



## The Impact of Corporate ESG Performance Disclosure Across Australian Industries

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### Abstract

The aims of this study are threefold. Firstly, it examines the long-term improvement in the corporate environmental, social and governance (ESG) performance. Secondly, it highlights the favourable financial implications of the higher corporate ESG performance disclosure. The third aim is to provide insight into the industrial impact on the relationship between corporate ESG performance disclosure and financial performance. This study uses a sample of all Australian publicly listed companies between 2007 and 2017 and conducts a panel regression analysis. It also performs several robustness checks to address the methodological, sample selection and endogeneity issues concerning corporate ESG performance disclosure. The findings show a tangible improvement in Australian companies' corporate ESG performance disclosure, favourably associated with financial performance. However, while the corporate ESG performance disclosure appears to be linked to higher financial performance, this is not the case across different industries. The industrial impact on the association between corporate ESG performance disclosure and financial performance has several implications. Firstly, the stakeholders' pressure on companies to address ESG-related concerns is substantial, enhancing corporate financial performance. Secondly, the findings indicate that corporate ESG performance disclosure does not benefit corporations in different industry sectors equally. It, therefore, requires more focus and interpretation by corporate decision-makers. Thirdly, by promoting ESG-related disclosure, managers should consider diverse stakeholders in different industries that weigh business objectives differently. The results of this study provide insights for corporate managers regarding prioritising resource allocations to ESG-related activities that could impact financial performance differently in different industry sectors. The results of this study contribute to the growing literature on the financial implications of corporate ESG performance disclosures, notably different industrial characteristics. <sup>4</sup>

**JEL classification:** G30, G32, L25, M41, Q51

**Keywords:** Environmental, Social, Governance, Corporate performance, Industrial sectors

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## Introduction

Over the last decade, the increasing concerns about a company's sustainable behaviour have led to substantial corporate disclosure on environmental, social and governance (ESG) performance. The evidence shows that the capital markets are also interested in corporate ESG performance disclosure (Li *et al.*, 2018). This causes significant academic studies examining the economic implications of these disclosures.

Based on the theoretical argument of Friedman (2007), due to the costs associated with ESG-related activities, corporate financial performance would have a negative impact. On the other hand, based on the stakeholder theory (Freeman, 1984), the relationship between corporate ESG performance disclosure and financial performance must be positive and beneficial to companies due to the better relationship with stakeholders, increased opportunities in the markets and reduced transaction costs (Fombrun *et al.*, 2000, Jones, 1995). The extensive empirical studies on the association yield unclear results. It is unclear whether there is a positive, negative or no association between corporate ESG performance disclosure and financial performance (Brooks and Oikonomou, 2018). While some studies documented a positive association (Margolis *et al.*, 2009, Harjoto and Jo, 2015, Kumar and Firoz, 2022, Gholami *et al.*, 2022c), others reveal a non or negative relationship (Hassel *et al.*, 2005, Clacher and Hagedorff, 2012). This has led to a recent call for further studies to consider confounding elements that can potentially present causality and yield inconclusive findings (Aouadi and Marsat, 2018). This study does not aim to declare a winner for this longstanding debate. Instead, this study argues that positive or negative associations could be correct due to the industrial characteristics. The stakeholders in different industries can impact the relationship. Therefore, there could be positive, negative or no associations. This study argues that the relationship requires more focus by corporate managers. They can choose to capitalise on ESG performance to increase financial benefit for their companies after considering their industrial characteristics and stakeholder expectations (Barnett, 2007). Companies with lower stakeholder concerns on ESG related disclosure may not create positive economic benefits. The industrial characteristics in which the company is mainly involved can significantly influence ESG and financial performance (Barnett, 2007, Amato and Amato, 2012).

The primary motivation of this study is the contrasting findings of prior literature with limited industrial comparison analysis that leave this line of research unresolved, guiding new research questions (Aouadi and Marsat, 2018, Brooks and Oikonomou, 2018). The contingencies, corporate strategies and industrial components that could alter the relationship are still an area of potential investigation (Brooks and Oikonomou, 2018). Therefore, this study proposes the following research questions.

*Research question 1 (RQ1):* Do Australian companies demonstrate improvement in ESG performance and consequent improved financial performance over time?

*Research question 2 (RQ2):* Do the different groups of stakeholders with diverse expectations across industries affect the relationship between ESG and financial performance?

This study investigates the above research questions in the context of the Australian corporate ESG performance disclosure from 2007 to 2017 for several reasons in the preceding paragraphs.

Since the start of the great financial crisis (GFC) (between 2008-2009), where the irresponsible behaviour of the financial sector caused the financial crisis (Eberle *et al.*, 2013), the notion of corporate ESG performance and its impact on financial performance has increased globally (Aguinis and Glavas, 2012). Due to the strong fundamentals of the Australian

economy and financial regulations,<sup>5</sup> Australia has shown a resilient performance compared to other developed countries. This has coincided with the introduction of the ASX Corporate Governance Principles and Recommendations in 2003<sup>6</sup> and further adjustments in the sustainability and risk guideline in 2007<sup>7</sup> that improved monitoring of the corporate governance. The period of this study (2007-2017) is important as the financial turmoil caused by the Global Financial Crisis (GFC) (2007-2008) has led to a significant organisational focus on corporate transparency and governance. Moreover, several corporate scandals after the GFC indicate the importance of monitoring corporate ESG performance as responsible actions toward diverse stakeholders. Hence, during the period of this study, there is a substantial organisational focus on corporate ESG-related activities globally. Thus, this study investigates the corporate ESG performance across the panel data of all Australian publicly listed companies between 2007-2017.

