IMPACT OF ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) ON FIRMS MARKET PERFORMANCE; EVIDENCE FROM CHINA

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ABSTRACT

This research study investigates the impact of environmental, social and governance factors (ESG) on firm's market performance of China for the period of 2009-2018. The data is collected from Refinitiv DataStream and WGI (World Governance Indicators). This study applied GMM for analysis on panel data. This study contributes to the literature by using country-level governance factors instead of firm-level factors. The empirical result shows that environmental factor foster the market value but social and governance factors decrease the market value for non-financial firms operating in China.

*Keywords***:** ESG, Financial Performance, WGI, GMM, China.

INTRODUCTION

Environmental, Social and Governance (ESG) is identified as a group of activities or associated processes that describe the relationship of the organization's with environmental surrounding, provide the interface among the employees of the organization with society and lastly intricate the internal corporate system of control and procedures to direct, administer and manage all the concern issues of the organization for the purpose to assist the interest of shareholders and other stockholders (Whitelock,

2015). The term ESG is used in the capital markets to describe the non-financial performance of firms.

In 2006, the investment industry, intergovernmental and governmental organizations pertaining to the United Nations Environment Program (UNEP) and United Nations Global Compact collaborated to create the United Nations Principles for Responsible Investment (UN-PRI). The UN-PRI understands the ESG implications and encourages investors for investment in these practices (Attan et al., 2018). Therefore, investors and stakeholders are concerned about the ESG factors of a company to know where the company invests money and how the company conducts business.

The concept of ESG is well known in develop countries but the developing countries recently started to introduce this phenomenon. China is also a developing country. The research on ESG in the country of China is very persuasive in nowadays. Because in coming years, the carbon dioxide emissions in China will become more intense. As the emission increase the pressure on China to halt the emission will also burgeon (Yuan et al., 2014).

The basic motivation behind this research is to investigate the effect of determinants of SESG factors on firm's financial performance in developing countries like China. This study is unique as the study uses Kaufman et al. (2011) country level indicators instead of firm level indicators for calculating governance factor.

The main theories used in ESG are following. Shareholder theory was presented by Jensen and Meckling in 1976. This theory mainly focuses on shareholder interest and considers short term incentives. This theory focus narrows on business sustainability. Institutional theory was presented by Meyer and Rowan in 1977. This theory considers the need of society and important for the concept and practices of ESG. Signaling/disclosure theory was presented by Michael Spence in 1973. Signaling theory proposes that when the firms follow ESG activities in their financial and voluntary report, they produce good signal. This theory differentiates between low-ESG firms and high-ESG firms. Stewardship theory was presented by Donaldson and Davis in 1993. The stewardship theory considers the long-term interest of all stakeholders. The main objective of ESG is also long-term benefits. Stakeholder theory was presented by R.E.Freeman in 1984, which focuses on the interest of the shareholders as well as stakeholders. According to this theory all the pillars of ESG are important to focus.

LITERATURE REVIEW

Previous Work on ESG

The empirical literature focused on various ESG measures and their economic performance association. Many academics explored whether or not ESG could be used as a prospective main factor for successful investment (Richardson, 2009). Some researchers evaluated whether shareholders would like to invest in companies with a stronger CSR picture for higher economic performance outcomes, (Margolis & Walsh, 2003; De-Bakker, et al. 2005). ESG measurement can also be done by different determinants on wide range, such as corporate social responsibility (CSR) reporting, generous giving and CSR ratings. Financial performance measures are classified in two categories, including accounting-based methods and market-based methods.

Broadstock et al. (2020) have studied the role of ESG performance in China during a pandemic, the situation in which the economic and physical lockdowns has collapsed the economy. These unusual circumstances provide researchers with an opportunity to question if stockholders consider ESG performance as a sign of increase future stock performance. The results obtained from this study clarified that the high portfolio of ESG tends to leave behind the low portfolios of ESG. It is also clarify that the overall ESG performance reduces the financial risk in the time of uncertainties.

