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Article

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Cogent Business & Management

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Suggested Citation: Alam, Md. Mahmudul et al. (2022) : Financial factors influencing environmental, social and governance ratings of public listed companies in Bursa Malaysia, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 9, Iss. 1, pp. 1-22,
<https://doi.org/10.1080/23311975.2022.2118207>

This Version is available at:

<https://hdl.handle.net/10419/289233>

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To cite this article: Md. Mahmudul Alam, Yasmin Mohamad Tahir, Abdulazeez Y. H. Saif-Alyousfi, Wanamina Bostan Ali, Ruhaini Muda & Sabariah Nordin (2022) Financial factors influencing environmental, social and governance ratings of public listed companies in Bursa Malaysia, Cogent Business & Management, 9:1, 2118207, DOI: [10.1080/23311975.2022.2118207](https://doi.org/10.1080/23311975.2022.2118207)

To link to this article: <https://doi.org/10.1080/23311975.2022.2118207>



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Received: 22 July 2022
Accepted: 24 August 2022

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Reviewing editor:
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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

Financial factors influencing environmental, social and governance ratings of public listed companies in Bursa Malaysia

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Abstract: Environmental, Social and Governance (ESG) ratings are widely recognised methods to assess the sustainability practices of corporations. However, the scores of these ratings are not satisfactory in emerging market economies. This study examines the financial factors that influence ESG ratings regarding public listed companies on the FTSE4 Good Bursa Malaysia Index (F4GBM Index). This paper uses static and dynamic Generalized Method of Moments (GMM) techniques to analyse the data of 31 public listed

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companies on the F4GBM Index and reported full ESG ratings data for the period 2007–2016. To utilise the maximum number of observations by avoiding the missing data and outlier due to COVID-19, this study applied the sample data up to 2016. Using the two-step system dynamic GMM estimator, such results indicate that highly profitable Malaysian companies enjoy a higher score for ESG overall ratings as well as all three individual ratings. Poorer credit management diminishes the environmental ratings, yet increases overall scores such as the social and governance scores. Companies with higher leverage have a weaker social, governance and overall score, but a higher environmental rating. Finally, companies eliciting a higher sustainable growth rate have weak governance and overall scores. This study provides empirical evidence that will be useful to capital market investors, management teams of these companies and policymakers in their efforts to promote responsible investment in Malaysian public listed companies in line with UN-PRI policy.

Subjects: Investment & Securities; Corporate Governance; Corporate Social Responsibility

Keywords: ESG rating; F4GBM Index; Public listed firms; Malaysia; Bursa Malaysia

1. Introduction

Defining sustainability is essential for future generations without comprising their ability to meet their wants and needs. Economic, Environmental and Social (EES) are descriptors recognised for three pillars of sustainability (Kenton, 2018). Meanwhile, Environmental, Social and Governance (ESG) is a term being used by the investment community with reference to corporate behaviour. The emergence of sustainability is a reflection of public discontent over the long-term damage being done to the environment and subsequently the need for corporate ethics (Kenton, 2018). As per Bursa Malaysia, the Global Risks 2015 report published by the World Economic Forum found that seven out of the ten risks of highest concern were sustainability-related. The main risk identified the crisis about viable water supplies that have now surpassed the danger of nuclear weapons and nations in conflict. Water crises are described as a significant decline in the available quality and quantity of fresh water, resulting in danger to human health and/or economic activity. Meanwhile, other prevalent sustainability-related risks identified in the said report are energy price shock, failure of climate change adaptation, fiscal crises, unemployment or underemployment, biodiversity loss and ecosystem collapse and spread of infectious diseases.

Due to the concerns above, the investment community is also being impacted. In the year 2004, the United Nations (UN) Global Compact initiated a meeting with respective parties, i.e. a number of global stock exchanges in order to explore opportunities for further collaboration. Then in 2008, a meeting was held at the UN Headquarters in Geneva attended by United Nations Conference on Trade and Development (UNCTAD), Principles for Responsible Investment (PRI), investors, financial information providers, stock exchange and public policy officials. The agenda items for this meeting were to seek collaboration, promote responsible investment in emerging markets, and review the corresponding policy context. By the end of 2008, another meeting was conducted in order to seek views from the listing authorities of global stock exchanges, and whether it would be beneficial to promote disclosures by companies about their sustainability performance and strategy. This disclosure came to be known as ESG. Thus, the sustainable stock exchanges (SSE) initiative was introduced by the UN Global Compact, UNCTAD and PRI.

The aim of this SSE initiative is to become a peer-to-peer learning platform in order to explore how the stock exchanges around the world collaborate with investors, regulators and companies to improve corporate honesty and good practice, and ultimately ensure ESG issues are acted on with the aim of ensuring sustainable investment. This initiative is being managed by the UNCTAD, the UN Global Compact, the UN Environmental Program Finance Initiative (UNEP FI), and PRI. The

aim of the Sustainable Stock Exchanges Initiative (SSE) initiative is supported by the Amsterdam Declaration on Transparency and Reporting (2009), which states that the root causes of the current economic crisis could be resolved by a global transparency and accountability system and the public reporting of how well ESG is functioning. With proper transparency, a thorough accountability system and accurate reporting of ESG supports improvement of companies' disclosures, helps the world's economy, and environmental and social conditions. This boosts the reputation of companies in many societies when they are actively working to save the environment with the support of internal and external stakeholders (Nejati et al., 2010). According to Joseph (2013), sustainability reporting is still gaining prominence among scholars (Joseph and Taplin, 2013). The origin of sustainability reporting lies in the annual reports, which no longer simply provide financial information, but now provide relevant information to a more comprehensive community of stakeholders

By having a set of sustainability reporting systems this may create a new paradigm shift where it is seen not only about business activity disclosure, but as a platform or an element of communication between the company and its stakeholders. This provides an opportunity to the latter to identify whether their concerns have been addressed (Sawani et al., 2010). The stakeholders approach offers a balanced view because it means evaluating what is important and at stake. This can be done through proper reporting (Ramachandra & Mansor, 2014). Since the adoption of the ESG rating in the FTSE4 Good Bursa Malaysia (F4GBM) Index it is still new in Bursa Malaysia Berhad and Malaysia, and hence it is not yet clear in terms of how far the public listed companies are doing with the ESG rating or how this rating is influenced by the financial performance of public listed companies. Moreover, only a very few studies are available on this issue from Bursa Malaysia Berhad. Due to these constraints, it is very important to study this issue in-depth to fill in the gaps in our knowledge.