This study recommends several contributions. First, few studies investigate the improvement in corporate ESG performance over time. This study explores time-based changes in corporate ESG improvement. Second, this study extends existing studies on corporate ESG performance improvement and its economic implications across industries holistically. Third, previous studies primarily concentrate on corporate ESG disclosure and financial performance with limited attention to the industry variances. Therefore, the important question of which industry sector achieves positive, insignificant, or negative financial impacts on ESG performance remains unexplored. Recent literature states that further research with a more robust analysis considering different industries is required (Omar and Zallom, 2016, Garcia *et al.*, 2017, Kumar and Firoz, 2022).

The remainder of this paper is structured as follows. The second section presents the theoretical frameworks. The third section discusses the study design and the main estimation models. The fourth section provides the empirical results, sensitivity and robustness check analysis, and section 5 presents the conclusions.

### **Theoretical Framework, Literature Review and Hypotheses Development**

This study uses institutional theory to explore the first research question. This theory focuses on the impact of the social or cultural environment on organisations (DiMaggio and Powell, 1983). There are presumptions, beliefs and expectations in the society that determine the organisational behaviour of corporations (Scott *et al.*, 1994). These organisational behaviours are not adopted based on efficiency or best practice; instead, they comply with the institutional expectations. Corporate legitimacy is awarded to organisations as a reward by the institutional environment (Scott *et al.*, 1994). As Scott (2001) states, there are three types of institutions within the institutional environment: regulative, normative, and cognitive. The official rules and incentives established by the state are regulative impacts. The normative impacts are the informal rules which involve values and moral commitments. The rules related to the cognitive distinctions and taken-for-granted concepts are cognitive impacts. These three institutional pillars are interrelated, as Scott (2001) states. For instance, the introduction of a carbon taxes acts is likely to generate a common understanding among businesses on climate change (cognitive), same as a set of values associated with sustainable development (normative).

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<sup>5</sup> <https://www.finsia.com>.

<sup>6</sup> This was introduced in 2001 and gradually updated to the recent version (Corporate Governance Principles and Recommendations, 2019).

<sup>7</sup> Principle 7.4 of the Council's Corporate Governance Principles and Recommendations recommends the disclosure of material exposure to economic, environmental, and social sustainability risks and how to manage those risks.

Australian regulation enforcement shapes the organisational environment in which corporations are expected to respond ESG related concerns. The introduction of the ASX Corporate Governance Principles and Recommendations in 2003 is one of the most official and institutional mechanisms. Referring to the corporate scandals during the last two decades, Australian regulators seem to take robust actions to ensure a healthy corporate governance structure for their publicly listed companies. Although compliance is not compulsory, the ASX Principles are structured to improve corporations' governance, accountability, and transparency. However, governance is only one aspect of regulative institutional focus, and other aspects can be found. For instance, section 299 (1)(f) of the Australian corporation Act of 2001 requires a corporate disclosure concerning any particular and significant environmental regulation. Other examples are the United Nations Global Compact (UNGI), the Global Reporting Initiative (GRI), and the Carbon Disclosure Project (CDP), which Australian companies increasingly practice. Many of these companies are publicly listed companies investigated in this study.

Moreover, there seems to be a combination of normative and cognitive institutions related to corporate ESG performance in Australia. A study by Black *et al.* (2011) on corporate ESG performance in Australia shows that Australian companies have structured robust abilities in ethical behaviour that, in return, serve as a basis for other abilities essential to address social concerns. Ethical behaviour is considered a normative institution and includes informal rules related to values and moral commitments (Scott, 2001). Australian companies have the ethical capabilities to help address social behaviour, which is necessary for success and licence to operate (Klettner *et al.*, 2010). Many corporate governance structures and principles in Australia gain shared comprehension and become homogenised in businesses (Klettner, 2016).

Given the above discussion of regulative, normative and cognitive institutional impacts, improvement in corporate ESG performance over time is likely as they seek to conform to institutional expectations. Therefore, the first hypothesis of this study is:

*H1* Australian companies have demonstrated an improvement in their ESG performance over time

As argued above, higher corporate ESG performance disclosure can confer higher competitive advantages for corporations and better reputation (Hart, 1995, Scott, 2001). With increasing social and regulation pressure, the equity market participants are becoming more interested in corporate ESG performance disclosure (Cormier and Magnan, 2007). It is reasonable to expect that companies with higher ESG performance disclosure are likely to view potential investors in the capital markets as more favourable.

The theoretical debates among scholars on the socio-political and legitimacy theory argue that corporate ESG performance disclosures are rooted in public pressure, thus aiming to maintain the license to operate by diverse stakeholders (Patten, 1991). However, consistent with the resource-based view (RVB) theory (Hart, 1995, Russo and Fouts, 1997), companies with higher corporate ESG performance disclosure have the incentive and resources to financially benefit from these disclosures and achieve higher market value in the equity market. Consistent with the prediction of the RBV (Hart, 1995, Russo and Fouts, 1997), this study argues that companies with higher corporate ESG performance disclosure benefit from higher market value.