Ahmad et al. (2021) examined the UK firms and how they were impacted by the ESG measures. The sample period was from 2002 to 2018. This research took into account the impression of both aggregate ESG and individual aspects on the growth and financial performance of UK-based firms. They used both static and dynamic approached for panel data. Not only this, but this research also investigated the influence of different ESG intensities on growth and performance of firms. The purpose of this research was to determine the exact influence and role of firm size that serves as a moderator between ESG and the performance metrics. The outcomes of total ESG performance clearly highlights that the ESG metric has a progressive and prominent influence on the firm's overall growth and financial performance. The individual ESG performance however produced different results. All in all, the outcomes validate that high ESG firms are more profitable than the companies with low ESG results. The results also specify that firm size moderates the association between ESG performance and financial growth and stability of the firm.

Sadiq et al. (2020) also found out the association between ESG and the outcomes that can devalue the firm. The data was extracted from the accounts of 122 organizations that were listed on Bursa Malaysia over the period from 2011 to 2019. In total, there were 1098 observations. Three instrumental variables were used by the researchers to determine the endogeneity related with ESG performance. Everything influences the process whether it is a CSR committee and their decisions, sharing or distribution of profits, and the ownership of the company. The researchers used benefitted from the first stage regression models that were associated with the ESG disclosure and various other factors, including the correlation between the factors of strength and concern. Besides that, they also used the second stage regression. The purpose of using this second stage model is to describe those ESG properties that are highly related with the factors of performance and disclosure. The research outcomes depicted that ESG becomes effective when a firm strictly adhere to its value. On the other hand, ESG disclosure reduces the overall firm's strength and value. This study also highlighted that ESG disclosures can also show the direction following which a firm can alleviate the negative consequences at the same time improving strength and positivity.

Fakoya & Malatji (2020) monitored the role of mutual fund managers and examined whether or not they should include the (ESG) factors while deciding on which specific sector to invest, especially when they're making decisions on behalf of their trustees. The top 20 South African mutual fund companies and their asset managers contributed to this study. Panel data analysis approach is used. The outcomes clearly showed an adverse relationship between the ESG and ROE. That reflects that the companies working in South African companies basically don't pay heed to the United Nations Principle of Responsible Investment (UN PRI) guideline. That further indicated that asset managers

mainly emphasize on improving profit margins and incentives returns on stakeholder's investment without giving attention to ESG concerns. The research paper also highlighted that the investment guidelines did not particularly persuade firms to strengthen their sustainable business approaches.

Shakil et al. (2019) also conducted a research on the effects of environmental, social and governance performance. They conducted this research in the context of financial institutions and their performance, in the light of present-day markets. The results of this research explains that earlier businesses were mainly evaluated on the basis of their financial progress and income ratio, but with the rising attention to sustainability goals, and other ESG factors, the stakeholders are now paying attention to other things rather than chanting financial progress or performance. The researchers have used the generalized method of moments (GMM) technique. With this technique, they were able to better deal with the dynamic nature of the data. This study gathered the ESG data of up to 93 successful banks. The data gathered was from 2015 to 2018, that was available in Asset4 ESG database. As far as the financial data is concerned, the authors collected it from Refinitiv Datastream database. The research outcomes clearly explained a positive link between banks' socio-environmental performance with their financial progress. However, the role of governance does not impact financial performance much.

Xie et al. (2018) investigated that ESG increase the financial performance or not? On the basis of their results it was cleared that governance indicated significant results to financial performance. They also described that other pillars of ESG also specify positive relationship to financial performance. But the companies which voluntarily followed the ESG dimensions they produced superior financial performance.

Garcia (2017) studied the ESG and financial performance association of BRICS countries for period of 2010 to 2012. According to their study results it was proposed that companies which are in sensitive industries produce better environmental performance. It was cleared from their research study that financial performance was affected mostly from environmental sensitivity. The other factors like social and governance were little effect on financial performance.

Ghosh et al. (2017) investigated the association of CSR and financial performance of firms. The population for this study was manufacturing and production sector while sample period was 2011-2015. The researcher used ROA and ROE for measuring performance variable. The resuSlts indicated that emission of greenhouse gasses reduction enhance performance of firms. The researcher recommended that long term financial measure will study for more accurate results.

