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**Corporate Social Responsibility (CSR) and Financial  
Performance of Kompas100 Entities for the year 2015-2019**

Bachelor Thesis International Bachelor Economics and Business Economics

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This views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

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## **Abstract**

This paper examines the relationship between Corporate Social Responsibility (CSR) and Corporate Financial Performance (CFP) in Indonesian firms listed under Kompas100 index. ESG rating is the independent variable and represents the CSR performance of firms. The dependent variables of this study are ROA, ROE, and Net Profit Margin, representing firms' financial performance. The findings show no significant relationship between CSR and CFP under various regression specifications. Nevertheless, firm profitability is affected by firm size, firm risk, sales growth, liquidity, and leverage. These results are in line with prior studies by Aupperle *et al.* (1985) and Mc Guire *et al.* (1988), where no significance exists between CSR performance and financial performance. Upon samples of Indonesian firms, a study by Hermawan and Mulyawan (2014) is in line with the result of this study in the sense that there is no correlation between CSR and profitability of Indonesian firms. The underlying reason is that there are still challenges in analyzing CSR's direct impact on firms' profitability, not only for Indonesian firms. CSR is not generalizable as it differs across countries. Based on further research, CSR practices implemented by Indonesian firms are not motivated by profit considerations, but the achievement of smooth business operations. To conclude, this study shows that the profitability of firms in Indonesia is not affected by CSR practices.

Keywords: corporate social responsibility, profitability, ROE, ROA, NPM

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## **Chapter 1 Introduction**

Concentrating only on financial performance does not ensure long-term sustainability and continuation of firms. Firms are responsible for its surrounding society and it has become general knowledge. As there has been a growing interest in ensuring the continuity of entity performance, it has come to the attention that Corporate Social Responsibility (CSR) is one of the alternatives. According to Epstein (1987), CSR principally is to manage organizational decisions regarding specific problems through normative standards that provide benefit rather than a negative effect on firms' stakeholders. Normative accuracy produced as a result of corporate action is the main focus of CSR. From the Merriam Webster dictionary, the definition of normative relate to or determine rules or standards based on norms. Norms refer to acceptable behavior in a particular society. Referring to Epstein's (1987) CSR definition, CSR's primary focus is to maintain corporate action by ensuring the soundness of chosen acceptable behavior displayed through firm activities. An entity should be driven by the acceptable behavior of the society to achieve well-established CSR objectives.

Nowadays, CSR is as crucial as an establishment of good Corporate Governance to satisfy shareholders. Including "beyond the law," commitment and activities are critical factors of CSR, including action and activity in favor of a broader scope of societies and the entity itself (Hohnen & Potts, 2007). CSR satisfies the interests of the shareholder related to employees, suppliers, lenders, customers, and society as a whole. A broad scope of CSR includes corporate governance and ethics, likewise. The most prevalent CSR practices implemented in most firms include codes of conduct, internal reporting channels (i.e. whistle-blowing, ethical hotlines), and culture and values. Those practices serve to fulfill the interests of the entity and stakeholders as a whole. For those reasons, CSR's importance aids firms in sustainable development, globalization, governance, corporate sector impact, communication, finance, ethics, consistency and community, leadership, and business tools.

One of the developing countries, namely, Indonesia, will be the representing country in this study. Indonesia is very well known for its strategic location, retaining a plenteous amount of natural resources and human resources retained. The urgency to sustain existing resources should be one of the main strategies of firms operating in Indonesia. CSR practices are

essential to support those activities. Since 2007, CSR practices in Indonesia have been reinforced by laws for Limited Liability Companies under Company Act. Violation of the intended rules and regulations would result in particular sanctions borne by the firms. Even though the obligation of exercising CSR, has been in much debate and is faced with objections, mandatory CSR practices have established fair and disciplined implementation (Andrini, 2016). CSR has been a common practice among firms. However, there are still many controversies regarding why firms implement the practice. CSR could serve as a strategic measure to gain a competitive advantage, or simply an entity aspires to contribute to a better society. Both purposes add value to an entity's performance.

The purpose of this study is to observe the relationship of implementing CSR towards the financial performance of firms listed in Indonesia's Kompas100 from 2015-2019. Positive, negative, or no significance are the hypotheses commonly observed under researches regarding CSR's significance towards financial performance. The previous study done by Ridho (2017) shows that CSR has a positive significance towards ROE and ROA, but no significant effect on customer and employee views. Angelia & Suryaningsih (2015) conclude that better CSR performance and disclosure of firms affect ROA and ROE positively. Another research conducted by Syamni *et al.*(2018) shows that CSR enhances communication with stakeholders and improves a company's profitability. For that reason, this study will assert the following research question:

*Does Corporate Social Responsibility affect the financial performance of Indonesian firms listed under Kompas100?*

The remaining parts of this study will include a literature review and hypothesis development in Chapter 2 and Chapter 3 consecutively. Data and methodology are under Chapter 4. The results and findings will be attached to Chapter 5. Discussion on the results and findings will be in Chapter 6. Chapter 7 will comprise of conclusion and limitation of the study.

## Chapter 2 Literature Review

Corporate Social Responsibility (CSR) emerged in the year of 1950s. However, there is a lack of strong evidence showing a true statement. An attempt to search for CSR's precise definition started in the 1960s, highlighting the significant growth of its theoretical development. In 1971, CED defined and established the most influential definition of CSR. CED defines CSR practice as a social contract between business and society. Businesses are responsible for a broader group of society, including, but not limited to, a broader range of human values. The upholding expectation for businesses is to contribute not only to delivering goods and services but also to the society's quality of life. The continuity of businesses will also depend on the management's decision-making adjusted to society's changing expectations (Carroll, 2008).

Up until the 1990s, the definition and concepts of CSR went through profound changes. In the 1990s, what seems to be 'generalized' definition of CSR is attained and informed globally—making its way to 1992, where advances of CSR have occurred. A particular non-profit organization called Business for Social Responsibility (BSR) is established and become the most influential company regarding CSR. BSR can include a broader scope of business activities into CSR. Which then viewed as a comprehensive set of business rules, regulations, structures, and activities combined with business operation, supply chains, and decision-making processes throughout the company (Carroll, 2008). CSR practices have been through many changes and development ever since.

Nowadays, analyzing the relationship between CSR and CFP is done to study the advantage of CSR. Based on the study conducted by Galant & Cadez (2017), alternative CSR and Corporate Financial Performance (CFP) measurements are by assigning the advantages and disadvantages of each approach. Four alternatives stand as the measure of CSR: reputation indices, content analysis, questionnaire-based surveys, and one-dimensional measures. Reputation indices the most commonly used measurement alternative as data is accessible and comparable amongst the companies. On the other hand, CFP measures involve accounting-based, market-based, and combination of both accounting and market based, which are then described further for each category. ROE, ROA, and NPM are part of the accounting-based CFP measures. Those are the most common formula under CSR studies (Ehsan *et al.*, 2018).

