

Sustainability Assurance Factors and Determinants in ASIA*

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This paper examines the factors and determinants of sustainability assurance (SA) for a sample of firms in Asia in the period of 2012-2016. We find that the quality and quantity of SA reports have made a steady improvement in recent years in Asia with a total of 2,196 assurance reports. We also find that SA factors are associated with both quality and quantity of sustainability reporting (SR) and assurance obtained from Big 4 and some of the United Nations Sustainable Development Goals (SDGs) relevant to environmental, social, and governance (ESG) dimension of sustainability performance. Among Asian countries, five that are significantly associated with the quantity and quality of SA are Japan, Singapore, Philippine, South Korea, and Thailand. In addition, five industries that are significantly associated with the quantity and quality of SA are energy, financial, material, healthcare, and telecommunication services.

Keywords: Asia, assurance providers, auditor, internal/external auditor, sustainability reporting assurance

Introduction

An increasing number of public companies worldwide, particularly those in Asia, are issuing sustainability reports on various dimensions of their economic, governance, social, ethical, and environmental (EGSEE) sustainability performance (Rezaee, Tsui, Cheng, & Zhou, 2019). The credibility of these sustainability reports can be significantly enhanced by obtaining assurance on these reports (Deegan, Cooper, & Shelly, 2006; Brown-Liburd & Zamora, 2015). Recent anecdotal evidence suggests that investors and portfolio managers are integrating non-financial disclosures into their investment decisions (Investor Responsibility Research Center Institute [IRRCI], 2016; 2018). Sustainability, particularly corporate social responsibility (CSR) activities in Asia, has significantly grown in the past decade (Scholtens & Kang, 2013). Firms in Asia, predominantly those in China, have faced greater pressure from regulators to engage in CSR programs (McGuinness, Vieito, & Wang, 2017). Asian countries are expected to continue disclosing sustainability information as they forge alliances with Europe to take a leading role in environmental initiatives by tackling climate change (Rezaee et

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al., 2019). However, much progress has been made in the past decade toward sustainability reporting (SR) with inadequate attention being paid to sustainability assurance (SA) (Rezaee, 2016).

Motivated by recent anecdotal evidence, promoting sustainability performance reporting and scholarly research indicating the importance of SR and assurance, this study examines the status and determinants of SA including quality and quantity of SA reports among Asian companies. We construct two factors of SA including sustainability assurance quantity (SAQ1) and sustainability assurance quality (SAQ2). We use several determinants of SA, such as sustainability reporting quantity (SRQ1), sustainability reporting quality (SRQ2), environmental, social, and governance (ESG) sustainability performance, Dow Jones Sustainability Index (DJSI) indices, and the United Nations (UN) Sustainable Development Goals (SDGs) ratings as a set of explanatory variables, with financial attributes as a set of control variables (total assets, return on assets [ROA], and return on equity [ROE]). We also investigate the association between SA across industries as well as Asian countries.

We perform our analyses of the factors and determinants of SA using data from the Global Reporting Initiative (GRI) database, spanning five years (2012-2016). Our trend analyses indicate that the quality and quantity of SA reports have made a steady improvement in recent years with a total of 2,196 assurance reports. Our regression analyses indicate that several determinants of SA, including SRQ1 and SRQ2 as well as the ESG scores, Big 4, and ESG dimensions of SDGs (five, 15, and 17) are positively and significantly associated with both quality and quantity of assurance reports. Among Asian countries, five countries that are significantly associated with the quantity and quality of SA are Japan, South Korea, Singapore, Philippines, and Thailand. Results suggest Asian companies in energy, financial, material, telecommunication services, and healthcare industries exhibit higher SA quality and quantity than other industries in signaling their commitments to obtain assurance on their sustainability reports.