The overall objective of this research is to examine the factors (financial performance) that influence ESG ratings for public listed companies in Malaysia. This study is one of the first of its kind to examine the effects of financial performance on ESG ratings for Malaysian public listed companies on the F4GBM Index. The FTSE4Good Bursa Malaysia Index is also known as F4GBM Index in Bloomberg Terminal. The F4GBM Index was designed to highlight the public listed companies in Bursa Malaysia which demonstrates a leading approach in addressing ESG risks. Consequently, the said public listed companies need to achieve a FTSE ESG rating above a specified threshold for inclusion on the index in addition to passing certain additional screens as set out in the FTSE4Good Index Ground Rules. The FTSE ratings are available for the largest 200 companies in the FTSE Bursa Malaysia EMAS Index. The public listed companies which are included in the F4GBM Index are in fact a small sub-set of these companies, whilst the FTSE ESG rating covers all the assessed companies. Therefore, this analysis will help us to understand better that the ESG rating for the public listed companies on the F4GBM Index will provide valuable evaluation tools for investment purposes and analysis in the case of Malaysia. The findings of his research will be highly beneficial for securities capital market investors in ensuring ESG investments in Malaysia's public listed companies through the disclosures are made about financial performance. These disclosures should include the following topics: profitability, credit, leverage and DuPont analysis. For public listed companies, it will help to boost their profile, encourage them to undertake ESG practices and to create an environment for best practice disclosure.

The remainder of the paper is structured as follows. Section 2 highlights the related literature and hypothesis development. Section 3 explains the data, definitions of variables and methods used. Section 4 outlines the findings, and Section 5 concludes the research.

2. Literature review and hypothesis development

2.1. Financial performance and ESG rating

The ESG data being used to improve the risk analysis undertaken by companies will offer companies and their investors the relevant information to understand growth, and productivity

opportunities associated with strong ESG performance (Stewart, 2015). This is supported by Rose (2018), who states that by integrating ESG considerations on a holistic basis, this should help investment managers to assess better price in assets in which they have invested, and subsequently avoid overpaying for an investment. ESG rating also helps to determine an appropriate weighting for a particular asset within a portfolio, and by implementing full integration of ESG into the investment process to help the engagement between investors and companies not only on material issues and subsequently better manage: firstly, the downside risk; or secondly, the risk that an asset loses value due to the augmentation of a key material risk to the business. Conversely, apart from the ESG rating information, analysts should also obtain information on how the companies will respond to critical issues, such as cyber security, human rights and diversity in order for shareholders to develop a more complete picture of a company they choose to invest in, so that the sustainability of a company's business and value creation is better understood (Halliday, 2016). Furthermore, sustainable development may wield a positive impact on a company's competitive advantage, but also at the same time become a threat to it if sustainable development roles are ignored due to the greater global awareness of such issues.

Sustainable development will rely entirely on a workable business model which should clearly set out the new actions and behaviours that will change how the company interacts with the world. It has been pointed out (Porter and Kramer, 2007) that the value chain model is a good management tool for building sustainability into a business strategy. Moreover, there is a challenge to integrate sustainability into a company's business activities across the value chain which requires refining the original model to reflect new challenges and new ways of doing business (McPhee, 2014). Having a good business strategy helps to accommodate business needs to strive for strategic corporate sustainability where there is a commitment to embedding sustainability into the corporate strategy by the CEO and the management team (Fernando, 2012). For example, according to Bursa Malaysia Berhad on 1 November 2017, Ms Emilia Tee was appointed Director, Sustainability which required her to lead the development and execution of sustainable strategies, and integrating sustainability throughout the company. In so doing, she worked with all departments to ensure that Bursa Malaysia Berhad's sustainability strategy actually improved its performance, and supported the long-term interests of the company and the capital market as a whole. In this way, sustainable reporting may help to create a good communication platform made between the companies and their stakeholders in the form of commitment to sustainability reporting. This type of documentation helps to create and improve people's awareness of sustainable development. Moreover, the stakeholders can obtain the details about this from the companies' official websites.

While referring to the correlation made between the ESG rating and financial ratios, studies done by Smith et al. (2007) especially reveal that for environmental disclosures, the profit-making performance is negatively correlated with the level of environmental disclosure. Elsewhere, Velte (2017) asserted that ESG performance has a positive impact on accounting-based financial performance especially regarding ROA, but no impact on Tobin's Q. Furthermore, governance performance has the strongest impact on financial performance besides environmental and social indicators. The financial ratios serve as a measurement tool for companies and they are judged on their total performance, not just their size, volume of sales or market share. It also helps the companies in creating a performance benchmark that applies to all industry players for measurement purposes. On the other hand, a good understanding on the structure of ESG ratings will help to ease investors' judgment in assessing which assets should be included in their portfolios to obtain more profit at the appropriate risk.

In other published research, Egyptian firms listed on the ESG index have better firm value and there is a positive association between firms with higher rankings on the index and firm value when measured by Tobin's Q (Aboud & Diab, 2018). Meanwhile, a study done by Buallay (2019) on the level of ESG for banks listed on European Union countries' stock exchanges discovered that ESG results exert a significant positive impact on performance. However, when splitting these

indicators, the measures have individual and very different outcomes. The environmental disclosure was to positively affect the ROE and TQ. Social disclosure is negatively affecting ROA, ROE and Tobin's Q (governance disclosure was found to adversely affect the financial and operational performance of ROA and ROE). A study on a world-wide sample illustrates that financial firms' ESG scores are enhanced by the size and profitability of the company (Crespi & Migliavacca, 2020). Meanwhile another study shows that ROE has a positive relationship with ESG score for Norges Bank Investment Management invested 905 companies (Angell-Hansen & Meling, 2021).

In Malaysia the study done by Atan et al. (2018) detected no significant relationship between a company's ESG factors and performance by using measurement such as profitability (i.e. ROE), firm value (i.e. Tobin's Q) and cost of capital for the public listed companies on the F4GBM Index. The said study examined a short three-year period and this may affect what the data actually means. In addition, more studies on ESG for Malaysia are required and doing so will be useful for the capital market and policymakers to promote investment in Malaysian public companies. It should be in line with the UN-PRI policy where ESG initiatives must be documented. Based on the discussion of the previous literature above, the hypothesis is written below:

H1: There is a significant relationship between financial performance and ESG rating for public listed companies on the F4GBM Index.