Regarding the measurement of individual CSR and CFP, the extent to which firms' CSR practices affect the financial performances is around the underlying concept of stakeholder theory. Stakeholder theory by Freeman in 1984 states that if a firm can build a relationship with people involved in their business activities, it will tackle challenges more efficiently. Some of those challenges are value creation and trade, the ethics of capitalism, and managerial mindset problems (Parmar *et al.*, 2010). The stakeholder theory relates to the definition of CSR by CED, where firms are accountable for a broader society's scope. Under the literature by Parmar *et al.* (2010), CSR is one of the crucial components under ethics literature that is in line with stakeholder theory. CSR includes a variety of concepts that share joint objectives, that is, for firms to include not only financial considerations but also a broader obligation. For that reason, based on the theory, firms should also consider the interests of stakeholders that would aid the maximization of profits and boost up stockholders' returns (Ali *et al.*, 2019). By engaging in practices that consider beyond financial matter results in a causal behavior where firms investing in socially responsible practices affect financial performance measurably (Callan & Thomas, 2009).

Previous studies on the impact of implementing CSR towards firms' performance, includes different measurement of CSR and financial performance. Also, the purpose of the studies is only on the effect on financial performance by firms that implement CSR practices. One of the studies conducted by Qiu *et al.* (2014) examines the relationship between firms' environmental and social disclosure towards profitability and market values. The result shows that investors in the UK take into account social disclosure by firms. Social disclosure is an attempt by firms to attain 'approval' from the influential political and societal stakeholders in the UK's society. However, the finding is also consistent with the fact that global investors care about firms' social performance. Another finding of the study shows that an entity's environmental disclosure does not hold significance towards firm value. The presence of inconsistency in environmental disclosure score and lack of evidence regarding environmentally sensitive sectors leads to cash flow implications that include environmental fines, remediation, and prevention costs. Also, there are doubts regarding the importance of environmental disclosure for investors. Additionally, social performance and disclosure are essential for investors who can increase firms' future economic benefits. The final result of the



study is that firms with better social disclosure attain higher stock prices by using expected growth of cash flows as the driver.

The previous study conducted by Burgwal *et al.* (2014) analyzes the impact of Dutch firms' environmental disclosure determinants. First, the study shows that larger firms disclosed a higher level of environmental information than smaller firms. Second, firms competing in an environmentally sensitive industry will more likely disclose environmental reporting. Lastly, profitability and environmental disclosure do not correlate. Finding regarding environmentally sensitive firm towards their tendency to disclose an environmental report is consistent with legitimacy theory. No relationship found on environmental disclosure towards profitability could be due to the financial crises occurring in 2008, as the study was done by deriving the average ROA and ROE from the year of 2004 to 2008. Further improvement of the study is probable by implementing a longitudinal analysis to show a more solid observation of environmental disclosure practices in the Netherlands.

Referring to the prior studies that focus primarily on CSR and the impact on firms in developed countries, observe that CSR is far more crucial in those countries (Visser, 2009). However, the lack of research on CSR's underlying concepts and practices in developing countries is encouraged for future studies. Indonesia, as one of the developing countries, retains the plentiful of human and natural resources. Indonesian firms depend heavily on those available resources. Concerning the definition of CSR by Carroll (2008), the upholding expectations for firms are to not only provide goods and services for customers but also contribute to the quality of life of a broader scope of society. In Indonesia's case, the definition of CSR stated by Carrol (2008) could be realizable by assigning the appropriate utilization of both natural and human resources. It serves as the purpose of ensuring the sustainability of the environment and the firm itself.

Moreover, Waagstein (2010) studied the challenges faced by Indonesian firms in CSR implementation and compliance with the established rules and regulations. In 2007, there are laws established concerning CSR practices of Indonesian firms, which are, the 2007 Indonesian Corporate Law no.40 and 2007 Indonesian Investment Law no.25. However, it

creates uncertainty in determining which mandatory and voluntary CSR practices that the firms should implement. Under Article 15 of the 2007 Investment Law no.25, where every firm must engage in Corporate Social and Environmental Responsibility. All investment companies are accountable for creating a unified, balanced, continuously, and suitable relationship with the related values, norms, and culture of its local community. However, under Article 74 of the 2007 Limited Liability Corporation Law no.40, it only requires firms that conduct their business activities within the field of natural resources to implement CSR practices. Also, firms that involve in activities relating to natural resources needs to engage in CSR activities. Firms are obliged to report specific funds and spending as a part of the corporate expense of CSR implementation. The inability to meet the stated regulation results in sanctions. However, under the 2007 Indonesian Corporate Law no.40, there is no sanction imposed as a result of failure to comply with the stated law (Waagstein,2010).

Correspondingly, in Indonesia, knowledge on the field of CSR is still inadequate, which in turn contributes to the uncertain understanding that the laws established. Findings by Waagstein (2010), showed that CSR concepts in Indonesia are still weak and inconsistent. Supporting a study by Ridho (2017), found that the majority of Indonesian listed firms retain only limited concepts on CSR practices. Managers of Indonesian listed firms understand CSR as a way to engage in donation and community development activities. Wherein prior researches found that CSR definition is dynamic and changes with the interests of the society. Despite the stated weaknesses, Indonesian firms continue to strive to achieve a good CSR practice. For those stated reasons, it is of importance to conduct a study about the existing CSR practices done by Indonesian firms to determine what might be the weaknesses in its current implementation.

There are numerous researches regarding the implementation of CSR by Indonesian firms. However, there are differences in the type of measurements used and the chosen time frame. One of the studies that have been conducted by Afiff *et al.* (2013) examines the evidence of CSR and performance towards firms' stock prices. The sample consists of LQ 45 companies in the year 2004-2011, including 11 firms from a sample population of 45. The finding shows that the performance indicators observed under the study (CSR employee, CSR community,

firm size, profitability, and leverage) hold a significant influence on firms' stock price. However, the statistically significant influences can be negative or positive, depending on each performance indicator. Employee CSR initiatives and community CSR initiatives hold negative significance towards the stock price. The underlying reason behind the result is the additional cost incurred to support the initiatives recorded under cash out. It increases expenses, which leads to a decrease in stock price. Also, an increase in leverage will have a negative significance towards stock price because it shows higher borrowings, including more payment of interest that adds up to the firms' expenses. On the other hand, higher profitability and larger firm size have a positive statistical significance towards the stock price. Higher profitability and larger firm size (depicted as total assets) are in favor of investors.