ESG performance and its implications on corporate financial performance have been discussed extensively in academic literature throughout the last four decades (Margolis *et al.*, 2009, Friede *et al.*, 2015). Previous studies on the association achieved counterintuitive results. While Clacher and Hagendorff (2012) study found a negative association, a review by Margolis and Walsh (2003) revealed mixed results. In contrast, the positive association between ESG engagement and financial performance is consistent with several studies (Margolis *et al.*, 2009, Friede *et al.*, 2015, Harjoto and Jo, 2015, Kumar and Firoz, 2022). The second component of

RQ1 for this study that addresses the relationship between corporate ESG and financial performance over time is motivated by the inconsistent results of the previous studies leaving this line of investigation unresolved.

Further to the above discussion, the second hypothesis of this study is:

*H2* There is a positive association between corporate ESG and financial performance over time

According to the stakeholder theory, establishing and maintaining relationships with diverse stakeholders is highly important for corporate success (Clarkson, 1995). Stakeholder theory also links the industry sectors as the influential variable to ESG disclosure (Melville, 1990, Waddock and Graves, 1997). Corporate ESG performance disclosure is a strategic tool to recognise stakeholders' expectations, understand ESG-related risks and opportunities, and respond publicly. Managing the satisfaction of a diverse group of stakeholders contributes to financial performance (Donaldson and Preston, 1995, Jones, 1995). Corporate managers must maintain and balance the ESG-related standards and strategies with the importance of being responsive to the diverse stakeholders and their expectations (Filatotchev *et al.*, 2019). Companies are encouraged to disclose ESG engagements to stakeholders to enhance their reputation and maintain accountability (Said *et al.*, 2009). In return, this generates value for the company (Forcadell and Aracil, 2017). The diversity of stakeholder needs and expectations is alluded to in RQ2. Due to the differences in stakeholder composition and their expectations, this study argues that the impacts of corporate ESG performance disclosure on the company's financial performance are likely to be different across different industry sectors.

Scholars have investigated the impacts of industrial characteristics on the relationship between corporate ESG engagement and financial performance from different perspectives. Hoepner and Yu (2010) witnessed a positive association between corporate social performance and financial performance only for limited industry sectors, including consumer discretionary and health care. Hoepner and Yu (2010) argue that the evaluation must be considered in the industry's context. Baron *et al.* (2011) evidence a positive association between corporate social performance and financial performance in the consumer industry sector and a negative association in the industrial sector. Incorporating the moderating impact of industrial differentiation into the relationship, Hull and Rothenberg (2008) recommend a complex but financially beneficial association. Their argument corroborates Barney (1991) that sustainable competitive benefits depend on several intertwined competencies, including differentiation through better corporate ESG performance disclosure.

The literature on corporate ESG and financial performance and further comparison across diverse industries is limited. This study investigates corporate ESG performance and financial performance across industries. This study argues that the mixed and counterintuitive findings of the previous studies on the relationship might be the outcome of different stakeholder groups and expectations among companies that operate in diverse industry sectors with particular conditions and strategies.

Therefore, the third hypothesis of this study is:

*H3* There are heterogeneous differences across industries in the association between ESG and the company's financial performance

## Research Design

This study uses a sample of 30,730 company-year observations between 2007 and 2017 from all Australian publicly listed companies and examines the improvement in ESG performance and, further, the relationship between ESG and a company's financial performance across ten industry categories provided by the Bloomberg Industry Classification System (BICS) to

evaluate the industrial impact on the relationship between corporate ESG and financial performance.

### ***Measures of ESG***

ESG has emerged as the key indicator of strategic management competency and non-financial performance (Boerner, 2010) and is linked to socially responsible investment (Richardson, 2009). Strategic ESG competency involves promoting innovations that eventually benefit the corporation and society (Becker-Olsen *et al.*, 2006). ESG also improves economic and social reputation by generating "shared value" in the communities (Porter and Kramer, 2011). ESG includes a broad list of environmental (e.g., energy, carbon emission, water usage, climate change), social (e.g., human rights, gender equality, product safety, health and safety, fair trade) and governance (e.g., corruption, bribery, reporting and disclosure, board independence, shareholder protection) issues.

### ***Sample and data***

This study retrieved the data from the Bloomberg database utilising the financial, environmental, social and governance functions of all companies listed on the Australian stock exchange. This study further standardises the ESG disclosure scores in the estimation model to have a notionally standard scale. The potential impact of outliers in the dataset is considered and follows the previous literature in trimming the extreme data and replacing them with the mean of that variable (Guenster *et al.*, 2011). The disclosure score calculated by Bloomberg is based on 120 indicators, including three environmental, social and governance engagement elements. The ESG score collected by Bloomberg ranges from a minimum of 0.1 to a maximum of 100.

Following prior studies, this study uses Tobin's Q, initially recommended by Tobin (1969) as a primary proxy for a company's valuation (Jo and Harjoto, 2011, Luo and Bhattacharya, 2018, Servaes and Tamayo, 2013).

Consistent with prior literature, this study includes other companies' characteristics to account for their confounding effects that are assumed to impact the company's financial performance, such as the company's size or the ratio of property, plant, and equipment to total revenue (Aggarwal *et al.*, 2010). A detail of variables is provided in Appendix A.

After retrieving all the variables from the Bloomberg database and excluding the missing data in the ESG variable and Tobin's Q, this study obtains a final sample of 3,425 company year observations for Australian publicly listed companies from 2007 to 2017. Table I presents the number of observations used in the regression analysis.