2.2. Financial performance and environmental rating

Regarding the environmental pillar, studies conducted are based on environmental disclosures for reporting purposes and the impact on stakeholders. In Malaysia, a study was conducted by Ahmad and Sulaiman (2004), and it examined the motivation of management to volunteer environmental disclosures in the annual reports of companies in selected industries. The study only covered the nature of environmental disclosures in annual reports, reasons for the said disclosures and whether legitimacy theory provides help in further explaining environmental disclosures. The study also suggested to further explore reasons for non-disclosure by the companies in their annual reports and to examine the stakeholders' needs on environmental disclosures when decisions had to be made.

Meanwhile, the study undertaken by Smith et al. (2007) investigated the environmental disclosures in annual reports for the companies listed on Bursa Malaysia. It concluded that the environmental reporting practices in Malaysia are slightly different from other countries due to the maturity of the reporting process. The study suggested that future studies take into account national identity issues in order to measure any explanatory variables such as political cost which is at the heart of Malaysian companies' environment-related matters. Fatima et al., (2015) looked at the quality of environmental disclosure for public listed companies in Malaysia for 2005 and 2009 (two years before and two years after the mandatory corporate social responsibility requirement of Bursa Malaysia which went into effect in 2007). It concluded that the quality of environmental disclosure improved in 2009 compared to 2005.

Other research was conducted by Said et al. (2014) who analysed environmental information usefulness to stakeholders in Malaysia. Their study examined the qualitative and quantitative effects of environmental information on fund managers' investment and bank officers' lending decisions. The authors found that fund managers and bank officers do not incorporate environmental information into their investment and lending decisions. Regarding an international perspective, Dang et al. (2018) discovered there is no significant relationship made between boards' gender diversity and ESG disclosure from the sample taken from 379 firms on the S&P 500 Index for 2010 to 2015. Based on the discussion above, the second hypothesis is posited:

H2: There is a significant relationship between financial performance and environmental rating for public listed companies on the F4GBM Index.

2.3. Financial performance and social rating

For Malaysia a study was conducted on the social pillar and specifically women in management. Malaysia has emerged as one of the four “tigers” of the South East Asian region, evidenced by rapid changes from traditional values to modern ones being embraced by women. Although the business organisations appear to provide an equal opportunity for women, they are nonetheless still under-represented at all management levels due to being required to work longer than men for recognition and rewards (Koshal et al., 1998). Based on the literature above, the third hypothesis is presented below:

H3: There is a significant relationship between financial performance and social rating for public listed companies on the F4GBM Index.

2.4. Financial performance and governance rating

A study was undertaken on the governance pillar in Malaysia. Ariff et al. (2007) extended the corporate governance reporting initiative (CGI) of 2004 when reporting on Malaysia’s first corporate governance rating system. The study concluded that firm size wields a strong influence on corporate governance ratings but not profitability, leverage, growth, market valuation, age, ownership structure and countries in which operations are taking place. Based on the literature above, the fourth hypothesis is presented here:

H4: There is a significant relationship between financial performance and governance rating for public listed companies on the F4GBM Index.

2.5. Knowledge gap

ESG exists under the umbrella term of Socially Responsible Investing (SRI), which consists of categories such as ethical investing, ESG investing and impact investing (Hill, 2020; Pedersen et al., 2021). ESG is also linked to the Sustainable Stock Exchanges (SSE) initiative of the United Nations. ESG also is considered by the Efficient Market Hypothesis, because it encourages investors to look beyond the financial performance variables, which subsequently increases unpredictability of the stock price (Liu et al., 2020). Moreover, based on the Signalling Theory, companies with a good ESG score provide a positive signal and can attract investors (Pérez, 2015; Zerbini, 2017). Similarly, ESG performance can also help to increase a firm’s value (Aboud & Diab, 2018; MacLean, 2012). According to Louis (2016), A joint analysis is made between Governance and Accountability Institute and Bloomberg LP on Bloomberg ESG Disclosure scores for S&P 500 Companies reporting versus non reporting on sustainability issues (G&A, 2016) suggests that companies that publish sustainability reports are scoring higher on the Bloomberg ESG Disclosure scores than companies that do not:

- Bloomberg “E” Disclosure score—The average Bloomberg “E” Disclosure score of S&P 500 non-reporters is 5, while reporters enjoy an average of 23, a 360% higher average “E” score for reporters.
- Bloomberg “S” Disclosure score—The average Bloomberg “S” Disclosure score of S&P 500 non-reporters is 15, while reporters enjoy an average of 30, a 100% higher average “S” score for reporters.
- Bloomberg “G” Disclosure score—The average Bloomberg “G” Disclosure score of S&P 500 non-reporters is 52, while reporters have a slightly higher average of 58, a 12% higher average score “G” for reporters.

The international sustainability ratings are now linked to stock indices such as the Dow Jones Sustainability Index that was launched in 1999 and the FTSE4 Good Index Series, commencing in 2001. Mostly the companies compete for coveted listings on these indices but at the same time there are numerous rating firms that analyse ESG performance and companies’ rankings (MacLean, 2012).

Moreover, the ESG assessment and ratings tend to make comparisons about ESG in the mainstream investment markets (Stubbs & Rogers, 2013). To elaborate further on ESG ratings, developing reliable ESG data and useful analytics by Bloomberg Terminal would allow investors to identify real investment opportunities through calculations of outcome probabilities, and thus turning uncertainties into actionable risks. The development of a valuation tool will engage the investor community in pricing externalities in order to clarify any risks and opportunities. These actions play a potential role as bridges between theory and practice (Park & Ravenel, 2013).

Having an ESG rating helps the ESG disclosure become more important and understanding the impacts of ESG issues on a company's reputation, brand, competitive advantage and investment decisions (Tamimi & Sebastianelli, 2017). According to Sirsly (2015), ESG measures are relevant to managers who are responsible for achieving results by knowing how to integrate the company's strategic choices and policies. The reputation of a company is known as a powerful driver and its proper management will improve the quality of ESG reporting. Generally, the highest levels of ESG disclosure occur in global companies or corporations operating in industries with higher reputation risk, for example, financial services, energy and communications (De la Cuesta & Valor, 2013).