Another finding by Hermawan and Mulyawan (2014) shows that firms' CSR reporting does not significantly impact profitability. However, the size of companies has more tendency to disclose CSR reports, which are consistent with the finding by Burgwal *et al.* (2014). The study observed that firms disclosing CSR reports are merely an alternative to increase their positive image and reputation. An interesting finding from this study is that Indonesian firms' CSR disclosure quality does not significantly impact financial performance. Such finding supports the result of disclosing CSR reports to establish a good relationship with shareholders and as a way to allocate surplus funds attained. Also, there is a lack of government enforcement regarding implementing well-sounded CSR reporting in Indonesia. However, this study needs to include a more extended observation period and take into account the economic crisis during the sample study period.

Supporting the finding by Hermawan and Mulyawan (2014), another study has been conducted the subsequent year by Cesari *et al.* (2015). Findings by Cesari results in a negative correlation between CSR towards the financial performance of firms. A small number of firms have optimized CSR practices. Out of the 100 samples on the study, only six firms did report their CSR practices under the established sustainability reporting. Also, misallocation of budgets or over-investing on CSR practices by firms is the upholding reason for similar adverse effects.

The inconsistent findings retained from empirical research conducted by employing Indonesian firms as sample studies is a result of lack of CSR knowledge and uncertain laws and regulation in the country. Notable findings found that CSR and financial have a negative relationship or no relationship. The particular result is the opposite of what the stakeholder theory would suggest, on how the relationship between CSR and financial performance should be, positive relationship.

### **Chapter 3 Hypothesis Development**

Studies on the relationship between CSR activities of firms and their CFP are prevalent. However, based on prior literature, inconclusive results are derived. Findings under the study vary between positive, negative, and no significant of CSR practices towards CFP of the sample firms. In 2001, Margolish and Walsh further studied the result of 95 existing empirical research on CSR and CFP. From the findings, 50% of the total empirical research results were questionable. The inconsistency results from different methods under each study, different sample firms observed, differing CSR and CFP operationalization, and different control measures (Parmar *et al.*, 2010).

Furthermore, a study by Karyawati *et al.* (2019) found that the inconsistent relationship between CSR and CFP results from the complexity present between the two variables. They obtained from the result, that merely contextual and lack of generalized from empirical evidence are present in the relationship. Analyzed under the study, are variables that contribute to the complexity between CSR and CFP relationship. The two variables found to be adding complexity to the relationship are country characteristics and the forms and dimensions of CSR practices. Research by Husten & Allen (2006) found that institutional characters play a crucial role in CSR decision-making than utilizing social and stakeholder strategic approaches. Derived from the findings, countries retaining similar institutional characteristics have more tendency to implement similar CSR practices. CSR practices by country would depict the institutional characteristics. The studies' sample countries are further analyzed and differentiated between developed and developing countries affected by economic development and governance. Developed countries tend to implement CSR practices compared to those developing countries because of the immense growth of their economic growth and more robust governance of institutional, legal framework. Last but not least important is how the different cultures, values, and norms embedded in different countries result in different CSR practices and expectations of each society.

Forms and dimensions of CSR add complexity to the relationship by how firms involve CSR implementation under their activities. Contradicting results between researchers are present under the study by Karyawati *et al.* (2019). Forms and dimensions of CSR vary depending on

how each firm understands what CSR means. CSR, as a part of firms' strategic initiatives, could lead to a competitive advantage. Including CSR as a core activity to increase financial performance, performed by developing countries to tackle existing poverty and economic problems and activities that enhance firm reputation, is crucial. The finding contradicts the notion of developed countries tend to implement CSR practices. However, another problem arises, developing countries are still lacking on the law-related side of CSR (Karyawati *et al.*, 2019). An interesting finding under the study is how philanthropic responsibilities aid the attainment of better business perception and enhancing firm reputation. However, at the same time, philanthropic responsibilities are argued to be more critical than CSR activities and contribute to financial performance. The definition of philanthropic responsibilities is the response of firms to society's expectation of being good corporate citizens and contributing to their well-being (Carroll, 1991). Carroll (1991), states that philanthropic responsibilities are just one of the components of total CSR of firms in addition to ethical, legal, and economic responsibilities. Also, CSR helps firms generate profit, comply with the law, be ethical, and be good corporate citizens. Concerning the statement, philanthropic activities should be accommodated by other components for firms to retain good perception and reputation.

Regarding complexity under existing research on the relationship between CSR and CFP, there are also supporting studies on the positive, negative, and no significant relationship between CSR and CFP. The stakeholder theory strongly supports the positive relationship between CSR and CFP. Stakeholder theory states that firms must satisfy the interest of stakeholders to retain maximum output (Freeman & Phillips, 2002). Concerning the stakeholder theory, many research contributes to supporting a particular view. Barnett and Salomon (2006), found that investors prefer to invest financially towards firms that are known to be socially responsible. Under the study, findings show that community relations positively relate to firms' financial performance. Employees as the most crucial stakeholders in the firms' activities would also seek to work in a socially responsible firm (Backhaus *et al.*, 2002) and work their best to achieve the firm's objective. Also, customers would be more satisfied to engage transactions with firms who engage in CSR practices (Brammer & Millington, 2008). Based on the study by Brammer & Millington (2008), firms that engage in socially responsible activities would perform best in the long run. Firms that poorly engage in socially

responsible activities would only perform best in the short run. Regarding those studies, CSR holds a positive impact on the financial performance of firms.

Numerous prior empirical research proves that the arguments are indeed correct. Results differ because of the different variables used under different studies. These include the use of different CSR and CFP measures, the study period, and the economic effect observed. One of the most recent studies conducted by Taliento *et al.* (2019) analyzes the impact of ESG information on European firms' economic performance. From the findings, social, environmental, and governmental responsibilities concerning all stakeholders have a positive impact on contemporary firms' competitive advantage. The study utilizes the Environmental, Social, and Governance (ESG) score to depict the firms' CSR performance. In 2007, Aguilera *et al.*, found that enhancing firm reputation, increase firm engagement in CSR, and customer loyalty components of CSR increase firms' financial performance.

Furthermore, Orlitky *et al.* (2003) conducted a meta-analysis. They concluded a positive relationship between CSP (Corporate Social Performance) and CFP in the long run. From the findings, the relationship between CSP and CFP is bidirectional and simultaneous. Firm reputation is one of the critical mediating variables among them. A study by Waddock and Graves (1997) found that CSP has a positive relationship with prior and future CFP. Under the study, CFP is represented by Return on Assets (ROA), Return on Equity (ROE) and Return on Sales (ROS). CSR ratings represent CSP. Firm size, risk, and industry are the control variables under the study.