This paper contributes to auditing and assurance in several ways. First, we investigate the status and determinants of both the quality and quantity of assurance reports in Asia, whereas a majority of prior studies (Adams & Evans, 2004; Simnett, Vanstraelen, & Chua, 2009b; Manetti & Becatti, 2009; O'Dwyer, Owen, & Unerman 2011; KPMG, 2013; Cheng, Ioannou, & Serafeim, 2014; Eccles, Ioannou, & Serafeim, 2014; Cohen & Simnett, 2015; Ferreira, Pereira-Eugénio, & Castelo-Branco, 2015) focus on auditing and assurance reports in Anglo Saxon Countries. Second, this paper provides evidence in support of the recent initiatives by regulators worldwide (e.g., the European Commission and the Singapore and Hong Kong Stock Exchanges) requiring listed companies to report sustainability information and obtain assurance on sustainability reports. Third, results confirm anecdotal evidence (Pricewaterhouse Coopers [PwC], 2015) that investors and executives support the move toward more uniform SR and assurance. Finally, this paper expands prior research (Shen, Wu, & Chad, 2017; Cooper & Owen, 2007; Darnall, Seol, & Sarkis, 2009; Simnett et al., 2009b; O'Dwyer et al., 2011; Cohen & Simnett, 2015; Unruh et al., 2016; Rezaee, 2016) by presenting the current status and determinants of SA in Asian countries, as they are viewed as the fastest emerging economies.

This paper proceeds as follows: Section 2 discusses the relevance of SA reports in Asia. Section 3 presents the determinants of SA in Asia discussions and conclusions are presented in Section 4.

Institutional Background of SA Reports

The demand for/and interest in SA reports is expected to continue to grow as more public companies issue sustainability reports on their financial economic sustainability performance (ESP) and non-financial

environmental, governance, ethical, and social (EGES) sustainability performance (Cohen & Simnett, 2015; Rezaee, 2015; 2016). Credibility of sustainability reports can be significantly improved by obtaining assurance on these reports. Investors value the assurance provided by external third parties, which lends more credibility to both financial and non-financial information disclosed by companies (Deegan et al., 2006; Adams, Fries, & Simnett, 2011). The number of firms obtaining external assurance on their sustainability reports has increased in the past decade (Kolk & Perego, 2010; Mock, Rao, & Srivastava, 2013; Shen et al., 2017).

Currently, there are several international auditing standards for providing assurance on sustainability reports. Two standards have been released by the International Auditing and Assurance Standards Board (IAASB), International Standard on Assurance Engagements 3000, "Other Than Audits or Reviews of Historical Financial Information" (ISAE 3000), and ISAE 3410 (Assurance Engagements on Greenhouse Gas Statements). Other assurance standards are the AICPA's Attestation Standards (AT Section 101), Canadian Institute of Chartered Accountants (CICA) Section 5025 (CICA, 2000), and AA1000 Assurance Standards (AS), issued in 2009 by Account Ability (AA) (2009). These assurance standards provide guidance for assurance on non-financial dimensions of sustainability. The Public Company Accounting Oversight Board (PCAOB) issued Auditing Standard No. 17 in 2013, which provides guidelines for auditors engaged to perform audit procedures on supplemental information that can include sustainability information accompanying audited financial statements.

The currently expressed assurance opinions on sustainability information are reasonable and have limited assurance (Brockett & Rezaee, 2012; Rezaee, 2015). A reasonable assurance engagement provides a positive opinion on whether the subject matter is, in all material respects, appropriately stated, and the work performed is greater than under the limited assurance engagement. A limited assurance engagement provides a "negative opinion," in which the auditors state that nothing has come to their attention to cause them to believe that the subject matter is not, in all material aspects, appropriately stated. In the case of limited assurance engagements, basic evidence-gathering procedures (e.g., inquiry and analytical procedures) form the basis for reaching conclusions. In the case of reasonable assurance engagements, a much broader range of evidence-gathering procedures. These procedures include an assessment of the risks of material misstatement, internal control evaluation, examination, confirmation, inspection, and analytical procedures.