To date, most of the international and domestic public companies are being evaluated and rated on their ESG performance by numerous third-party providers of reports and ratings. The users of these reports are mainly institutional investors, asset managers, financial institutions and other stakeholders. These users are increasingly relying on these reports and ratings in order to conduct further assessment and measurement of the company's ESG performance over time, and as compares to other businesses (Huber et al., 2017). Referring to Malaysia, the level of current environmental reporting and disclosure in that country appears to be very low and is restricted or can be categorised as general, ad-hoc statements on environmental matters, which is due to the absence of mandatory environmental reporting standards. Additionally, the environmental reporting lacks uniformity and poorer quality informational value (Ahmad & Sulaiman, 2004).

Overall, ESG is a new concept in financial history, and businesses are still struggling to report the ESG relevant data. As the longitudinal data is not available, there is insufficient empirical literature available on the ESG determining factors, especially for E, S, G scores separately. Due to these constraints, this study also keeps the hypotheses open without specifically indicating there is a positive or negative relationship. The effort is made to fill in the gaps in the knowledge on this subject.

3. Methodology and data

3.1. Measurement of variables

Referring to the dependent variables, the ESG rating model was designed by FTSE Russell in order to allow investors to understand a company's exposures and type of management it had, and alerting investors who are interested or otherwise in such companies. ESG issues are now appearing in various contexts, i.e. environmental, social and governance. For the environmental context, there are four main areas: biodiversity; climate change; pollution and resources; and water use. In the social sphere, its four main areas are: labour standards; human rights and community; health and safety; and customer responsibility. Referring to governance, there are four main areas: anti-corruption; corporate governance; risk management; and tax transparency. The benefits of this model are that it helps to manage exposure to aspects of ESG, meet the stewardship requirements, integrate the ESG data into securities and portfolio analysis, and implementation of ESG awareness investment strategies.

The features of this model can be divided into six elements: comprehensive; flexibility; customisation; emphasis on materiality; precise rules and focus on data; objective and strong governance; and aligned sustainable development goals. This ESG rating can be accessed through an online data model. The ESG rating is flexible and can be customised because the data model had been designed for customisation. In this way the data can be "sliced and diced" to meet each user's needs. When the emphasis is on materiality, the said rating is calculated using an exposure

weighted average, for those material issues will be given most weight when determining a company's scores. The model also is based on only clearly defined rules in order to evaluate how the company is being managed, and the output of the data tool will produce quantitative results rather than qualitative research reports. The model also is very objective and strong in terms of governance due to the data model being overseen by an independent external committee well versed in all aspects of the business. Moreover, the said model supports the UN sustainable development goals (SDGs, wherein all 17 SDGs are reflected in the 14 themes under the ESG framework). ESG rating is based on the scores earned from the environmental, social and governance indicators for a given company.

This ESG rating can be retrieved directly from the Bloomberg Terminal. Bloomberg will be investigated to evaluate the companies' ESG score on a year-to-year basis. The collection of public ESG information is based on the companies' disclosures on their websites where corporate social responsibility (CSR) is documented, takes the form of sustainability reports, annual reports, and other public sources, or garnered through direct contact with the company. Then, the collected data will be checked and standardised by Bloomberg. Should there be any missing data the ESG rating of each company will be penalised accordingly by Bloomberg. To date, Bloomberg ESG data covers 120 ESG indicators. This includes evaluation of carbon emissions, climate change effects, pollution, waste disposal, renewable energy, resource depletion, supply chain, political contributions, discrimination, diversity, community relationships, human rights, cumulative voting, executive compensation, shareholders' rights, ability to withstand takeover bids by staggered boards and the number of independent directors (Huber et al., 2017).

Financial performance is one of the main indicators that determines the ESG rating. For financial performance, this study will discuss profitability ratio, credit ratio, leverage ratio and DuPont analysis ratio which also serve as inputs in the ESG rating evaluation. For the profitability ratio, the measurement is based on net income margin. For credit ratio measurement this is based on net debt to earnings before interest and tax (EBIT). Then the leverage ratio measurement is based on long-term debt to equity and lastly, DuPont analysis ratio measurement is based on sustainable growth rate. For net income margin, which is also known as net profit margin, this may help an investor determine the proportional profitability of business. This ratio is expressed as a percentage of sales from the net after taxable income is calculated for a business. An analyst may use this ratio to see if there are any spikes or dips in the long-term average net income margin. This can in fact help an analyst recommend to investors whether a company's shares should be bought or sold. The formula can be referred to as follows (Saif-Alyousfi et al., 2020).

For the credit ratio measurement, it is measured by net debt to EBIT. The net debt to EBIT is used to measure the indebtedness of a company. Net debt to EBIT is calculated as a company's net debt divided by its EBIT. If the EBIT is negative, then the ratio cannot be calculated. This ratio demonstrates how many years it would take for a company to pay back its debt if the net debt and EBIT are held constant. Hence, the lower this ratio is the better, since it is reflected in terms of company management being able to manage indebtedness (Saif-Alyousfi et al., 2020).

Referring to the leverage ratio measurement, the long-term debt to equity measures the financial leverage. It can help to determine the leverage that a company has taken on and sometimes used to compare the leverage level of a business with those of its competitors in order to see if the leverage level is reasonable or not. The formula derived from long-term debt of an entity by the aggregate of its common stock and preferred stock. If the ratio is comparatively high, it implies that a business is at greater risk of bankruptcy since it may not be able to pay the interest expense on the debt if its cash flows decline. This measurement has a disadvantage where the standard debt-to-equity ratio can be a more reliable indicator of the financial viability of a business since it includes all short-term debt as well. This is especially the case when a company has a large amount of debt that has to be paid in the following year, but will not appear in the long-term debt-to-equity ratio. In addition, this ratio indicates that companies with

higher ratios are thought to be riskier. To simplify this, the greater a company's leverage then the higher the ratio of the same (Saif-Alyousfi et al., 2020).