Conducted studies also present a contradictory result, where inturn, CSR hurts CFP. Friedman (1970), states that the only responsibility that firms retain is to maximize shareholder wealth. They are opposing the fact that CSR plays a vital role in making a profit for firms. A negative relationship between CSR and CFP are present under some prior empirical studies. Shane and Spicer (1983), observed the market reaction towards externally produced environmental information of firms. The externally produced information is established by the Council on Economic Priorities (CEP), which publishes studies containing firms' engagement towards environmental matters. However, the study focuses solely on the socially-oriented disclosure

done by firms. From the findings, firms with more externally produced information would have negative stock returns.

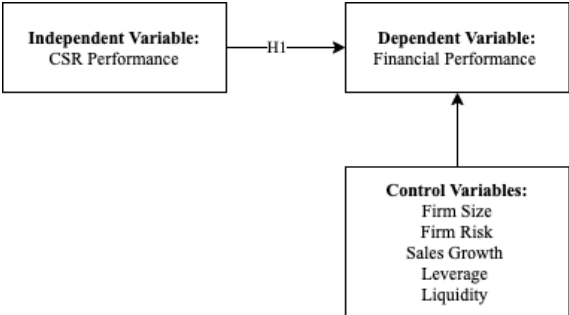
Furthermore, Brammer et al. (2006) found that firms that retain high social performance scores attain lower returns. However, firms with lower social performance scores perform better in the market. It found that environmental and community indicators have a negative significance towards returns. From the observation, managers who consider implementing ethical practices suggest to their investors that they engage in poor investments. Those results support the finding by Afiff *et al.* (2013), where employee and community CSR initiatives negatively affect firms' financial performance of Indonesian LQ45 listed firms.

The third finding concerning the relationship between CSR and CFP is that there is no observable significance between the variables. A study conducted by Aupperle *et al.* (1985) found that firms' profitability represented by ROA cannot be determine affected by CSR practices of firms. Moreover, being socially motivated to fulfill social contracts would not be harmful or beneficial towards firms' performance. Another study conducted by McGuire *et al.* (1988) with ROA, total assets, sales growth, and operating income growth as financial performance measures resulting in no significant relationship between CSR and financial performance. The study also includes critiques about the prior study. Simply made-up 'artifacts' exist between the relationship of CSR and firm financial performance. However, interestingly, the findings showed that firms that engaged in low social responsibilities practice have more tendency to experience lower ROA and stock-market returns. Also, the study found that high performing firms retaining low risk will be better to act in a socially responsible manner. Thus, the studies are in-line with the research by Hermawan and Mulyawan (2014) and Burgwal *et al.* (2014), whereby they found no correlation between CSR and CFP. Hermawan and Mulyawan (2014) use profitability ratios — ROA, ROE, and NPM — as financial performance measures. The findings showed that CSR has a weak positive significance towards ROA, weak negative significance towards NPM, and CSR has a strong influence on ROE. While the results showed a mixed interpretation, it concludes that CSR and profitability are not correlated.



Concerning the theories presented, there is a relationship between satisfying interests of stakeholders and firm financial performance. The stakeholder theory stated that CSR practices and CFP has a positive relationship. Under the stakeholders' perception, considering the interest of stakeholders is a crucial bridge that connects firms' CSR performance and financial performance. Despite the inconsistencies found in previous studies, the proposed hypothesis that will be supported by Stakeholder theory would be:

**H1: CSR performance has a positive effect on financial performance**



## Chapter 4 Data and Methodology

Carrol (1991) establishes one of the early understanding of CSR components. They include philanthropic, ethical, legal, and economic responsibilities. While reputational indices are the most commonly utilized index for CSR scoring. As to represent the initial understanding of CSR components, the Environment, Social, and Governmental (ESG) index will be the base for CSR scores among firms. Furthermore, this study will bestow upon secondary data for CSR scores from CSRHUB® sustainability management tools. CSRHUB® provides rankings from over 18,000 firms worldwide and provides accessible information for most Indonesian firms that have adopted the ESG index.

The sample used in this study covers Kompas100 listed firms from Indonesia Stock Exchange (IDX) website that provides an updated list each year. The index is updated every six months. The list of firms for this study will be from the second half of each year (August-January) in 2015-2019. During those periods, firms listed varies. This study includes only firms listed during the stated period. Second half of each year, because the firms have disclosed its financial report and the CSR activities throughout the year. Kompas100, as the chosen index strictly includes firms that have achieved a large market capitalization, high liquidity, and sound fundamentals (IDX, n.d.). Out of a total of 100 firms listed under the Kompas100 index, there are only 47 firms that are continuously listed during the chosen period of analysis. The firms listed are of various industries. Table 1 shows the number of firms from each industry. Firm-specific data are from Bloomberg as it provides thorough information on Indonesian firms listed in the Kompas100 index.

Table I. Industry Sample Firms

Industries	Number of firms
Mining	8
Finance	7
Trade, Services and Investment	7
Property, real estate and building construction	7
Infrastructure, utilities and transportation	6
Agriculture	4
Consumer goods industry	4

Industries	Number of firms
Basic industry and chemicals	2
Miscellaneous	1
Pharmaceutical	1
Total	47

Ordinary Least Square (OLS) panel data regression is used to analyze the relationship between CSR rating and firms' financial performance from 2015-2019. The purpose of OLS regression is to find a significant relationship between the independent and dependent variables. The year and industry are the variables that are considered to have fixed effects and they include the clustering of standard error done to overcome bias. The following model is proposed as a basic model to analyze the effect of financial performance:

$$FP_{i,t} = \alpha + \beta_1 ESG_{i,t} + \beta_2 Size_{i,t} + \beta_3 Risk_{i,t} + \beta_4 Growth_{i,t} + \beta_5 LEV_{i,t} + \beta_6 LIQ_{i,t} + \mu_i + \varepsilon_{i,t}$$

The fixed effects panel data allows including multiple periods under the study from 2015-2019. FP is the measure of financial performance as the dependent variable. The measurement of financial performance is calculated using Return on Equity (ROE), Return on Assets (ROA), and Net Profit Margin (NPM). ESG rating retained from CSRHUB will serve as the independent variable. Control variables of the model are Risk, Growth, Leverage, and Liquidity. The year and industry fixed effects are added to the equation to control unobserved time-invariant characteristics between industry. The expansion of the preceding equation will be as follows:

$$ROA_{i,t} = \alpha + \beta_1 ESG_{i,t} + \beta_2 Size_{i,t} + \beta_3 Risk_{i,t} + \beta_4 Growth_{i,t} + \beta_5 LEV_{i,t} + \beta_6 LIQ_{i,t} + \mu_i + \varepsilon_{i,t}$$

$$ROE_{i,t} = \alpha + \beta_1 ESG_{i,t} + \beta_2 Size_{i,t} + \beta_3 Risk_{i,t} + \beta_4 Growth_{i,t} + \beta_5 LEV_{i,t} + \beta_6 LIQ_{i,t} + \mu_i + \varepsilon_{i,t}$$

$$NPM_{i,t} = \alpha + \beta_1 ESG_{i,t} + \beta_2 Size_{i,t} + \beta_3 Risk_{i,t} + \beta_4 Growth_{i,t} + \beta_5 LEV_{i,t} + \beta_6 LIQ_{i,t} + \mu_i + \varepsilon_{i,t}$$

Concerning prior studies, financial performance is represented by the profitability of firms by measuring ROA, ROE, and NPM. Following what the prior studies include. Return on Assets (ROA) is measured by dividing total assets by net income after tax. Net income after tax is used instead of net income because it is defined as revenue of the company after deducting expenses and also tax. Return on Equity (ROE) is derived by dividing net income by total shareholders' equity. Net Profit Margin (NPM) is net profit divided by net sales.