**Table I**

Sample size

Items	No. of observations	Sample percentage
Initial number of observations	3624	100
Missing observations	199	5.4
Number of observations used in regression	3,425	94.5

1. Note: This table presents the sample selection process for all listed companies.

Table II represents the sample composition of the companies for the 2007-2017 period. Panel A of Table II represents the sample composition by year, and Panel B represents the sample composition by industry specification. According to Table II, the top five representative industries are basic materials (754 companies, 22 per cent), consumer non-cyclical (595 companies, 17 per cent), financial (575 companies, 17 per cent), energy (386 companies, 11 per cent), and consumer cyclical (377 companies, 11 per cent). Three industry sectors, comprising basic material, financial and consumer non-cyclical, represent more than 50% of the total sample's composition by industry sector.

**Table II**

Sample composition

Panel A: Sample composition by year		
Year	N	
2007	244	
2008	267	
2009	272	
2010	283	
2011	295	
2012	304	
2013	314	
2014	343	
2015	364	
2016	370	
2017	369	
Total	3,425	

  

Panel B: Sample composition by industry		
Year	Observation	%
Basic materials	754	22%
Communications	201	6%
Consumer cyclical	377	11%
Consumer non-cyclical	595	17%
Diversified	18	1%
Energy	386	11%
Financial	575	17%
Industrial	354	10%
Technology	108	3%
Utilities	57	2%
Total	3,425	100%

2. Note: This table represents the sample company's composition by year and industry specification. The industry classification is based on Bloomberg Industry Classification Systems (BICS).

3.

### *Estimation model*

### **Empirical results**

#### *Descriptive statistics*

Table III shows the descriptive statistics for all companies and industries' independent and dependent variables. This study winsorises the variables at 1% and 99% levels. Based on the data provided in the descriptive statistic table, the mean values of Tobin's Q are 1.9355, respectively. The average ESG score is 2.91, with the 25<sup>th</sup> of 2.53 and 75<sup>th</sup> of 3.18, which shows sufficient variation in the ESG disclosure score for testing the hypotheses of this study.

**Table III**

Descriptive statistics

	Obs	Mean	St.Dev	p25	Median	p75
Tobin Q	3,425	1.9355	1.8458	0.9999	1.3356	2.1399
EVA	3,425	4.1068	1.8434	2.9943	3.9967	5.2099
ESG	3,425	2.9193	0.4711	2.5313	2.8639	3.1839
LNTA	3,425	6.4935	2.147	5.0982	6.2964	7.7873
PPE	3,425	0.6598	1.0661	0.0419	0.2241	0.8047
Capex	3,425	0.224	0.6353	0.0101	0.0396	0.1545
Growth	3,425	0.1074	0.6438	-0.005	0.0443	0.1779
Cash	3,425	0.124	0.1424	0.0249	0.0658	0.1686
Leverage	3,425	0.4286	0.2613	0.2553	0.4237	0.5757

4. Note: This table shows the descriptive statistics for the variables included in the estimation model for all the companies in all industries.

### ***Main result***

The following analyses have been conducted to test all three hypotheses of this study.

#### *ESG performance analyses*

Table IV represents the detailed statistical comparison of the corporate ESG performance for all industries from 2007 to 2017. This study compares the average ESG performance score and benchmarks the performance in 2017 against 2007. To examine whether Australian companies have demonstrated improvement in ESG performance over time, this study performs a t-test analysis by comparing the years 2017 and 2007. The mean difference is significant for the ESG performance score ( $t = 8.213$ ,  $p = 0.000$ ). The ESG performance trend is upward and shows improvement over time. Therefore, the first hypothesis of this study is supported. This is consistent with the results of previous studies by Galbreath (2013) and Klettner *et al.* (2010), which show that Australian companies demonstrate significant improvement in ESG performance over time.



**Table IV**  
ESG Longitudinal performance

Statistics	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Rate of change (%)
Minimum	2.0297	2.1327	2.0825	2.1327	2.0297	2.2262	2.2262	2.1855	2.1806	2.2262	2.3116	+13.89
Maximum	3.9558	3.9113	4.1095	4.0758	4.0758	4.0578	4.1027	4.0465	4.082	4.078	4.0607	+2.65
Mean	2.6923	2.7184	2.7569	2.8123	2.8533	2.9127	2.9623	2.9951	3.0339	3.0571	3.117	+15.77
SD	0.4268	0.4399	0.478	0.4915	0.4871	0.4705	0.4697	0.445	0.4347	0.4232	0.4108	

5. Note: This table shows the longitudinal analysis of the ESG performance of all companies for the period 2007-2017. \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively.

