only together as a part of the total ESG rating.

Consequently, hypothesis 2 of different dependence of financial performance in the two regions on individual ESG factors is confirmed. Thus, in South-West Asia, in such countries as Turkey, Israel and Saudi Arabia the *E*, *S* and *G* factors produce a positive influence on *ROA* and *P*/*B*. In South-East Asia, in China or Malaysia, these factors have no impact of corporate financial performance at all. Probably, this result may be due to characteristic features of historic, cultural and social development of the regions. In south-west regions of Asia people have long been concerned with the impact of emissions, contamination and the environment. In south-east regions of Asia the trend for conscious resource consumption and ESG ratings has been introduced rather recently and this explains such difference in influence of ESG ratings on corporate performance.

Conclusion

The present paper is dedicated to study of the impact of ESG ratings on financial performance of companies from the Asian region. The purpose of the paper is to reveal, taking into consideration the historical and social-and-cultural preconditions of regions' development, the influence of ESG ratings on ratios of corporate financial performance: return on assets, return on equity and the ratio of company's market capitalization to its book value.

The paper begins with a theoretical substantiation of the problem of ESG ratings' development in the Asian region

and analysis of the existing scientific publications on ESG indicators and ratings.

On the basis of study of publications we advanced two hypotheses for empiric study. The data was collected manually, the sample comprised 276 companies from two regions: South-West Asia (Turkey, Israel, Saudi Arabia) and South-East Asia (China, Hong Kong, Singapore and Malaysia). We studied the time interval of 5 years: from 2018 to 2022. The information was collected from accounting statements of companies and two rating agencies: the international *S&P* and local Chinese rating agency *SynTao*.

In the practical part of this research we used *STATA* software, evaluated two regressions: the panel data and data for one year. The ratios of *ROE*, *ROA*, *P*/*B* in the form of logarithms were used as dependent variables; data on ESG ratings, individual *E*, *S* and *G* factors as well as indicators of assets growth, sales growth, the leverage ratio, the total assets logarithm as the variable of the company size were the independent variables. In total we have studied 15 different model specifications for two hypotheses. In some specifications we excluded collinear elements.

In the hypotheses and regression specifications we used random effects and fixed effects models, conducted the tests to choose the best model and made an adjustment for data heteroscedasticity.

When we verified the first hypothesis on a positive influence of the ESG rating on corporate financial performance in both Asian regions we found out that the hypothesis was confirmed just partially. The positive influence is observed in South-West Asia while in South-East Asia negative effects of the ESG rating (both global and local) were revealed.

The second hypothesis on a different impact of individual *E*, *S*, *G* factors was confirmed completely. In the western regions of Asia a positive influence of individual factors on some financial performance ratios was revealed, in the eastern regions there is no influence of individual factors, hence, the companies from South-West Asia are more susceptible to change of the ESG agenda in the world than companies from South-East Asia.

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