What distinguishes this study from the prior studies are the control variables involved. Firm size, firm risk, and leverage are the commonly used control variables. However, an additional two control variables are present under the study. The firm size will be the natural log of market capitalization. Firm risk is measured by dividing total debts by total assets. Sales growth shows how well the firms are doing compared to their previous year, measured by  $\frac{\text{sales}_t - \text{sales}_{(t-1)}}{\text{sales}_t}$ . The leverage of firms is calculated by the Debt to Equity ratio (DER). The quick asset ratio of the firms represents liquidity.

Furthermore, this study uses *EViews*, a data analysis tool that enables users to find the best-fit regression specification model for each equation. Every dependent variable retains results from common effect (CE), fixed effects (FE), and random effects (RE) models. A common effect model assumes that no heterogeneity is present under the data and only applies to the case where the same parameter is utilized (Higgins *et al.*, 2009). Fixed effects and random effects models are the two most commonly utilized model to study the relationship between variables. The significant difference between the FE and RE lies in the observation of time-invariant and their coefficient. FE model uses  $\mu_i$  to control and measure, but does not estimate the time-invariant variables and time-invariant effects. The model also allows the unobserved variables to relate with observed variables (Williams, 2018). RE model, on the other hand, assumes that all explanatory variables affect the dependent variable over the same period and allows an estimate of the existing time-invariance. However, the RE model does not allow the observed variables to correlate with the time-invariant and unobserved variables, which may result in biased estimates (Bollen and Brand, 2010) (Williams, 2018). This particular study utilizes (Estimated) Generalized Random Effects (EGLS), a method that generalized the OLS regression. According to Kaufman (2013), EGLS cross-section random

effects relaxes the assumption that existing error in the model is homoskedastic and uncorrelated. Thus, EGLS provides an unbiased estimation of the beta comprising minimum sampling variance amidst the class of linear unbiased estimators.

On choosing the right model, there are several tests conducted. To specify error in a regression model, there are three standard tests: Chow-test, Hausman-test, and LM-test. Those tests are applied to determine which model is the most appropriate, common effect, fixed effects, or random effects. Chow-test analyzes whether the coefficient of the dummy variables is identical. If the result is  $H_0: p > 0.05$ , CE will be selected; however, if  $H_1: p < 0.05$ , FE will be preferred instead of CE. The Hausman-test of panel econometrics is a specific application of the Hausman principle and applies to all hypothesis testing problems. Hausman-test is calculated as an F-test and comprises two estimators. It tests the estimators to observe whether those estimators are insignificantly different. RE will be the right choice, if the result is  $p > 0.05$ , on the other hand, if  $p < 0.05$ , FE will be selected. The last test, Lagrange Multiplier (LM-test), estimates and tests whether the intercept variance component of the composite error term is equal to zero. If the result is  $p > 0.05$ , CE is selected; if the result is  $p < 0.05$ , RE is preferred (Kennedy, 2003). Under the next chapter, the result of the regression will be further discussed, including which of the three models best fits each equation.

## Chapter 5 Results

Based on the regression result in Tables 2, 3, and 4, ESG rating do not affect Indonesian firms' profitability. However, it is interesting to observe that the different models — CE, FE, and RE — resulted in varying degrees of significance. Observing the result of all models, SIZE holds a significant impact on firms' probability. The subsequent part will include the explanation of results from each model.

First, concerning the result under Table II employing the common effect model, all three dependent variables representing profitability are not affected by the independent variable of ESG rating obtained by sample firms. The results obtained show that the p-value of ESG towards ROA, ROA, and NPM is high and does not fall into any level of significance. However, control variables, SIZE, RISK, LEV, and LIQ, have significance towards ROA and ROE under the 5% or 1% significant level. Although GROWTH does not have any significance towards both ROA and ROE, other control variables hold a significant impact. On the other hand, only RISK, GROWTH, and LEV has a significance under the 5% or 1% towards NPM of firms, but not SIZE and LIQ. The difference between the pattern of significance holds an interesting fact. The three measure of profitability comprises net income as the standard measure. However, it differs by the dividing components, but the direction of significance varies.

Furthermore, Panel A shows that it retains the highest adjusted R-squared. High adjusted R-squared means that the ROA model shows that the regression model provides a better fit to the data than a model without an independent variable. Adjusted R-squared shows how well can an independent variable explains the dependent variable. Under panel A, the ESG rating as an independent variable can only explain the ROA as a dependent variable at a 43% level. Panel B shows that ESG rating can only describe ROE at the level of 29.39%. The lowest adjusted R-squared lies under Panel 3, where ESG rating can only explain NPM at a 10.7% level.

Second, referring to the result under Table III, it can be observed that under the fixed effects model, ESG rating do not have significance towards profitability. However, the p-value of the

independent variable under the fixed effects model is lower than that of the common effect model. Even though the p-value is lower than the CE model, it does not fall under any level of significance. Also, there are fewer control variables that hold a significant impact on the dependent variables. SIZE holds a significance towards ROA under 1%, RISK and GROWTH only holds a significance under 10%. ROE is only affected by SIZE under a 1% significant level. NPM is affected by SIZE, GROWTH, and LEV under a 1% significance level. The F-statistic of ROE shows an increase, but the increase in the F-statistic of ROA is much higher. However, the F-statistic of NPM drops into a lower number. Despite those observations, the number of adjusted R-squared under the fixed effects model increased substantially for ROA and ROE. However, the increase in NPM is not significant. Referring to Panel A and B under Table III, ROA as a dependent variable can be explained by ESG rating at a 92.2% level. ESG can explain ROE at a level of 80.9%. The two result shows a significant increase compared to the adjusted R-squared derived under common effect model. Adjusted R-squared for NPM also increases to a level of 35%. From the observation, the fixed effects model takes into account the time-invariant between variables. Thus, the independent variables can have a higher degree of explanation towards the dependent variables.