Tarmuji et al. (2016) studied the Malaysian and Singapore companies from 2010 to 2014. Their results revealed that social and governance pillar of ESG support superior financial performance. According to their results it was cleared that firms which are socially responsible and also follow the governance rules have in better financial position.

Sahut and Pasquini-Descomps (2015) investigated the effect of ESG on stock return. They investigated companies of Switzerland, US and UK. The data collected was from the period 2007-2011. The research outcomes proved a positive link between ESG and stock market returns of just US firms. The Switzerland and US firms showed inconclusive results. Yu et al. (2018) investigated 47 growing companies from developed

and developing countries. Their results suggested that benefits created from ESG were greater than the cost associated with these activities. Also suggest that financial performance will be enhanced in long run if they followed ESG.

Hypothesis Development

Sustainable performance is the reasons for the survival of the organizations in the long way of competitions and profitability. The positive effect of ESG is the example of social responsibilities and an investment of intangible assets (i.e good reputation as well as human right) to enhance the competitiveness and long run financial performance. But the inverse effect is related to the opinions that ESG activities are overpriced which decrease the shareholders' value. The corporations having superior ESG performance will categorize as more responsible toward environment and social, and also have more advance governance measures. Firms with superior ESG can attract talented employees, increase productivity and talented employees. Also improvements in ESG positively influence the financial performance and support to access a better capital by decreasing cost of capital.

Environmental

Limkriangkrai et al. (2017) describe the environmental performance as the responsibilities and duties of the corporations to diminish the harmful impact towards environment and follow the regulation of ecosystem. The following areas came in this; weather and climatic fluctuations, biodiversity, lack of forestation, energy wastage, water wastage, mishandling of waste management and numerous other factors (Chartered Financial Analyst Institute 2008, 2015). Busch et al. (2016) also talked about numerous ecological factors that can play their part for improvement of resource productions, the use of renewable resources, and incorporating more of the recycling reusability programs and last the step towards following the ecological systems by nations

References provided by (Xie et al., 2018; Miralles-Quirós et al., 2018; Ferrero-Ferrero et al. 2016; Duuren et al., 2016; Vincent, 2012) the environmental pillar of ESG for this research work will be calculated from the following factors (a) waste reduction, (b) CO_2 emission, (c) water consumption, (d) energy consumption, (e) product innovation. The literature also show other factors for environmental pillar of ESG but these factors are most important therefore the researcher selects only those factors.

Hypothesis 1: There is a positive relationship between environmental and financial performance of firms.

Social

Corporate social performance also explained the construct that highlights the responsibilities of multiple stakeholders from employees to the community as a whole, instead of its traditional responsibility to increase wealth for shareholders (Turban & Greening, 1997). Sultana et al. (2018) refers that social performance refers to shield the rights of people and improving their well-being in the community. But these activities are not only limited to labor standard, community relations, gender diversity, human rights and employee engagement, (Chartered Financial Analyst Institute, 2008).

References given by (Xie et al., 2018; Miralles-Quirós et al., 2018; Ferrero-Ferrero et al., 2016; Ortas et al., 2015; Duuren et al., 2016) reveals that the social pillar of ESG is

collected from the following factors (a) Health and safety (b) human rights, (c) training & development, (4) community development. On the basis of different theories and empirical literature the researcher assume following hypothesis for this study;

Hypothesis 2: There is a positive relationship between social and financial performance of firms.

Governance

Governance is dealing with power and determines who have the power to set and supervise the rules of society. According to La Porta et al, (1999), the determining factors of government effectiveness are an outcome of socio-political and several cultural theories. It is also concluded by La Porta that how government operates and performs is related to cultural discrepencies as well as religious and ethnic diversity. Islam and Montenegro (2002) recommended that social attributes are not related with institutional quality. According to the mention sources (Yu et al., 2018; Kaufman et al., 2005; Judge et al., 2008; Petzer et al., 2012) the governance pillar of ESG can be collected from these factors, (a) voice and accountability, (b) Political stability and absence of violence, (c) Governance effectiveness (d) Regulatory quality (e) Rule of Law (f) Control of Corruption. On the basis of different theories and empirical literature the researcher assume following hypothesis for this research study;

Hypothesis 3: There is a positive association between governance and financial performance of firms.