**Table V**  
Panel regression analysis- industrial impact

Variables	All sectors	Basic materials	Communications	Consumer cyclical	Consumer non-cyclical	Diversified	Energy	Financial	Industrial	Technology	Utilities
Panel A: Financial performance as measured by Tobin Q											
ESG	0.0040*** (0.0008)	0.0068*** (0.0021)	0.0165*** (0.0044)	0.0342 (0.0570)	0.0038** (0.0021)	0.1425 (0.2014)	0.0048** (0.0024)	0.0103 (0.0307)	0.0096*** (0.0019)	0.0526 (0.1758)	-0.0030 (0.0018)
LNTA	-0.0476*** (0.0047)	-0.0656*** (0.0129)	-0.1159*** (0.0263)	-0.0531*** (0.0175)	-0.0184** (0.0140)	-0.1226*** (0.0166)	-0.0304* (0.0156)	-0.0142 (0.0091)	-0.0727*** (0.0155)	0.0024 (0.0354)	0.0095 (0.0179)
PPE	-0.0916*** (0.0097)	-0.0207* (0.0219)	-0.1698 (0.1916)	-0.3224*** (0.0927)	-0.2241*** (0.0420)	0.1314 (0.1047)	-0.0423** (0.0211)	-0.1123*** (0.0159)	-0.2170*** (0.0659)	-0.7881*** (0.2051)	-0.0654* (0.0327)
Capex	0.1001*** (0.0165)	0.0412* (0.0314)	0.0881 (0.2402)	0.5337** (0.2170)	0.2390*** (0.0658)	0.6675 (0.5667)	0.0334 (0.0335)	0.0344 (0.0458)	-0.0627 (0.0938)	0.8037*** (0.2490)	0.1523 (0.1266)
Growth	0.0423*** (0.0096)	0.0193 (0.0176)	0.0358 (0.0622)	0.0719 (0.0516)	0.0370 (0.0266)	0.0300 (0.0239)	0.0219 (0.0213)	0.0276 (0.0248)	0.0760*** (0.0239)	0.2699*** (0.1003)	0.2492*** (0.0635)
Cash	1.0352*** (0.0523)	1.0780*** (0.1146)	0.9267*** (0.2972)	0.4507** (0.1850)	1.2563*** (0.1186)	0.2896 (0.2681)	0.7604*** (0.1453)	1.1809*** (0.1382)	1.7289*** (0.1499)	0.9405*** (0.3292)	0.5474 (0.4305)
Leverage	0.1520*** (0.0273)	0.2928*** (0.0684)	0.0578 (0.1861)	-0.0666 (0.1003)	0.2991*** (0.0875)	0.6800 (0.4178)	0.2092*** (0.0487)	0.3536*** (0.0725)	0.2363*** (0.0705)	0.6456*** (0.2384)	0.3673* (0.1427)
cons	1.0368*** (0.0276)	0.9498*** (0.0634)	1.4311*** (0.1807)	1.2348*** (0.1271)	0.8390*** (0.0790)	0.9656*** (0.6238)	0.8190*** (0.0890)	1.1451*** (0.0832)	0.8644*** (0.0850)	1.2557*** (0.4619)	0.9679*** (0.1361)
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,425	754	201	377	595	18	386	575	354	108	57
R-squared	0.2480	0.2019	0.2613	0.1610	0.2735	0.8877	0.1921	0.4690	0.4634	0.5501	0.6007
Panel B: Financial performance as measured by EVA											
ESG	0.3633*** (0.0590)	0.3701* (0.2207)	1.2700*** (0.2792)	-0.0511 (0.1234)	0.3821** (0.1565)	-1.5790 (2.6076)	0.0188*** (0.0093)	0.3043 (0.0899)	0.2331*** (0.1559)	0.0440 (0.3703)	-0.2618 (0.3163)
LNTA	-0.7738***	-0.9432***	-0.7064***	-0.2001***	-0.8206***	-0.2874***	-0.8835***	-0.7798	-0.9102***	-0.1256	0.1210

Variables	All sectors	Basic materials	Communications	Consumer cyclical	Consumer non-cyclical	Diversified	Energy	Financial	Industrial	Technology	Utilities
PPE	(0.0159)	(0.0614)	(0.0685)	(0.0394)	(0.0435)	(0.2164)	(0.0829)	(0.0257)	(0.0533)	(0.0807)	(0.1097)
	-0.0565	0.0872	0.3939	-0.0974	-0.8389***	0.6029	0.6604***	-0.0451***	0.3507	-2.6035***	-0.0019
Capex	(0.0361)	(0.1205)	(0.7712)	(0.2038)	(0.1904)	(1.3594)	(0.1357)	(0.0472)	(0.2598)	(0.6758)	(0.1892)
	0.0350	0.1231	3.7470**	-0.7333	0.5981	6.0981	0.5225**	-0.0682	1.1554***	2.1909**	-0.6686
Growth	(0.0794)	(0.1815)	(1.8138)	(0.4796)	(0.3649)	(7.3409)	(0.2335)	(0.1308)	(0.9721)	(4.9531)	(0.7598)
	0.1320***	0.3478***	0.0122	0.2523	0.0903	0.2692	0.2352	0.0120	0.0237	0.8833***	0.4400*
Cash	(0.0424)	(0.0948)	(0.1751)	(0.1206)	(0.1029)	(0.3105)	(0.1564)	(0.0773)	(0.1572)	(0.4136)	(0.3327)
	0.6306***	1.5379**	1.3610**	1.2234	0.9712**	3.7212	0.0502	1.2574***	2.0234***	0.7870	4.2286
Leverage	(0.1932)	(0.6155)	(0.6794)	(0.4081)	(0.4036)	(3.4709)	(0.9398)	(0.3837)	(0.1572)	(0.7536)	(2.4568)
	0.7321***	0.4742***	-0.5584	-0.3130	-0.1015	6.6510	0.9744*	1.6971***	0.3118***	-0.3078	1.5327
cons	(0.1125)	(0.3576)	(0.4910)	(0.2372)	(0.2810)	(5.4144)	(0.4992)	(0.2092)	(0.2601)	(0.5856)	(0.8330)
	2.0954***	4.0614***	4.0251***	3.6357***	2.6021***	5.0350	1.8455***	1.5698***	2.8084***	2.9927***	1.9092***
Year Fe	(0.1403)	(0.4946)	(0.6187)	(0.2840)	(0.3244)	(8.0823)	(0.5430)	(0.2410)	(0.3639)	(0.9586)	(0.9855)
Observations	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	3,425	754	201	377	595	18	386	575	354	108	57
	0.7516	0.7664	0.8105	0.6097	0.7567	0.3235	0.7482	0.8545	0.7541	0.6450	0.8093

6. Note: This table provides results of the regression of a company's financial performance over ESG overall and across different industries. Financial performance is measured as Tobin's q (Panel A) and EVA (Panel B). The table reports that coefficient estimates and standard error are computed (in parentheses) using robust fix-effect regression analysis. \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively.