Lastly, the EGLS cross-section random-effects model result under Table IV shows that ESG rating do not significantly impact firms' profitability. Compared to the result under the fixed effects model, the p-value of ESG increases but still less than the value under the common effect model. The use of the cross-section random effects model is not able to identify the existence of a relationship between ESG towards the financial profitability of firms. Referring to Panel A, SIZE and RISK have a significance towards ROA below the 1% level of significance. GROWTH has a significance towards ROA under a higher level of significance is 10%. Panel B shows that the only SIZE holds a significant effect towards ROE under the 1% level, and RISK and LEV has an effect under the 5% significant level. SIZE also significantly affects NPM, as shown under Panel C, under the 5% level of significance. Also, GROWTH and LEV have an impact on the 1% significant level. All adjusted R-squared under Table IV shows a decrease in compared to under the fixed effects model. For ROA and ROE as the dependent variable, the cross-section random-effects model attains the lowest adjusted R-squared and F-statistic. However, for NPM, it attains the highest F-statistic compared to the

subsequent models. Using the EGLS cross-section random-effects model, referring to the adjusted R-squared under panel A, the independent variable can only explain 28.4% of the dependent variable. Panel B shows that the independent variable can only explain 14.5% of the dependent variable. Under panel C, only 13% of the dependent variable are explanatory by its independent variable.

Referring to the previous results, ROA and ROE attain comparable results regarding the control variables that hold significance. This particular result is in line with prior studies. The impact of firms' CSR performance towards ROA and ROE tends to be in the same direction. However, the significance of ESG towards ROA and ROE differs significantly under the common effect and cross-section random effect model. In brief, under the three models, there is no significant impact of the independent variable towards the dependent variables. For that reason, the findings show that it is not possible to accept the proposed hypothesis. Findings on how there is no significant relationship between CSR toward the probability of firms are in line with the previous studies conducted by McGuire *et al.*(1988), Hermawan and Mulyawan (2014), and Burgwal *et al.*(2014). The subsequent section will discuss further why ESG rating have no significant impact on the profitability of Indonesian firms listed under Kompas100. On choosing the right model of each equation, it is necessary to complete further tests. The equation with ROA and ROE as dependent variables should select the fixed effects model based on the Chow-test. However, from the Hausman-test and LM-test, the cross-section random effects model should be selected. On the other hand, the best model for the model with NPM as a dependent variable would be the fixed effects model based on the Chow-test and Hausman-test. Appendix 1,2, and 3 include the result of the three tests.



Table II. Panel Least Square: Common Effect Model

VARIABLES	Profitability Proxies		
	Panel A (ROA)	Panel B (ROE)	Panel C (NPM)
ESG	-0.018 (0.074)	0.081 (0.278)	-0.424 (1.489)
SIZE	2.536*** (0.500)	7.590*** (1.905)	-1.683 (10.047)
RISK	-0.399*** (0.049)	-1.184*** (0.187)	-2.581*** (0.977)
GROWTH	0.036 (0.030)	0.096 (0.126)	-1.378** (0.613)
LEV	0.020*** (0.005)	0.113*** (0.021)	0.501*** (0.107)
LIQ	-2.226** (0.716)	-11.999*** (2.708)	-14.617 (14.395)
Constant	-6.699 (7.40)	-30.122*** (28.076)	108.541 (148.707)
Observations	196	193	196
Adj R-squared	0.430	0.294	0.107
Number of Companies	40	39	40
F-Statistic	25.528	14.279	4.905

\* significantly different from zero at the level of 0.10

\*\* significantly different from zero at the level of 0.05

\*\*\* significantly different from zero at the level of 0.01

This table shows how the dependent variables – ROA, ROE, and NPM – correlates with the independent variable, ESG score of firms using the common effect model. Panel A describes how independent and control variables relating to the dependent variable, ROA. Panel B describes how independent and control variables relating to the dependent variable, ROE. Panel C describes how independent and control variables related to the dependent variable, NPM. Each panel consists explanatory result of particular dependent variable. Where SIZE: firm size by calculating the natural logarithm of firm market capitalization; RISK: firm risk measured by end-of-year total debt divided by total assets; GROWTH: a measure of sales growth of sample firms by computing the difference between sales in year t and t-1, divided by sales in year t-1. LEV: leverage of firms measured by debt-to-equity ratio, total debt divided by total equity; LIQ: measure liquidity of firms by using quick ratio, total assets subtracted by inventories, and divided by total liabilities. The columns show the coefficient of the independent and control variables, standard errors, t-statistics, and to measure the significance of each variable by interpreting the p-value. To interpret the significance of p-value, refer to the (\*) at the end of each number. Adjusted R-squared is computed to show how  $x$  variables explain the variation in variable  $y$ .

Table III. Panel Least Square: Fixed Effects Model

VARIABLES	Profitability Proxies		
	Panel A (ROA)	Panel B (ROE)	Panel C (NPM)
ESG	0.065 (0.056)	0.205 (0.298)	-3.123 (2.284)
SIZE	4.636*** (0.712)	17.156*** (3.903)	108.583*** (28.948)
RISK	-0.098* (0.056)	-0.060 (0.294)	-2.141 (2.258)
GROWTH	0.024* (0.014)	0.083 (0.082)	-2.234*** (0.568)
LEV	0.003 (0.004)	0.037 (0.024)	0.685*** (0.179)
LIQ	-0.296 (0.642)	-2.778 (3.378)	-11.516 (26.076)
Constant	-41.044*** (8.076)	-167.879*** (43.501)	-902.863*** (328.270)
Observations	196	193	196
Adj R-squared	0.922	0.809	0.350
Number of Companies	40	39	40
F-Statistic	39.354	14.279	3.330

\* significantly different from zero at the level of 0.10

\*\* significantly different from zero at the level of 0.05

\*\*\* significantly different from zero at the level of 0.01

This table shows how the dependent variables – ROA, ROE, and NPM – correlates with the independent variable, ESG score of firms using the fixed effect model. Panel A describes how independent and control variables related to the dependent variable, ROA. Panel B describes how independent and control variables related to the dependent variable, ROE. Panel C describes how independent and control variables correlate with the dependent variable, NPM. Each panel consists explanatory result of particular dependent variable. Where SIZE: firm size by calculating the natural logarithm of firm market capitalization; RISK: firm risk measured by end-of-year total debt divided by total assets; GROWTH: a measure of sales growth of sample firms by computing the difference between sales in year t and t-1, divided by sales in year t-1. LEV: leverage of firms measured by debt-to-equity ratio, total debt divided by total equity; LIQ: measure liquidity of firms by using quick ratio, total assets subtracted by inventories, and divided by total liabilities. The columns show the coefficient of the independent and control variables, standard errors, t-statistics, and to measure the significance of each variable by interpreting the p-value. To interpret the significance of p-value, refer to the (\*) at the end of each number. Adjusted R-squared is computed to show how  $x$  variables explain the variation in variable  $y$ .