DuPont analysis is made possible by the sustainable growth rate, which is the maximum rate of growth that a company can sustain without having to explain financial leverage or look for external financing. For the company which operates above the sustainable growth rate, sustaining growth can be difficult in the long-term due to strained financial resources or overextended financial leverage, in which case the company should borrow funds to facilitate prolonged growth. Businesses that fail to attain a sustainable growth rate are at risk of stagnation. Furthermore, this calculation assumes that a company wants to maintain a target capital structure of debt and equity, keep a static dividend pay-out ratio and accelerate sales as quickly as possible. Achieving a sustainable growth rate is every company's goal but some headwinds such as consumer trends and planning ability may stop a business from growing and achieving its desired sustainable growth rate. A higher sustainable growth rate signifies that a company is still growing very quickly. As such, the company may be spending a lot of its earnings on research and development and may not have a lot of cash left over to make debt payments (Saif-Alyousfi et al., 2020).

3.2. Modelling

To examine the impact of the financial performance ratios on ESG of public listed firms, this paper follows Saif-Alyousfi et al. (2020) and employs both static and dynamic panel estimation techniques. The static techniques used here are pooled OLS, the random effects (RE) model, the fixed effects (FE) model, generalised least squares (GLS), panel corrected standard errors (PCSE) and two-stage least squares (2SLS). The dynamic techniques used are the one-step and two-step systems and difference GMM estimators.

Eqn (1) is calculated with the static panel estimation techniques. To choose between cross-sections pooled OLS and the RE model, the Breusch-Pagan Lagrange Multiplier (LM) test examines the null hypothesis that there are no random effects. However, Hoechle (2010) concludes that most common panel data estimators cannot handle serial correlation and cross-sectional dependence simultaneously. Beck and Katz (1995) argue that although panel data methods (pooled OLS, RE, FE, GLS, PCSE and 2SLS) solve the problem of time-constant omitted variables, alone they do not solve the problem of time-varying omitted variables that are correlated with the explanatory variables. Moreover, firm-wise heteroskedasticity and endogeneity can be reasonably expected to exist in the estimation process:

$$ESG_{it} = \beta_0 + \beta_1 NIM_{it} + \beta_2 NDE_{it} + \beta_3 LTD_{it} + \beta_4 SGR_{it} + \varepsilon_{it} \quad (1)$$

where i , and t indices denote firm and time, respectively; ESG is the measure of ESG; NIM is net income margin; NDE stands for net debt to EBIT ratio; LTD is long-term debt-to-equity ratio; SGR denotes sustainable growth rate; and ε is the error term.

Thus, to avoid these problems, this study uses the dynamic GMM estimator which employs lagged values of independent and dependent variables in variance instruments (Hall, 2005). Moreover, the system GMM estimator is more robust in improving efficiency gains and reducing finite sample bias (Blundell and Bond, 2000). The system GMM addresses the unit root property problem and provides more accurate findings (Arellano & Bover, 1995). Here, the instruments' validity is examined by the Hansen test for over-identifying restrictions and a test for the absence of residual serial correlation. The dynamic model of Equation (1) can be expressed as follows:

$$ESG_{it} = \beta_0 + \beta_1 ESG_{it-1} + \beta_2 NIM_{it} + \beta_3 NDE_{it} + \beta_4 LTD_{it} + \beta_5 SGR_{it} + \varepsilon_{it} \quad (2)$$

3.3. Data and sources

The accounting models are expected to produce positive results and better ones than market models, because accounting record shows the core financial values whereas the market model is greatly affected by various events as well as investor sentiment. However, there is a problem in

using accounting models which is that the number of samples is limited (Devalle et al., 2017; Ohlson, 1995; Balatbat et al., 2012). Consequently, this study has used data from 31 public listed companies (Table A1) which are listed on the F4GBM Index and reported full ESG rating data for the period 2007–2016. Moreover, to utilise the maximum number of observations by avoiding the missing data and avoiding the outlier due to COVID-19, this study employed the sample data up to 2016. The secondary data comprises ESG rating, environmental rating, social rating, governance rating and financial performance data. That is, net income margin, net debt to EBIT, long-term debt to equity and sustainable growth rate ratios for the required period that were collected from Bursa Malaysia and Bloomberg Terminal.

4. Results and discussion

4.1. Descriptive statistics

Table 1 summarises the statistics of all variables used in this analysis. The mean of net income margin expresses that, on average, the observed companies have a certain profitability with an average ratio of 18.27. The average value of long-term debt to equity (54.70) means that the sample companies rely much more on long-term debt than equity while excessive leverage may increase the risk of bankruptcy because more cash flow must cover larger interest payments. In terms of normal distribution level, Skewness and Kurtosis reveal that all the variables meet the condition of normal distribution. Furthermore, the outcomes of Variance Inflation Factor (VIF) detection illustrate the absence of serious multicollinearity problems because their VIFs are less than 5.

In addition, the correlation coefficients between the variables are reported in Table 2. The correlation analysis reports that the relationship among all independent variables used in this study is weak because the highest correlation coefficients of independent variables is lower than 0.5. This confirms there is no multicollinearity problem.

4.2. Model efficiency test

This study estimates the model using both static panel (OLS, RE, FE, GLS, PCSE, and 2SLS) and dynamic panel (two-step system GMM) estimation techniques. The estimation results for the static panel techniques have the expected signs, and most of the coefficients are statistically significant at the 5% level or better with the R-square statistics greater than 0.21. This study estimates the model using both static panel (OLS, RE, FE, GLS, PCSE, and 2SLS) and dynamic panel (two-step system GMM) estimation techniques. The estimation results for the static panel techniques have the expected signs, and most of the coefficients are statistically significant at the 5% level or better with the R-square statistics greater than 0.21 (Appendix 2 & 3). Nevertheless, the Breusch–Pagan LM test rejects the null hypothesis of no random effect, implying that the estimation results with the RE model are more robust than the cross-section pooled OLS. It also finds that the statistics reject the null hypothesis of the RE model consistently and efficiently. Unfortunately, the selected FE model is also imperfect because it fails to pass the diagnostic tests. More specifically, the error variance generated by the selected FE model is unequal (i.e. heteroskedasticity) and the residuals are serially correlated. The Hausman test also confirms that the endogeneity problem is a major issue, which implies that static panel estimations are not efficient. Consequently, in order to examine the impact of firm performance on ESG over time, the model must be dynamic. In other words, the authors stress that the dynamic GMM estimator is the best method to solve all these problems. Therefore, the results for static panel techniques are presented in Appendices 2–3 while the results of two-step system GMM estimation technique are reported in Table 3.