Global trends toward business SA primarily concern financial ESP non-financial EGES sustainability performance. In general, business organizations worldwide, particularly those in Asia, are now recognizing the importance of both ESP and EGES sustainability performance and the link between financial profitability, social behavior, and the environment. Justifications for EGES sustainability performance are: the contribution to financial ESP sustainability and moral obligations, maintaining a good reputation, licensing to operate, and creating shared value for all stakeholders (Rezaee, 2016). In a shared value approach, corporations identify potential social and environmental issues and integrate them into their strategic planning. There are many factors of why a company should pay attention to EGES sustainability performance, such as pressure of the labor movement, development of moral values and social standards, development of business education, and the change in public opinion about the role of business (Rezaee, 2016). Companies, which are, or aspire to be, leaders in sustainability are challenged by rising public expectations, increasing innovation, continuous quality improvement, and heightened social and environmental problems. These businesses should fulfill social responsibility and environmental initiatives in respect to the public image, consumer movements, better relations with stakeholders, employee satisfaction, a sense of pride, and an appropriate way to improve quality.

The achievement of both ESP and EGES sustainability performance in Asia can be attained through either mandatory or voluntary initiatives as explained in the following sections.

The Hong Kong Stock Exchange code provisions for SR are detailed in the ESG Reporting Guide of the Hong Kong Stock Exchange Listing Rules for the Main Board listing companies (Hong Kong Stock Exchange [HKSX], 2015). The guide identifies general disclosure and key performance indicators on four ESG areas: workplace quality, environment protection, operating practices, and community involvement in addition to corporate governance, which is covered in the Main Board Listing Rules. The exchange allows companies to specify relevant subject areas, aspects and indicators that are material in the context of its corporate strategy. In April 2014, the Hong Kong Institute of Certified Accountants issued “A Guide on Better Governance Disclosure.” The Hong Kong Stock Exchange has effectively integrated the reporting of sustainability with its earlier code requirements on Corporate Governance into the ESG reporting (HKSX, 2015).

Countries in Asia have their own sustainability initiatives that are influenced by their economic, cultural, political, and legal infrastructure. Listed companies in Asia are now encouraged to report their business sustainability including CSR activities. In December 2008, the Shanghai and Shenzhen Stock Exchanges required a subset of Chinese listed firms to issue sustainability/CSR reports using a quasi-natural experiment (Wang, Cao, & Ye, 2016). The Rankins (PKS) is an independent rating agency which has ranked and reported on CSR activities of listed companies in China, in the categories of macrocosm, content, and techniques, since 2009. This move toward sustainability performance reporting and assurance in China is also expected to influence other countries in Asia to improve the content, depth, coverage, and consistency of their integrated sustainability performance and assurance reporting. The Chinese central government has played and will continue to play an important role in promoting CSR sustainability practices in China (Vermander, 2014). It is expected that more firms in China will disclose their overall CSR strategies, activities, and performance as well as corporate governance. This move toward CSR sustainability in China is also expected to improve the content, depth, coverage, and consistency of CSR reporting.

Other countries in Asia have made progress toward sustainability in recent years. For example, CSR has continued to develop in Singapore in a more concrete and broad manner. With the growing concern of social responsibility in Singapore, the National Social Responsibility Tripartite Initiative was established in May 2004 with a tripartite approach involving industry, trade unions, and government representatives. In 2005, the CSR Compact was launched in Singapore (Asia-Pacific Economic Cooperation [APEC], 2005). In June 2015, the Compact was renamed to the Singapore Global Compact Network, as it became the official network of the United Nations Global Compact (UNGC) based on the principles of sustainability, including safeguarding human and labor rights, protecting the environment, and combating corruption. This change was met with the support of many tripartite leaders (Cheam, 2015).

SA Factors in Asia

An increasing number of public companies worldwide are producing and disseminating sustainability reports on a variety of their financial ESP and non-financial EGES dimensions of sustainability performance. Results of prior research regarding the importance and value-relevance of SA with a focus on CSR disclosures are mixed. For example, some studies (e.g., Casey & Grenier, 2015; Peters & Romi, 2015; Simnett et al., 2009a; Holder-Webb, Cohen, Nath, & Wood, 2009) provide evidence of the importance of CSR assurance reports and their value-relevance in mitigating investor concern for lack of credibility in CSR reports whereas others (e.g.,

Cho, Michelon, Patten, & Roberts, 2014; Gray, 2006) find no value-relevance of CSR assurance reports. We contribute to the emerging debates on the quantity and quality of SA by investigating the determinants of factors that drive the demand for SA.