**Table VI**  
Endogeneity analysis

Variables	All sectors	Basic materials	Communications	Consumer cyclical	Consumer non-cyclical	Diversified	Energy	Financial	Industrial	Technology	Utilities
Panel A: Financial performance as measured by Tobin Q											
ESG_Adj	0.0789***	0.0069***	0.3575***	0.0134	0.1148***	0.1034	0.0706***	0.0102	0.2964***	0.1007	-0.1340
	(0.0195)	(0.0018)	(0.1106)	(0.0619)	(0.0543)	(0.2172)	(0.0217)	(0.0316)	(0.0502)	(0.1644)	(0.0538)
LNTA	-0.0442***	-0.0649***	-0.1071***	-0.0454***	-0.0234**	-0.1108***	-0.3537***	-0.0146	-0.0843***	-0.0109	0.0214
	(0.0048)	(0.0112)	(0.0263)	(0.0173)	(0.0145)	(0.0124)	(0.0996)	(0.0090)	(0.0157)	(0.0325)	(0.0177)
PPE	-0.0897***	-0.0187	-0.1236	-0.3152***	-0.2265***	0.1887	-0.0508***	-0.1111***	-0.2303***	-0.6944***	-0.0619**
	(0.0098)	(0.0226)	(0.1917)	(0.0914)	(0.0420)	(0.1503)	(0.0368)	(0.0157)	(0.0652)	(0.1931)	(0.0314)
Capex	0.0990***	0.0276	0.0300	0.4863**	0.2454***	0.5655	0.0838*	0.0122	-0.0711	0.8393***	0.1419
	(0.0165)	(0.0324)	(0.2402)	(0.2140)	(0.0658)	(0.4647)	(0.0588)	(0.0458)	(0.0926)	(0.2404)	(0.1213)
Growth	0.0421***	0.0078	0.0391	0.0373	0.0382	0.0238	0.0906**	0.0128	0.0791***	0.3998***	0.2476***
	(0.0096)	(0.0182)	(0.0628)	(0.0523)	(0.0266)	(0.0933)	(0.0428)	(0.0250)	(0.0237)	(0.0961)	(0.0609)
Cash	1.0519***	1.1289***	1.1114***	0.4325**	1.2439***	0.8999	0.7920***	1.1740***	1.7734***	1.0371***	0.5763
	(0.0522)	(0.1152)	(0.2893)	(0.1824)	(0.1187)	(1.0383)	(0.1456)	(0.1360)	(0.1476)	(0.3058)	(0.4112)

Variables	All sectors	Basic materials	Communications	Consumer cyclical	Consumer non-cyclical	Diversified	Energy	Financial	Industrial	Technology	Utilities
Leverage	0.1486*** (0.0273)	0.2440*** (0.0683)	0.1186 (0.1857)	-0.0661 (0.1034)	0.2944*** (0.0873)	0.3902 (0.3833)	0.1032*** (0.0824)	0.3551*** (0.0716)	0.2439*** (0.0696)	0.3742*** (0.2231)	0.4304*** (0.1397)
cons	0.8620*** (0.0460)	0.8539*** (0.0538)	0.5998*** (0.2503)	1.3285*** (0.1368)	0.6141*** (0.1157)	1.2378*** (0.6848)	1.6303*** (0.1958)	1.1542*** (0.0843)	0.2431*** (0.1162)	1.5730*** (0.4309)	1.2526*** (0.1592)
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,425	754	201	377	595	18	386	575	354	108	57
R-squared	0.2457	0.2131	0.2482	0.1611	0.2752	0.9967	0.3433	0.4691	0.4771	0.5488	0.6317
Panel B: Financial performance as measured by EVA											
ESG_Adj	0.0936*** (0.0151)	0.0311* (0.0323)	0.0537*** (0.0106)	0.2072 (0.1441)	0.0740* (0.0267)	-3.6092 (3.2105)	0.0211*** (0.0435)	0.1044 (0.0176)	0.0634*** (0.0766)	0.6238 (0.7226)	-0.0103 (0.3241)
LNTA	-0.3932*** (0.0664)	-1.2178 (0.1895)	-0.6963*** (0.0665)	-1.4975*** (0.5613)	-0.5174** (0.1322)	-0.0406 (1.7274)	-0.8683*** (0.2596)	-0.3340*** (0.0671)	-1.3493*** (0.4635)	-1.6777 (1.0108)	0.0024 (0.1125)
PPE	-0.0611* (0.0447)	0.0497 (0.1230)	0.0213 (0.7749)	-0.0789 (0.5014)	-0.9091*** (0.2159)	0.7067 (1.5629)	0.6630*** (0.1441)	-0.0943 (0.0717)	1.0630 (0.5771)	2.6394*** (0.7637)	-0.0262 (0.1970)
Capex	0.1093 (0.1006)	0.1133 (0.1873)	2.9251 (1.7992)	-0.1071 (1.3096)	0.5532*** (0.4114)	0.4057 (9.0041)	0.5241*** (0.2291)	0.1185 (0.2150)	-2.6231*** (0.7927)	-1.1998 (5.5266)	-0.3126 (0.8074)
Growth	0.1948*** (0.0549)	0.3051*** (0.1070)	0.0033*** (0.1719)	0.5854** (0.5215)	0.0755* (0.1174)	0.0476 (0.3338)	0.2419 (0.1959)	0.1268** (0.1245)	-0.0856 (0.2523)	0.8890*** (0.0076)	0.5505 (0.3679)
Cash	0.1227*** (0.2988)	1.7725 (0.7152)	0.6825 (0.6975)	0.0731*** (1.1221)	1.2081*** (0.4029)	4.0416 (3.4304)	-0.0501 (0.8342)	0.5430** (0.6494)	0.9165*** (1.4087)	0.0997 (0.2708)	1.2160** (2.5269)
Leverage	0.4063*** (0.0981)	0.4322 (0.3231)	-0.6481 (0.4851)	-0.5478** (0.2492)	0.0201 (0.3253)	8.5896 (7.6908)	-0.9657 (0.5834)	-1.4927*** (0.1793)	-0.1297 (0.3881)	-0.2732 (1.9134)	1.7053** (0.8586)
cons	0.6505*** (0.1819)	3.8445*** (0.5852)	1.1732*** (0.4461)	2.0117*** (0.9906)	0.9146*** (0.3428)	9.2649 (8.1276)	1.7912*** (0.7247)	0.4250*** (0.2778)	3.6382*** (1.4524)	2.7362*** (1.1880)	2.2704*** (0.9492)
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,425	754	201	377	595	18	386	575	354	108	57
R-squared	0.6143	0.7521	0.7951	0.6852	0.6883	0.4292	0.7208	0.6693	0.6343	0.4058	0.7212