As shown in Table 3, the Sargan test indicates there is no evidence of over-identification restrictions. The analysis also suggests that a negative second order autocorrelation AR(2) does not exist, which clarifies that the moment conditions of the model are valid. With these diagnostic tests, the study can infer that the two-step system dynamic GMM estimation is robust and

Table 1. Summary statistics

Variable	Obs	Mean	SD	Min	Max	Skewness	Kurtosis	VIF
ESG rating	310	20.12	14.41	0	52.26	0.15	2.09	
Environmental rating	310	10.45	12.00	0	47.97	1.03	3.13	
Social rating	310	19.52	19.15	0	64.06	0.50	1.93	
Governance rating	310	42.19	22.38	0	73.21	-1.22	2.83	
Net income margin	310	18.27	19.49	-149.36	125.89	0.51	2.23	1.69
Net debt to EBIT	310	1.88	17.09	-43.18	288.11	0.30	3.11	1.53
Long-term debt to equity	310	54.70	89.21	0	746.05	1.40	4.57	1.51
Sustainable growth rate	310	4.12	21.56	-317.74	70.23	0.30	3.09	1.29

Table 2. Correlation matrix

Variable	1	2	3	4	5	6	7	8
ESG rating	1							
Environmental rating	0.8990***	1						
Social rating	0.8943***	0.7943***	1					
Governance rating	0.8242***	0.5663***	0.6362***	1				
Net income margin	-0.0293	-0.0354	0.0442	-0.0291	1			
Net debt to EBIT	0.1562***	0.1695***	0.1303**	0.1133**	-0.0976*	1		
Long-term debt to equity	0.1494***	0.1379**	0.1328**	0.1076*	-0.0866	0.0728	1	
Sustainable growth rate	-0.0637	-0.0695	-0.0426	-0.0532	0.0608	-0.0048	-0.0164	1

Table 3. Regression results using two-step system dynamic GMM estimator

Variables	ESG	Environmental	Social	Governance
L.ESG	0.699*** (0.0510)			
L.Environmental rating		0.919*** (0.0705)		
L.Social rating			0.739*** (0.0828)	
L.Governance rating				0.105* (0.0673)
Net income margin	0.125** (0.0538)	0.131*** (0.0457)	0.115*** (0.0428)	0.221* (0.128)
Net debt to EBIT	0.439** (0.219)	-0.355*** (0.0734)	0.463* (0.247)	2.018** (0.830)
Long-term debt to equity	-0.0608*** (0.0115)	0.0181*** (0.00636)	-0.0266** (0.0119)	-0.0618*** (0.0206)
Sustainable growth rate	-0.0346** (0.0143)	0.0528 (0.0599)	0.0724 (0.107)	-0.309** (0.129)
Year dummy	Yes	Yes	Yes	Yes
Constant	4.548** (1.832)	-0.299 (1.219)	1.196 (1.743)	28.26*** (2.957)
Observations	243	243	243	243
Number of firms	29	29	29	29
Sargan test p-value	0.578	0.621	0.542	0.510
AR(1) p-value	0.000	0.007	0.000	0.010
AR(2) p-value	0.236	0.352	0.267	0.219

Estimations are performed using system dynamic GMM estimators. Net income margin is modelled as an endogenous variable. The dependent variables are ESG rating, environmental rating, social rating, and governance rating. The Sargan test tests for over-identifying restrictions in GMM estimation. The instrumental variable is net interest margin AB tests AR(1) and AR(2) refer to the Arellano-Bond tests that average autocovariance in residuals of order 1 resp. of order 2 is 0 (H0: no autocorrelation). ***, **, and * indicate significance at the 1, 5 and 10% levels, respectively.

standard errors are unbiased. Subsequently, interpretation can be made based on these outcomes. In addition, the extremely significant coefficient of the lagged dependent variables emphasises the dynamic nature of the model specification and its significance across all models.

4.3. Estimations and outcomes

Using the two-step system GMM estimator, the results envisage that the effect of net income margin on ESG rating is positive and significant at the 1% level. This significant and positive association means that companies with high ESG disclosure score tend to have a higher profitability ratio. These results are in line with Buallay (2019) who examines the association between the level of ESG and performance of banks listed on European Union countries' stock exchanges, and finds that ESG results have a positive impact on business performance. However, these results do not agree with Atan et al. (2018) who find there is no significant relationship made between a company's ESG factors and firm ROE. In terms of the influence of credit ratio measurement on ESG disclosure score, results confirm that the effect of net debt to EBIT on ESG disclosure score is negative but insignificant.

Suggested here is that the higher the credit ratio, the lower ESG disclosure score. In other words, those companies better able to manage debt have lower level of ESG disclosure. Similarly, results demonstrate that the relationship between leverage ratio (long-term debt-to-equity ratio) and ESG disclosure score is negative and insignificant, indicating that higher long-term debt to equity does not necessarily improve the degree of ESG disclosure score. The results also indicate that sustainable growth rate is negatively associated with ESG disclosure score at the 5% level of significance. This means that higher levels of sustainable growth rate may reduce the degree of ESG disclosure. Stewart (2015) also explains that companies and investors can obtain information on growth and productivity opportunities associated with strong ESG performance.

Turning to the environmental score, the results infer that the effect of net income margin on environmental score is positive and significant at the 1% level, the effect of credit ratio (net-debt to EBIT) on environmental score is a negative and significant at the 1% level. This outcome is not in line with the findings of Said et al. (2014) who noted that fund managers and bank managers do not take environmental information into account when making investment and lending decisions. For the listed companies in Malaysia, greater leverage may contribute to improving environmental ratings while it also brings about a higher operational risk due to the abundant cash outflow made possible by interest payments. Table 3 demonstrates the insignificant relationship between sustainable growth rate and environmental rating. It appears to be the case that those sustainably growing companies may not face problems of poorer environmental score companies.