We use the GRI database for the five years from 2012 to 2016 to compile data regarding the status and determinants of SA reports (GRI, 2016). The GRI database provides global trends in SR and assurance practices for global companies.

We investigate two quantity and quality aspects of SA. SQA1 is determined based on whether a firm obtains SA on its sustainability reports. SQA2 is measured based on whether the obtained assurance report is provided by accounting firms.

Sustainability Assurance Quantity (SQA1)

Panel A of Table 1 indicates that SA has made steady progress after the issuance of G4 and in the past five years a total of 2,196 SA reports in Asia were issued in the 2012-2016 period. Panel B of Table 1 shows the trend in SA opinions in the past five years by countries in Asia with at least 20 assurance sustainability reports in total. The top five countries in Asia for SA represented by almost five years are Taiwan with 589 statements (29%), Korea with 378 statements (18%), Japan the 296 statements (14%), India with 205 statements (10%), and Mainland China with 151 statements (7%). Panel C of Table 1 reveals that the top five industries in Asia for SA represented by almost five years are financial services with 276 SA reports (15%), technology hardware with 177 assurance reports (9%), energy with 154 assurance reports (8%) chemicals with 134 assurance reports (7%), and conglomerates with 108 assurance reports (6%).

Table 1

Sustainability Assurance Quantity in Asia

Panel A: A Trend of SA in the Past 5 Years (2012-2016) in Asia

2016	2015	2014	2013	2012	Total
570	511	430	367	318	2,196

Panel B: Sustainability Assurance Quantity Based on Asian Countries More Than 20 Statements in the Past 5 Years

	2016	2015	2014	2013	2012	Total
Taiwan	219	195	87	65	23	589
Korea	72	73	97	99	37	378
Japan	71	49	46	36	94	296
India	58	51	45	41	10	205
China	15	29	35	22	50	151
Hong Kong	30	29	28	25	8	120
Thailand	19	14	11	6	27	77
Malaysia	12	11	13	9	12	57
Indonesia	11	10	8	14	11	54
Philippines	11	10	8	10	4	43
Srilanka	11	9	9	7	4	40
Singapore	8	5	6	7	8	34
Total	2,553	2,500	2,407	2,354	2,300	2,044

Panel C: Sustainability Assurance Quantity by Industry more than 20 Statements

	2016	2015	2014	2013	2012	Total
Financial services	71	70	64	41	30	276
Technology	51	43	34	27	22	177
Energy	35	32	33	32	22	154
Chemicals	37	34	30	19	14	134
Conglomerates	26	27	23	20	12	108
Food	39	34	14	8	7	102
Telecommunications	22	19	19	15	13	88
Construction	18	17	17	19	12	83
Automotive	16	16	13	17	9	71
Energy utilities	17	11	15	13	9	65
Aviation	18	13	13	10	9	63
Real Estate	18	15	12	10	8	63
Construction	18	16	11	10	7	62
Computers	20	16	11	10	4	61
Public agency	6	8	15	13	13	55
Equipment	15	11	9	9	8	52
Metals products	14	11	9	9	8	51
Mining	6	8	8	15	8	45
Logistics	9	7	7	6	4	33
Tourism/Leisure	12	11	3	3	3	32
Consumer durables	9	6	7	5	4	31
Textiles and apparel	12	13	3	1	1	30
Healthcare products	4	5	5	6	4	24
Retailers	9	7	4	1	2	23
Railroad	5	4	4	4	3	20
Total	507	454	383	323	236	1,903

Sustainability Assurance Quality (SQA2)

In general, assurance reports provided by external auditors and particularly those with reasonable assurance are perceived to be of higher quality compared with those provided by others and with a limited assurance (Rezaee, 2015). Panel A of Table 2 shows that SA is almost equally performed by auditing/accountants (37%), engineers (33%), and consultants (29%). Panel B of Table 2 indicates that among accounting firms, KPMG and Ernest and Young (EY) performed a higher portion of SA services, followed by PwC and Deloitte.