Conceptual Frame Work

The goal of this study is to link the financial performance to ESG. This research considers the independent variable ESG. The environmental pillar of ESG can be calculated from five proxies. Which are waste reduction, CO_2 emission, water consumption, energy consumption and product innovation. The social pillar of ESG can be calculated from human right, health safety, training and development as well as community development. Governance is the last pillar of ESG, which can be evaluated from voice and accountability, Political stability and absence of violence, Governance effectiveness, Regulatory quality, Rule of Law and Control of Corruption. While financial performance is the dependent variable in this study. For assessing the market performance the proxy of Tobin's q will be used. The control variable for this study is firm's size, firm's age and leverage. Figure 2.1 shows the graphical representation of the conceptual framework.

2.1 Conceptual Framework for ESG

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┌─────────────────────────────────────────────┐
│ INDEPENDENT VARIABLE: ESG                     │
├─────────────────────────────────────────────┤
│ ENVIRONMENTAL                                 │
│                                               │
│    • Waste reduction                          │
│    • Co2 emission                             │
│    • Water consumption                        │
│    • Energy consumption                       │
│    • Product innovation                       │
└─────────────────────────────────────────────┘
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ENVIRONMENTAL

- Waste reduction
- CO_2 emission
- Water consumption
- Energy consumption
- Product innovation

DEPENDENT VARIABLE

Financial Performance

SOCIAL

- Human right
- Health and safety
- Training and development
- Community development

Market Performance
- Tobin's Q

GOVERNANCE

- Voice and accountability
- Political stability and absence of violence
- Governance effectiveness
- Regulatory quality
- Rule of law
- Control of corruption.

Control Variables
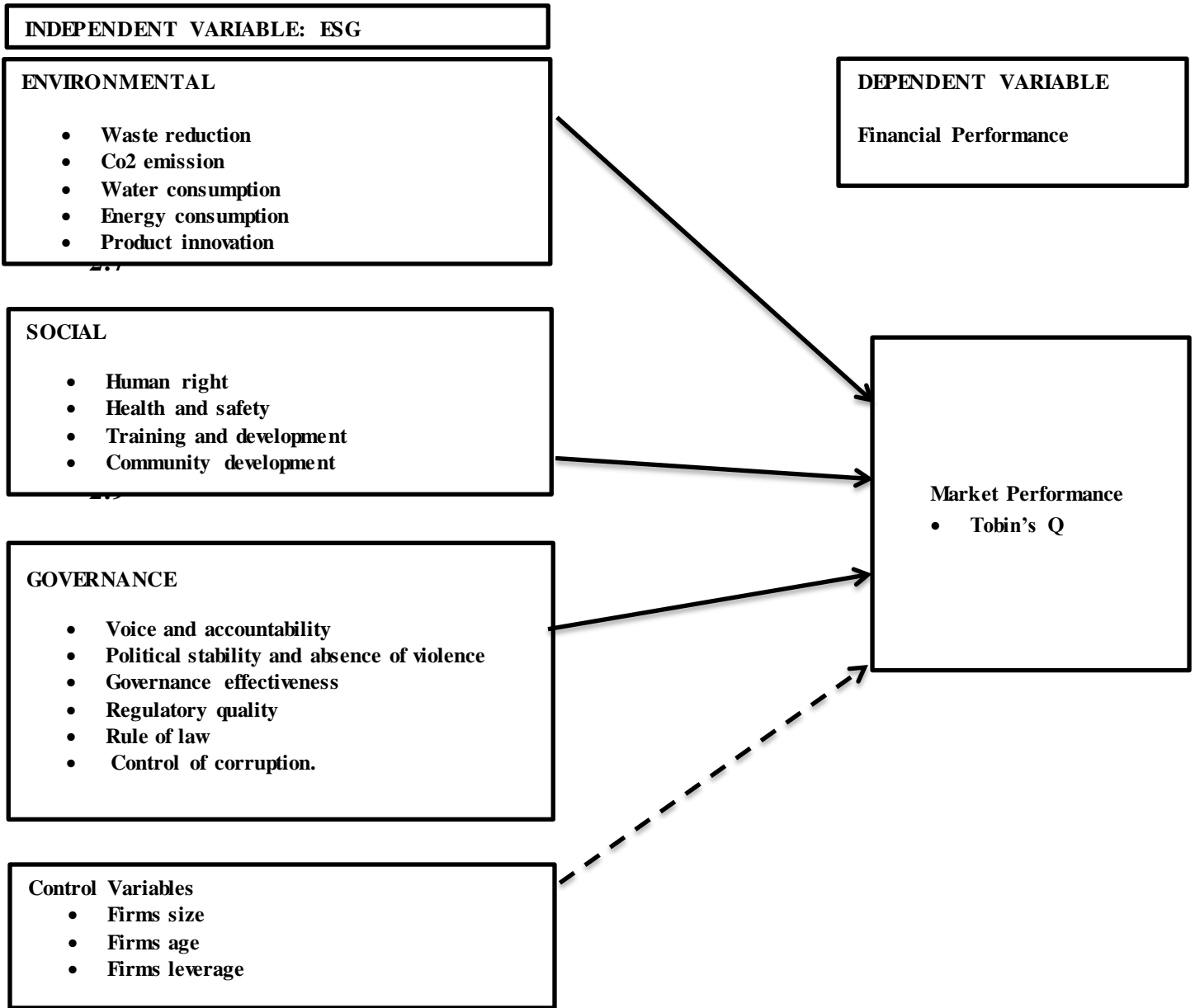- Firms size
- Firms age
- Firms leverage