For social ratings, the results of those listed companies demonstrating good profitability can help increase the social score because the relationship of net income margin and social rating is positive at the 1% level of significance. There is also a positive and significant link between net debt to EBIT and social score, implying that if the companies are better able to pay their debts, they will earn a higher social score. For leverage ratio measurement and social score, the outcomes of two-step system GMM suggest a significantly negative relationship of long-term debt to equity and social score, that is, the higher level of long-term debt to equity may weaken the social score. In terms of sustainable growth rate and social score, the effect of the former on the latter is positive but insignificant. It indicates that the sustainably growing companies may find it difficult to achieve a higher social rating.

Regarding the governance score, as shown in Table 3, net income margin is positively associated with governance score at the 10% level of significance, strongly suggesting that the listed companies that make good profits may have a higher governance rating. Meanwhile, net debt to EBIT has a significant and positive impact on governance score. This means that if the listed companies in Malaysia use more leverage, they may obtain a higher governance score. In return, the results have proved there is a negative link between long-term debt to equity and governance

score at the 1% level of significance, suggesting that companies with lower leverage can have a superior governance score. Additionally, the results reveal there is a negative link between governance score and a sustainable growth rate, implying that companies with greater opportunity to expand may have a lower governance score.

In summary, the profitability ratio (net income margin) significantly and positively affects the scores for ESG disclosure, environmental disclosure, social disclosure and governance disclosure. Malaysian companies with good profit-earning ability are more likely to have higher scores for these four types of disclosure. The results of a two-step system dynamic GMM cannot prove the significant relationship of net debt to EBIT and ESG score. Nevertheless, higher level of net debt to EBIT, namely weak leverage management, can help decrease the environmental rating at the 1% level of significance, and greatly improve the social and governance rating. The effect of long-term debt to equity on the environmental score is significant and positive, while it has a negative impact on social disclosure score and governance disclosure score. This means that higher leverage will help to improve the environmental score but curtail the social and governance disclosure score.

A rising sustainable growth rate reduces the ESG and governance disclosure scores, which means that sustainably growing companies may not have a higher governance disclosure rating. Moreover, it may be due to the company being likely to spend much of its revenues on research and development and may lack enough money to pay dividends and/or debts. It is noted that higher sustainable growth rate is linked with lower dividend payment or higher retention ratio, which is the outcome of the decision of company governance. In other words, sustainably growing companies may have the disadvantage of weak governance mechanisms in place. Meanwhile the effect of sustainable growth rate on environmental and social disclosures is insignificant, which suggests that the sustainable growth rate does not have a meaningful connection with environmental disclosure and social disclosure scores.

5. Conclusions

This paper examines the factors that influence ESG rating for 43 public listed companies on the F4GBM Index for the period 2007–2016. To analyse the data, this paper uses both static (OLS, RE, FE, GLS, PCSE, and 2SLS) and dynamic GMM estimation techniques. This study considers the dependent variable from ESG ratings, that is, environmental, social and governance scoring and the independent variables from financial performance including: Profitability ratio for Net Income Margin; Credit ratio for Net Debt/ -EBIT; Leverage ratio for Long Term Debt/Equity; and DuPont analysis ratio for Sustainable Growth rate. Moreover, a profitability ratio is a measure of profitability and it acts as a measurement for how well a company is performing. Credit ratio functions in terms of percentage on how the company income is affected by a company's other obligations. This would help to justify whether the company is good in managing credit risk. Alternatively, the leverage ratio would help to indicate the company's financial risk. Meanwhile the DuPont analysis ratio helps to justify whether a company can increase its returns for both foreign and domestic investors.

This research reveals new empirical knowledge about financial performance and how it helps to contribute to the knowledge by improving our understanding of the relationship between financial performance and ESG rating for public listed companies on the F4GBM Index. Especially, investors and corporations will obtain better insights from these findings as they reveal that net income margin (sustainable growth rate) has a positive (negative) and significant impact on ESG rating. Meanwhile the effect of net debt to EBIT and long-term debt to equity on ESG rating is insignificant. More specifically, for environmental rating, long-term debt to equity and net income margin (net debt to EBIT) has a positive (negative) and significant impact on environmental rating. This means that firms with higher leverage, better able to make a profit and manage leverage have a higher environmental rating. Regarding the social pillar, the results reveal that firms with greater profitability and lower leverage have a lower social rating. Net debt to EBIT and sustainable growth rate have an insignificant relationship with the social disclosure score.

Finally, for the governance pillar, the net income margin and net debt to EBIT exert a positive significant impact on governance disclosure score, while long-term debt to equity and sustainable growth rate are negatively associated with governance rating. These indicate that firms enjoying higher profitability and lower leverage management achieve a higher governance rating, while firms with higher leverage and more growth opportunities suffer from a lower governance rating. Moreover, this empirical evidence will assist the capital market authority and policymakers promote responsible investment in Malaysian public companies in line with the UN-PRI policy. To realise this, firstly, companies should be compelled to report their ESG initiatives, and secondly, accountants in Malaysia should be more conversant with the mechanism of ESG reporting further when preparing annual reports.

This study relies mainly on a quantitative analysis as the research approach. Future research might employ face-to-face interviews with key personnel working at selected public listed companies on the F4GBM Index, to understand better the impacts of ESG ratings on their financial performance. The empirical focus in this paper considered 10 years (i.e. 2007 to 2016). In future research, a longer timeframe should be employed to obtain more accurate findings via employing more independent variables. Especially, the market performance data such as price and volume of the public listed companies, and share details on the F4GBM Index besides sole financial performance must be considered in future analyses. Finally, there is not enough empirical literature available on the direct impact of financial performance on overall ESG as well as individual rating. Therefore, future research should validate and provide better justification of the findings of this study based on different data or how variables are set up.

Acknowledgements

We acknowledge the support of Universiti Utara Malaysia, Accounting Research Institute (HICoE), Universiti Teknologi MARA Malaysia, Bursa Malaysia Bhd, University of Hafr Al-Batin, Taiz University, Prince of Songkla University and UUM Special Grant (APIQ S/O code # 14326) to conduct the research.

Funding

The authors have no funding to report.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

Availability of data and material

The data are collected from publicly available sources.

Citation information

Cite this article as: Financial factors influencing environmental, social and governance ratings of public listed companies in Bursa Malaysia, Md. Mahmudul Alam, Yasmin Mohamad Tahir, Abdulazeez Y. H. Saif-Alyousfi, Wanamina Bostan Ali, Ruhaini Muda & Sabariah Nordin, *Cogent Business & Management* (2022), 9: 2118207.