Table IV. Panel EGLS: Cross-Section Random Effect Model

VARIABLES	Profitability Proxies		
	Panel A (ROA)	Panel B (ROE)	Panel C (NPM)
ESG	0.051 (0.053)	0.051 (0.266)	-0.857 (1.596)
SIZE	4.125*** (0.592)	12.793*** (2.692)	6.077 (12.018)
RISK	-0.162*** (0.047)	-0.426** (0.215)	-2.752** (1.105)
GROWTH	0.024* (0.014)	0.088 (0.080)	-1.658*** (0.538)
LEV	0.005 (0.004)	0.055** (0.022)	0.599*** (0.117)
LIQ	-0.371 (0.590)	-4.498 (2.869)	-14.785 (16.027)
Constant	-33.474*** (7.118)	-111.473*** (33.174)	52.802 (168.096)
Observations	196	193	196
Adj R-squared	0.284	0.145	0.130
Number of Companies	40	39	40
F-Statistic	13.916	6.419	5.855

\* significantly different from zero at the level of 0.10

\*\* significantly different from zero at the level of 0.05

\*\*\* significantly different from zero at the level of 0.01

This table shows how the dependent variables – ROA, ROE, and NPM – correlates with the independent variable, ESG score of firms using the Estimated Generalized Least Square (EGLS) cross-section random effect model. Panel A describes how independent and control variables correlate to the dependent variable, ROA. Panel B describes how independent and control variables relating to the dependent variable, ROE. Panel C describes how independent and control variables correlate to the dependent variable, NPM. Each panel consists explanatory result of particular dependent variable. Where SIZE: firm size by calculating the natural logarithm of firm market capitalization; RISK: firm risk measured by end-of-year total debt divided by total assets; GROWTH: a measure of sales growth of sample firms by computing the difference between sales in year t and t-1, divided by sales in year t-1. LEV: leverage of firms measured by debt-to-equity ratio, total debt divided by total equity; LIQ: measure liquidity of firms by using quick ratio, total assets subtracted by inventories, and divided by total liabilities. The columns show the coefficient of the independent and control variables, standard errors, t-statistics, and to measure the significance of each variable by interpreting the p-value. To interpret the significance of p-value, refer to the (\*) at the end of each number. Adjusted R squared is computed to show how  $x$  variables explain the variation in variable  $y$ .

## Chapter 6 Discussion

Regarding prior studies, there are different relationships between CSR practices of firms on their profitability. From the conducted regression, it is not possible to establish any significance of CSR towards firm profitability. Results from all three models, namely, the common effect, fixed effects, and random cross-section random effects, shows no effect of CSR ratings on firm performance. The p-values of ESG rating are very high and do not fall under the 1%, 5%, or 10% significance level.

A study by Aupperle *et al.*, (1985) shows that firms fulfilling their social contract by investing in social responsibility does not benefit or harm them, since the measurement of CSR is not as direct as CFP's. According to Aupperle *et al.* (1985), CFP can simply be calculated based on the particular accounting techniques, analytical tools, or statistical method to determine the financial performance of firms objectively. There are no tools and techniques applicable to determine whether or not firms have been socially responsible objectively. Despite its measurement, one might also assume that CSR simply affects firms' profitability positively. CSR practices enhance the image of firms and increase the revenues retained by gaining trust from stakeholders. However, a study that has been conducted by Vance (1975) shows the other way around. Vance (1975), analyzes the financial performance of firms that retain high social responsibility ratings and those that receive the lowest social responsibility ratings. The study finds that firms with low social responsibility rating financially outperform firms with higher rating. This shows that being socially responsible is not necessarily a good investment. They conform to the study conducted by Friedman (1970) which investigates the definition of "social responsibility" and observes additional cost incurred in order for firms to act in the best interest of stakeholders. Cost incurred by firms to act socially responsible are insofar received from their stakeholders' wealth. In other words, exercising social responsibility promotes good virtue for firms. However, considering the additional expense borne by firms, it provides strong evidence that CSR does not always increase profits.

Furthermore, knowledge of social responsibilities is extensive and is not able to be generalized. As CSR activities involve multiple stakeholders, it results in various understandings of the extent to which a firm acts responsibly. It can result from the

contribution of firms toward their employees, customers, shareholders, or the environment. There is no solid definition of CSR that applies to different countries because of the varying cultures, norms, and perspectives on ethical behavior. The preceding notion is in line with the study by Carrol (2008), where, as time goes by, the definition and the scope of CSR change. Many researchers proposed the need for a hierarchical or analytical framework that could act as a benchmark and operationalization for CSR practices by firms, yet have not been realized up until the present time. Given these points, CSR practices and measurements are still vague, which contributes to why it is challenging to establish the relationship between CSR and CFP.

As this study emphasizes CSR implementation of Indonesian firms, there are additional contributing reasons. One of the crucial factors that must be recognized is that Indonesia is still one of the developing countries. The lack of knowledge of CSR plays a crucial role in the implementation and impact of CSR itself. While CSR would be able to bring positive effects towards Indonesian firms, the inadequacy in CSR enforcement may lead to misuse of the stakeholders' wealth. One of the most recent examples reported by The Jakarta Post, where the executive of the state flag carrier, Garuda Indonesia, was alleged to embezzle allocated CSR funds. Under the report, the firm did a transaction to its cabin crew union by making use of the CSR funds. The particular action shows that the transaction goes against the firm's stated codes of conduct, as the allocated CSR funds are instead to satisfy private use but not external projects (The Jakarta Post, 2019).

Regulations on CSR practices in Indonesia are set forward under the laws. The most general regulation on CSR is written under Indonesian Corporate Law No. 40 of 2007 and a more thorough regulation on its mechanism in the Government Regulation no. 47 of 2012 entitled social responsibility and Limited Liability Company. The government does not enforce laws and regulations on CSR implementation in Indonesia. Instead, they act as regulators. Meaning, CSR is not compulsory, but the laws become a policy to encourage firms to have their initiatives. However, there are particular firms obliged to do CSR. The notion conforms the Company Law article 74, which entails specific industries obligated to conduct CSR implementation. Those are firms that engage in business processes in the field of natural resources and firms that carries out business activities involving the field of natural resources.

For that reason, in Indonesia, CSR implementation is directed towards firms operating in the natural resources field. It conforms with the regulations concerning Environmental Protection and Management Law no. 32 of 2009 and Oil and Natural Gas Law no. 22 of 2001.