Figure 2.1 Diagram showing association among dependent variable and independent variables.

RESEARCH METHODOLOGY

Data, Sample and Population

The current study is quantitative in nature in the light of discussion and extensive literature reviewed. The researchers make use of the Panel data type. Panel data were emanated from different companies upon multiple time and periods. The population for this study was all non-financial firms listed on stock exchanges of China. The sample for

this study is available non-financial firms listed on stock exchanges of China. This study uses 10 years data from 2009 to 2018.The data related to all variables are collected from Refinitiv DataStream and WGI (World Governance Indicator).

Variables

The dependent variable for this research work is financial performance. Financial variable is calculated by Tobin's Q. Tobin's Q is the product of market value of companies by the replacement cost of total assets (Ortas et al., 2015; Atan et al., 2018; Mohammad & Wasiuzzaman, 2021).

The independent variables for this study are environmental, social and governance. Environmental factor is calculated from the sum of the score available in data source of the following factors, Waste Reduction, CO2 Emission, Water Consumption, Energy Consumption and Product Innovation. (Ahmed et al., 2021; Muslichach, 2020; Xie et al., 2019; Miralles-Quirós et al., 2018; Gerged, 2020; Develle, 2021; Broadstock. 2020). Social factor is calculated from the sum of the score available in data source of the following factors, Human Right, Health and Safety, Training and development and Community development. (Ahmad et al., 2021; Xie et al., 2019, Miralles-Quirós at al., (2018), Garcia, (2017), Ferrero-Ferrero et al., (2016), Ortas et al., (2015), Duuren et al., (2015), Galbreath, (2013). Governance factor is calculated from the world governance indicators index. The index consists of the following factors, Voice and accountability, Political stability and absence of violence, Governance effectiveness, Regulatory quality, Rule of Law and Control of corruption (Yu et al., 2018; Kaufman, 2005; Judge et al., 2008; Kaufman et al., 2011; Petzer et al., 2012).

The control variables for this study are Firms Size, firms age and leverage. Firm's size is calculated by logarithm of total assets. (Mohammad & Wasiuzzaman, 2021; Sahut & Pasquini-Descomps, 2018; Xie et al., 2018). Firms Age is calculated by age of the firm since its enlisting on stock exchange (Thomas, 2012). Firms Leverage is calculated by total liabilities over total assets (Gerged, 2020; Xie et al., 2018; Garcia, 2017).