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Appendices

Table A1. List of F4GBM indexed companies used for this study

No.	Stock Codes	Stock Names	Bloomberg Indicators	Company Names	Industry Types
1	6399	ASTRO	ASTRO MK Equity	Astro Malaysia Holdings Berhad	Trading/Services
2	6888	AXIATA	AXIATA MK Equity	Axiata Group Berhad	Trading/Services
3	5210	ARMADA	BAB MK Equity	Bumi Armada Berhad	Trading/Services
4	1818	BURSA	BURSA MK Equity	Bursa Malaysia Bhd	Finance
5	1023	CIMB	CIMB MK Equity	CIMB Group Holdings Berhad	Finance
6	6947	DIGI	DIGI MK Equity	DIGI.Com Bhd	Infrastructure
7	5168	HARTA	HART MK Equity	Hartalega Holdings Bhd	Industrial Products
8	4324	HENGYUAN	HYR MK Equity	HengYuan Refining Company Berhad	Industrial Products
9	5235SS	KLCC	KLCCSS MK Equity	KLCC Prop&Reits-Stapled Sec	REITs
10	5878	KPJ	KPJ MK Equity	KPJ Healthcare Bhd	Trading/Services
11	2445	KLK	KLK MK Equity	Kuala Lumpur Kepong Bhd	Plantations
12	1155	MAYBANK	MAY MK Equity	Malayan Banking Bhd	Finance
13	5014	AIRPORT	MAHB MK Equity	Malaysia Airports Holdings Bhd	Trading/Services
14	5186	MHB	MMHE MK Equity	Malaysia Marine And Heavy Eng Holdings Bhd	Trading/Services
15	1651	MRCB	MRCBOA MK Equity	Malaysian Resources Corp Bhd	Properties
16	6012	MAXIS	MAXIS MK Equity	Maxis Berhad	Trading/Services
17	3816	MISC	MISC MK Equity	MISC Bhd	Trading/Services
18	5183	PCEM	PCEM MK Equity	Petronas Chemicals Group Bhd	Industrial Products
19	5681	PETDAG	PETD MK Equity	Petronas Dagangan Bhd	Trading/Services
20	6033	PETGAS	PTG MK Equity	Petronas Gas Bhd	Industrial Products
21	5204	PRESBHD	PRES MK Equity	Prestariang Berhad	Trading/Services
22	1295	PBBANK	PBK MK Equity	Public Bank Bhd	Finance
23	1066	RHBBANK	RHBBANK MK Equity	RHB Bank Berhad	Finance

(Continued)

Table A1. (Continued)

No.	Stock Codes	Stock Names	Bloomberg Indicators	Company Names	Industry Types
24	4197	SIME	SIME MK Equity	Sime Darby Bhd	Trading/Services
25	5211	SUNWAY	SWB MK Equity	Sunway Berhad	Trading/Services
26	4863	TM	T MK Equity	Telekom Malaysia Bhd	Trading/Services
27	5347	TENAGA	TNB MK Equity	Tenaga Nasional Bhd	Trading/Services
28	7113	TOPGLOV	TOPG MK Equity	Top Glove Corporation Bhd	Industrial Products
29	5148	UEMS	UEMS MK Equity	UEM Sunrise Berhad	Properties
30	5246	WPRTS	WPRTS MK Equity	Westports Holdings Berhad	Trading/Services
31	4677	YTL	YTL MK Equity	YTL Corporation Bhd	Trading/Services

Table A2. Regression results on ESG Disclosure score using statics model: Overall ESG

	OLS	RE	FE	GLS	PCSE	2SLS
Net income margin	0.0465**	0.594**	0.526***	0.0852**	0.0471**	0.0451*
	(0.0222)	(0.287)	(0.132)	(0.0312)	(0.0221)	(0.0253)
Net debt to EBIT	1.278***	0.816**	0.664*	1.278***	0.278***	0.962**
	(0.341)	(0.345)	(0.376)	(0.334)	(0.156)	(0.393)
Long-term debt to equity	-0.0352*	-0.0531**	-0.0558**	-0.0452**	-0.0399**	-0.0625**
	(0.0199)	(0.0206)	(0.0227)	(0.0195)	(0.0107)	(0.0298)
Sustainable growth rate	-0.400***	-0.256*	-0.266*	-0.400***	-0.478***	-0.489***
	(0.141)	(0.136)	(0.144)	(0.138)	(0.144)	(0.148)
Constant	11.19***	10.87***	9.937***	11.19***	4.15***	12.77***
	(2.124)	(2.346)	(2.311)	(2.081)	(2.010)	(2.575)
Observations	270	270	270	270	270	243
R-squared	0.21	0.22	0.17		0.22	0.19
Number of firms	29	29	29	29	29	29

***, ** and * indicate significance at the 1, 5 and 10% levels, respectively.

Table A3. Regression results of some statics model estimations for individual ESG dimensions

Variables	FE model			PCSE model		
	ENV.	SOC	GOV.	ENV.	SOC	GOV.
Net income margin	0.0861*** (0.0213)	0.0279** (0.0129)	0.451*** (0.115)	0.165*** (0.0419)	0.111** (0.0469)	0.648** (0.220)
Net debt to EBIT	-1.030*** (0.288)	1.605*** (0.437)	1.311** (0.547)	-0.514** (0.161)	0.294 (0.238)	1.169*** (0.385)
Long-term debt to equity	0.0392**	-0.0326**	-0.0689**	0.0772**	-0.0423**	-0.0406**
Sustainable growth rate	(0.0168)	(0.0155)	(0.0319)	(0.0362)	(0.0148)	(0.0192)
	-0.0351	-0.0646	-0.507**	0.0749	0.108	0.404**
Constant	(0.119)	(0.181)	(0.227)	(0.0534)	(0.770)	(0.162)
	4.699*** (1.793)	10.03*** (2.727)	27.03*** (3.410)	4.882*** (1.478)	0.894 (2.324)	41.42*** (2.626)
Observations	270	270	270	214	214	214
R-squared	0.21	0.20	0.16	0.22	0.22	0.23
Number of firms	29	29	29	29	29	29

***, ** and * indicate significance at the 1, 5 and 10% levels, respectively.



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