Also, the presence of globalization is unavoidable by firms that increase awareness and implementation of CSR. From both a philanthropic aspect, humanitarian encouragement that comes from universal norms and ethics to help others and fight for social equity. The expansion of a firm's strategic level should direct towards a macro and comprehensive policy (Korhonen, 2006). Originally, CSR in Indonesia is simply a moral responsibility that has now shifted into a corporate responsibility (Anantan, 2009). According to Ambadar (2008), some various motivations and objectives drive CSR implementation of firms in Indonesia, comprised of 1. Avoid negative reputations that destroy the environment by pursuing short-term profits without considering the consequences of firms' unethical behavior; 2. A robust ethical framework aids managers and employees to work in an environment where the firms operate in; 3. To retain respect from the core community groups that require employment from firms, and 4. Promotes ethical behavior, so firms are free from environmental disturbance, and firms can operate smoothly (Ambadar, 2008). Regarding the motivations and objectives, firms in Indonesia engage in CSR practices that serve as the purpose of promoting particular ethical behavior towards the environment and employees. CSR enhances a good reputation that does not affect profit directly.

The lack of implementation of CSR practices in Indonesia can be referred to in several cases, such as environmental damages occurring in mining locations in Bangka-Belitung. Another evidence is that a firm called Freeport Indonesia, involved with environmental destruction, creates problems amongst the society where the firm operates. Referring to those cases, the lack of CSR implementation is also a result of weak awareness of firm leaders and executives. The obligation of caring for the environment is a shared responsibility, not on an individual level. However, the awareness of company leaders in the environment will automatically increase CSR implementation. A substantial control lies upon higher management of firms in conducting CSR practices (Anantan, 2009). In addition to those factors, weak enforcement of CSR regulations by the government is a result of inadequacy in awareness of the

environment. Having strict regulations and enforcement will automatically increase the implementation of CSR itself. Referring to Table 1, the mining industry holds the highest number of firms included under Kompas100 index. In which the laws specifically apply to those firms and need to be highly enforced.

## **Chapter 7 Conclusion and Limitation**

This study aims to provide further evidence on the existence of a relationship between CSR performance towards the financial performance of Indonesian firms listed under Kompas100 index. The regression conducted shows that no relationship exists between CSR performance, computed as ESG rating, and profitability of firms, measured by ROE, ROA, and NPM. The results are from the three models: common effect, fixed effects, and cross-section random effects. P-values of the independent variable from all three methods do not fall under any level of significance as they are very high. For those reasons, the result is to reject the proposed hypothesis. However, the contributing control variables hold a significant towards the profitability of firms (i.e., firm size, firm risk, sales growth, leverage, and liquidity). Factors other than CSR ratings contribute to the increase or decrease in firm profitability.

As there are different definitions and understandings of CSR that result in a weak measurement scheme on ensuring the appropriateness of CSR practices, it presents involvement of assumption and subjectivity in establishing a relationship between CSR and CFP. As the focus of this study is Indonesian firms, contributing factors such as a lack of implementation, are likewise present. The main reason for a weak CSR implementation among Indonesian firms is inadequate guidance provided by higher-level management. Furthermore, the motivations and objectives of CSR implementation in Indonesia are not to increase profit but rather to enhance firm reputation, preserve the environment, and ensure society's well-being.

Nonetheless, this study retains several limitations. The first limitation is the number of sample firms. Those mentioned above might affect the overlooked regression results, which can be resolved by adding more sample firms. Another limitation of the study is the industry of the included sample firms that are not categorized, resulting in different availability of data inputted under the regression. A third limitation is a difficulty present in generalizing the result of prior studies regarding CSR and CFP, which apply to this study's result. The last limitation of the study is the time-period included in the sample study. A more extended period might capture the effect of CSR practices better as it takes time to ascertain the effect of CSR. Further research can improve the result of this study by examining these possibilities.



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## Appendices

### Appendix 1 Chow-Test, Hausman-Test, and LM-Test (Dependent variable: ROA)

Chow-Test

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Effects Test	Statistic	d.f.	Prob.
Cross-section F	23.360541	(39,150)	0.0000
Cross-section Chi-square	383.452326	39	0.0000

---

This table shows result from the Chow-test. On choosing between common vs. fixed effect model it was derived a probability of  $0.000 < 0.05$ . It can be concluded that the best model would be fixed effects.

Hausman-Test

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Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	10.552244	6	0.1032

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This table shows the Hausman-test. On choosing between common effect vs. fixed effects probability of  $0.103 > 0.05$  was derived. It can be concluded that the best model would be cross-section random effects.

LM-Test

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F-statistic	73.75190	Prob. F (2,187)	0.0000
Obs*R-squared	86.42875	Prob. Chi-Square (2)	0.0000

---

From the LM test, on choosing between common vs. fixed effect model. It was derived a probability of  $0.000 < 0.05$ . It can be concluded that the best model would be cross-section random effects. For those reasons, the cross-section random effects will best fit the model with ROA as dependent variable.

## Appendix 2 Chow-Test, Hausman-Test, and LM-Test (Dependent variable: ROE)

### Chow-Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	10.096603	(38,148)	0.0000
Cross-section Chi-square	246.810802	38	0.0000

From the Chow-test, on choosing between common vs. fixed effect model it was derived a probability of  $0.000 < 0.05$ . It can be concluded that the best model would be Fixed effects.

### Hausman-Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	11.915112	6	0.0639

From the Hausman test, in choosing between common vs. fixed effect model it was derived a probability of  $0.064 > 0.05$ . It can be concluded that the best model would be common-section random effects.

### LM-Test

F-statistic	29.84032	Prob. F (2,184)	0.0000
Obs*R-squared	47.26828	Prob. Chi-Square (2)	0.0000

From the LM-Test, in choosing between common vs. fixed effect model it was derived a probability of  $0.000 < 0.05$ . It can be concluded that the best model would be common-section random effects. For those reasons, the cross-section random effects will best fit the model with ROE as dependent variable.

### Appendix 3 Chow-Test and Hausman-Test (Dependent variable: NPM)

#### Chow-Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.806649	(39,150)	0.0000
Cross-section Chi-square	107.401054	39	0.0000

From the Chow-Test, in choosing between common vs. fixed effect model it was derived a probability of  $0.000 < 0.05$ . It can be concluded that the best model would be fixed effects.

#### Hausman-Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	27.876753	6	0.0001

From the Hausman test, on choosing between common vs. fixed effect model it was derived a probability of  $0.000 < 0.05$ . It can be concluded that the best model would be fixed effects. With regard to NPM, the LM-Test is not conducted because both Chow-test and Hausman-test results to fixed effects as the best model that fits the equation.