Descriptive Statistic of China

Descriptive statistics show us the dissimilar description of data. It consists of entire observations, mean, medians, maximum, minimum and standard deviation. The descriptive statistic for calculating the ESG impact on financial performance for China is shown in the Table 1 below.

Table 1: Descriptive Summary of China

Variable	N	Mean	median	Maximum	Minimum	Std.Dev
TQ	360	.0483794	0.033	.45282	.0013367	.0541402
ENV	360	239.7268	223.95	354.68	153.53	42.75231
SOC	360	193.6946	235.04	322.59	29.82	87.66613
GOV	360	226.9825	8.006	257.0721	207.2897	16.72386
SIZE	360	8.025585	8.006	9.381795	6.718077	.5530513
AGE	360	22.63889	19.5	85	11	13.5818
LEV	360	.4520285	0.334	2.534383	0	.4302277

The Table1 represents the descriptive statistics of the China. TQ is for Tobin's, the proxy use for calculating the market performance. ENV is for Environment, SOC for social and

GOV for governance, these all are independent variables, while SIZE for firm size, AGE for firm age, and LEV for leverage, these are control variables.

Correlation Matrix for China

The current study examines the collinearity among variables by correlation matrix. The following Table 2 presents the correlation matrix of China. The correlations between all variables are below the limit of 70% (Greene, 2003; Gujrati, 2012). So there is no issue of multicollinearity.

Table 2: Correlation matrix for Tobin's Q of China

	TQ	ENV	SOC	GOV	SIZE	AGE	LEV
TQ	1						
ENV	-0.1085**	1					
SOC	-0.0444	0.3905***	1				
GOV	-0.1559***	0.1499***	0.3994***	1			
SIZE	-0.3793***	0.4809***	0.4274***	0.2193***	1		
AGE	-0.0044	0.0777	-0.2596***	0.0000	-0.1558***	1	
LEV	-0.2693***	-0.0713	-0.0280	-0.0217	0.0976*	-0.1160**	1

*This Table 2 presents the Pearson correlation coefficients among variables with their significance levels. Variables are described in Table 1. ***, ** and * represents values statistically significant at 1%, 5% and 10% respectively.*

3.5   Econometric model

This study applies the dynamic panel data estimator i.e., Generalized Method of Moments (GMM) for estimation purpose to deal with econometric problems such as endogeneity, fixed effects and autocorrelation. GMM is popular for panel data analyses. It is a general estimator and designed for situations with "small T and large N" panels, it means few or less time periods and many individuals or observations. It is also use for linear functional relationship. In this research study, 2-step GMM estimator is used to perform all estimations, because one-step estimations can be followed by occurrence of heteroscedasticity.

The regression model for this study is as follow,

$$TQ_{i,t} = \alpha + \delta_0 TQ_{i,t-1} + \delta_1 ENV_{i,t} + \delta_2 SOC_{i,t} + \delta_3 GOV_{i,t} + \delta_4 SIZE_{i,t} + \delta_5 AGE_{i,t} + \delta_6 LEV_{i,t} + \varepsilon_{i,t}$$

(1)

Equation (1) shows the association between market performances and environmental, social governance, firm size, firm age and leverage. α is for intercept, δ_0 is the difference of 1 and the adjustment coefficient $(1-\delta_0)$ and $\varepsilon_{i,t}$ is for the error term.

Table 3: Estimation Results for China

Regressors	TQ	P-value
TQ L1	-.3485901**	0.056
ENV	.0013161**	0.028
SOC	-.0003106*	0.146

GOV	-.0006666**	0.067
SIZ	-.1465631***	0.000
AGE	-.0028088*	0.087
LEV	-.1624447**	0.057
Constant	-16.91144*	0.106
F-test	16.90***	0.000
AR1	0.71	0.480
AR2	-0.87	0.386
Hansen	8.58	0.379
No. of groups	36	-
No. of instruments	17	-
observations	324	-

The dependent variable is calculated by TQs (market value of equity in combination of book value of debt to the replacement cost of total assets. SIZE is measured by natural logarithm of total assets; AGE is calculated by age of the firm since its enlisting on stock exchange. LEV is measured by total liabilities to total assets. ***, **and * are significance at 1%, 5% and 10% respectively.