7. Note: This table provides results of the endogeneity analysis using instrumental regression of a company's financial performance over the instrument variable overall and across different industries. Financial performance is measured as Tobin's q (Panel A) and EVA (Panel B). The table reports that coefficient estimates and standard error are computed (in parentheses) using robust fix-effect regression analysis. \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively.

### *ESG impact analysis*

The results presented in the second column of Table V (Panel A) show a positive and statistically significant association between the corporate ESG performance score and financial performance. This study conducts panel regression analysis considering year fixed effect with robust standard error. The estimated coefficient of ESG is 0.0040 and statistically significant at 1% level (t-statistics = 5.21 and standard error 0.0008).

The findings are consistent with prior literature. In line with the study by Jo and Harjoto (2011), and Brooks and Oikonomou (2018), the overall relationship between corporate ESG and financial performance is positive and significant, including all companies in different industry sectors. Therefore, consistent with the second hypothesis, the results show that corporate ESG performance is positively associated with corporate financial performance.

### *Industrial impact analysis*

Table V (Panel A) also represents the result of evaluating the industrial impact of corporate ESG performance on corporate profitability across ten BICS industry sectors. The results presented in Table V (Panel A) show a positive and significant association for sectors, including basic materials, communications, consumer non-cyclical, energy and industrial. On the other hand, no significant association has been witnessed for other sectors. In other words, although the overall relationship is positive, but is not consistent across different sectors. This is in line with the results of the studies by Omar and Zallom (2016) and Gholami *et al.* (2022b), in which they document inconsistent results between the ESG and financial performance across industries.

Companies operating in different industry sectors are often significantly regulated and subject to diverse challenges by their stakeholders. The growing demands of customers, communities and regulators need to be addressed while maintaining the operational costs. The energy, industrial and material companies specifically need to ensure the employees' safety requirements, environmental performance improvements such as the reduction in greenhouse gas emissions and other specific challenges while maintaining industry compliance (Spence, 2011, Gholami *et al.*, 2022b). The results reported in Table V (Panel A) show that the association between corporate ESG performance and corporate financial performance varies between different sectors. Therefore, the third hypothesis of this study is supported.

### *Sensitivity analysis*

Traditional performance measures have been criticised recently for inconsistency in corporate performance measurement due to the inability to include the full cost of capital (Kumar and Sharma, 2011, Sloof and van Praag, 2015). Therefore, this study conducts additional tests utilising alternative metrics of corporate financial performance as economic value added (EVA)<sup>8</sup> and presents the result in Panel B of Table V.

Compared to other measures, the significance of EVA is the inclusion of both economic capital and economic profit to measure the corporations' value generation after adjusting the accounting profits. EVA could be used for both small and large corporations, and it reflects the value creation of a corporation, including the economic situations (Kumar and Sharma, 2011).

The result of this study's sensitivity analysis continues to mirror the main findings, including all variables of interest. Consistent with the result of the main model in Panel A of Table V, a robust positive relationship between the ESG and alternative financial performance measures is documented. The findings show a similar different relationship between ESG and financial performance across different industry sectors (Gholami *et al.*, 2022a). Therefore, the results reported in the primary evaluation models are supported.

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<sup>8</sup> Economic Value Added (EVA) is the economic profit after considering net operating profit (NOPAT) over the total cost of capital (COC). It is argued that EVA reflects the company's true value (Stern *et al.*, 1995).

*Robustness check*

This study runs several robustness tests to examine the authenticity of the main findings. The robustness test results are discussed in this section. This study follows previous literature in utilising an instrumental variable (IV) approach for re-examining the estimation models and reports the results in Table VI (Li *et al.*, 2018, El Ghouli *et al.*, 2011).