EMPIRICAL RESULTS AND DISCUSSION

The table 3 shows the empirical results for China. The results show that F-statistics for all variables are statistically significant. The positive coefficient of environmental (ENV) for Tobin's Q shows that investment in environmental activities increase the market performance for firms in China. According to Li et al, (2018) environmental factors are positively related to TQ. Iatidris, (2013) and Qiu et al. (2014) suggest positive relationship between environmental disclosures and environmental performance. Deswanto, (2018) suggest that environmental performance has an encouraging direct consequence on firm market value. The positive influences of ESG on financial performance also indicate towards stakeholder theory. Stakeholder theory suggests that sustainability activities and performance enhance the long-term value of the firm by fulfilling the firms' social responsibilities, Campbell, (2007); meeting their environmental obligations, Clarkson et al. (2011) and improving their reputation, (Weber, 2008). Thus, according to stakeholder theory, all factors of ESG are viewed by stakeholders as value-added activities that create stakeholder value (Razaee, 2016).

The result shows that investment in social factors decrease the market performance. But the results of Yu et al, (2018) prove that social factors positively influence the financial performance. The result shows that governance is negatively related to market performance.

Core et al. (2006) and Statman & Glushkov (2009) found that governance does not affect firm performance. According to Whitelook (2015) governance has a positive impact on financial performance. Kweh, (2017) also proposed that there was a significantly positive correlation between governance and ESG. The negative relation of social and governance with TQ indicate towards shareholder theory. The shareholder theory focuses on creating shareholder value and leaves the decisions about social responsibility to their shareholders. Thus they produce negative relation between ESG and financial performance. Therefore in line with shareholder theory, social and governance factors

decrease the market performance of firms operating in China. The results of Velte (2017), also revealed that ESG is negatively associated to market value.

It is also estimated that small firms are better for TQ. The relationship between leverage and firm age are negative to TQ. According to Aggarwal et al. (2010) and Li et al. (2018) firm size is negatively related to Tobin's Q. But according to Aupperle et al. (1985), Crisóstomo et al. (2011) and Ingram & Frazier, (1980) leverage positively and significantly fosters ROE and Tobin's Q.

Table 3 also depicts the availability of negative 1st order serial correlation (AR(1)), and the 2nd order serial correlation (AR (2)) emblazones that non of the second-order serial correlation has been detected during reckoning. More ahead, the Hansen test results for all the models depicts that null hypothesis of valid instruments cannot be rebuked, which accede that the instruments are valid and there is no possible correlation between error term and instruments. The table also shows that the numbers of group are 36, while number of instrument is 17.

CONCLUSION

This study investigate the ESG impact on market performance of China from 2009-2018. This study contributed to the literature by using country level governance factors instead of firm level factors. This study applied GMM for analysis on panel data. It is concluded from the empirical results of the China that environmental performance fosters the market value of firms operating in China. It is also concluded that investment in social and governance decrease the firm value. The firm with large size gave value to firms. It is also concluded that high leverage firms are not good for market performance. The outcomes of the current research study have many implications to non-financial firms, local and foreign potential and existing investors/shareholders, management and policy makers. The current study revealed that environmental factor of ESG increase the market performance of firms. This information is also important for local and foreign potential that can get benefits from the ESG factors. The current study helps the investors and shareholders in making decision to invest in ESG factors or not. It is also recommend for future research to use more factors of environmental and social pillars of ESG. This will help in explaining the effect of more and complex factors of ESG on market performance. It is also recommended for the future research to study the impact of macroeconomic variables with market performance. For example macroeconomic determinants such as GDP, GNP and inflation etc. keep significance importance in explaining financial performance.

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