Considering that companies with better operational performance in the past may maintain a higher ESG disclosure score, the IV approach helps control any potential endogeneity bias initiating from the reverse causality. To find an appropriate instrument, this study refers to the extant literature, uses a simultaneous equation system, and uses the yearly company-average of ESG score (ESG\_Adj) as an instrument (Cheng *et al.*, 2014, Gupta and Krishnamurti, 2018). First, the ESG performance for each company is benchmarked against other companies. The ESG performance is then standardised by subtracting from the average ESG performance of the total sample and dividing by the standard deviation<sup>9</sup>.

The results of the endogeneity test are presented in Table VI (Panels A and B). The findings highlight the positive implication of ESG on the company's financial performance and further indicate the different impacts of corporate ESG performance on financial performance across sectors. The results of the robustness analysis check are all consistent with the study's main finding, showing that endogeneity is not the issue.

**Conclusion**

This study first examines how Australian companies demonstrate improvement in their ESG performance from 2007 to 2017. The findings of this study show a significant improvement in corporate ESG performance over the designated period; therefore, the first hypothesis is supported. The ESG performance improvement is meaningful and in line with the previous study by Galbreath (2013), in which a significant improvement in the ESG performance is documented from 2002 to 2009.

Secondly, this study echoes previous studies' results by supporting the positive implication of corporate ESG performance improvement on financial performance over time (Jo and Harjoto, 2011, Margolis *et al.*, 2009, Brooks and Oikonomou, 2018). The results indicate that ESG performance improvement increases corporate financial performance longitudinally and, further, ESG disclosure helps to communicate to investors the appropriateness of corporate ESG performance. Communication via disclosure helps to convince stakeholders that the company is making a credible commitment toward sustainable business.

Lastly, this study extends the investigations into ESG performance's implications by targeting diverse stakeholders in different industries with diverse expectations. This study's findings support the argument that ESG performance does not equally benefit companies across different industry sectors, therefore, supporting the third hypothesis of this study and previous literature (Fish and Wood, 2017, McWilliams and Siegel, 2011). While the results of this study did not show a negative association between corporate ESG and financial performance, the positive impact of ESG on financial performance is not uniform across industries. Therefore, there is evidence to support the existence of the different associations between corporate ESG and financial performance across different industry sectors.

The results of this study have several implications. Firstly, the findings demonstrate that stakeholder pressure is the main driver for corporate ESG performance improvement across Australian companies. While stakeholder pressure on corporations in Australia is intense, an industry's characteristics impact the strength and scale of ESG performance improvement. This

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<sup>9</sup>  $ESG\ Adjusted\ performance = \frac{Company\ ESG - Average\ ESG}{SD}$

is consistent with the study by Galbreath (2010), who argues that the type of corporation and industrial strategy impacts a corporation's ESG performance. There are implications for ESG performance when management aims to satisfy diverse stakeholders in different industries. Consistent with prior literature, this study recommends that managers are likely to improve corporate financial performance by improving corporate ESG performance (Albertini, 2013). However, it is important to consider corporate ESG performance in a way that is appropriate for each company's strategy in a particular industry. This study indicates that the ESG performance does not benefit corporations across different sectors equally, with different stakeholder groups supporting prior studies (Omar and Zallom, 2016, Gholami *et al.*, 2022b). This study recommends that managers consider their respective industry's characteristics and whether corporate ESG performance is essential to their financial performance. The industry sector differences result in selecting various organisational strategies that weigh business objectives differently (Ortas *et al.*, 2015). This study's findings guide managers by highlighting that investing in ESG performance generates different financial outcomes in industry sectors. Managers should wisely prioritise resource and budget allocations to ESG activities that substantially impact financial performance in the different industry sectors.

This study is not without limitations. Firstly, using only Australian publicly listed companies, and not a broader sample of non-listed corporations and smaller companies, could yield results that may not represent all types and sizes of companies. Secondly, Although this study expands the literature, it only examines Australian companies. Hence, it is limited by generalizability. This study provides an important direction for future ESG research. Due to the different nature of the relationship between ESG and financial performance across industries, it will be interesting to examine the same relationship between disaggregated ESG elements. The result of studies examining different ESG elements and different industry sectors should provide meaningful implications for managers. Finally, it is acknowledged that companies may be at different stages of organisational ESG consciousness (Benn *et al.*, 2014) and potential greenwashing, where the exaggerated or misrepresented ESG performance disclosure creates a favourable impression of the company (de Silva Lokuwaduge and De Silva, 2022).

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**Appendices****Appendix A.**

Variable definitions, measurements, and sources

Category	Measure	Definition/Measurement
Environment, social and governance disclosures	ESG	It is measured based on a total of 120 indicators, covering three aspects: environment, social activities, and governance. The aggregated ESG score ranges from 0.1 for the minimum ESG data disclosed to 100 maximum for those that disclose all data point
Company characteristics: TobinQ Economic Value Added	EVA	Market value/total assets Also referred to as economic profit that compares net operating profit to the total cost of capital The EVA is measured by: $EVA = NOPAT - (WACC \times Capital\ Invested)$ Where: $NOPAT = net\ operating\ profit\ after\ tax$ $WACC = weighted\ average\ cost\ of\ capital$ $Capital\ Invested = total\ capital\ invested\ via\ equity\ or\ debt$
Company Size	LNTA	The natural logarithm of total assets
Property, plant and equipment	PPE	The ratio of property, plant, and equipment to total sales
Capital expenditure	CAPEX	The capital expenditure divided by total sales
Sales growth	GROWTH	The percentage change in sales over the prior year
Cash	CASH	The cash divided by total assets
Leverage	LEVERAGE	Leverage or total debt ratio measured as total debts divided by total assets

Source: Bloomberg Dataset