Panel C of Table 2 shows that the majority of opinions expressed in SA reports (over 70%) are limited/moderate, suggesting that assurance providers opine that they are not aware of their client company failing to be in compliance with applicable sustainability guidelines (G4 of GRI). Less than 10% of assurance reports are accompanied with reasonable/high level assurance, suggesting that assurance providers opine that their client company is in compliance with applicable sustainability guidelines (e.g., G4 of GRI).

Table 2

Sustainability Assurance Quality in Asia

Panel A: Organizations Provide Sustainability Assurance Services

Type of assurance provider	2016	2015	2014	2013	2012	Total
Accountant	223	205	150	124	95	797

Small Consultancy/Boutique Firm	156	132	110	122	102	622
Engineering Firm	180	177	159	122	70	708
Total	559	514	419	368	267	2,127

Panel B: Sustainability Assurance Providers

Assurance Provider	2016	2015	2014	2013	2012	Total
Pricewaterhouse Coopers	40	40	20	17	0	117
Deloitte	32	28	14	9	22	105
Ernst & Young	49	47	40	41	13	190
KPMG	66	53	48	33	27	227
Grant Thornton	0	1	0	0	24	25
Other	215	194	169	173	0	751
Bureau Veritas	35	24	18	11	124	212
SGS	63	51	47	24	5	190
DNV	40	44	43	43	14	184
ERM	1	0	1	0	41	43
AENOR	1	0	0	1	1	3
URS	2	3	5	6	0	16
Lloyds	23	21	16	9	3	72
BDO	5	6	7	1	2	19
Total	572	512	428	368	276	2,156

Panel C: Type of Sustainability Assurance in Compliance With G4 from 2012-2016 Level

	2016	2015	2014	2013	2012	Total
Limited/Moderate	466	390	308	264	173	1,601
Reasonable/High	52	41	37	28	39	197
Combination	2	5	13	2	2	24
Not specified	52	78	61	74	53	318
Total	572	514	419	368	267	2,140

Determinants of SA Reports

Given that many firms voluntarily present SR and assurance, we investigate the determinants of SA reports. Clarkson, Li, Richardson, and Tsang (2015) found that firms committed to CSR initiatives are more likely to issue standalone CSR reports and have assurance on their CSR reports. CSR assurance reports increase the likelihood of being included in sustainability indices. However, results of prior research regarding the importance and value-relevance of SA with a focus on CSR disclosure are inconclusive and mixed. For example, some studies (e.g., Casey & Grenier, 2015; Peters & Romi, 2015; Simnett et al., 2009a; Holder-Webb et al., 2009) provide evidence of the importance of CSR assurance reports and their value-relevance in mitigating investor concern for lack of credibility in CSR reports whereas others (e.g., Cho et al., 2014; Gray, 2006) find no value-relevance of CSR assurance reports. We contribute to the emerging debates on the quantity and quality of SA by investigating the factors that drive the demand for SA.

Research Design

We examine the determinants of SA reports by investigating the possible impact of quality and quantity SA on the likelihood of inclusion in the Dow Jones Sustainability Indices (DJSI) and sustainability ESG score by Thomson Reuters Eikon, the sustainability performance scores (ESG score) included in Thomson Reuters

Eikon database, and assurance services provided by Big 4 accounting firms as well as several SDGs. Signaling theory suggests that firms with high and superior sustainability performance voluntarily disclose their good performance to differentiate themselves from firms with poor sustainability performance (Rezaee, 2016). We posit that firms with high quality and quantity SA are more likely to disclose their good sustainability as these rankings and ratings are good measures of firms' superior reputation for sustainability and test our proposition using the following equation.

$$SA\ Factors = \alpha_0 + \sum \beta_i \cdot Explanatory + \sum \beta_i \cdot Control_i + \Sigma Year + \Sigma Industry + \varepsilon \quad (1)$$

SA factors are SAQ1 and SAQ2. The factors take the value of 1 in the case of the presence of SAQ1 or SAQ2, and 0 otherwise. The explanatory variables are SRQ1, SRQ2, industry affiliation, auditors (Big 4), DJSI, the sustainability performance scores included in Thomson Reuters Eikon database, and some of the goals of SDGs and assurance services provided by Big 4 accounting firms. The control variables are size and profitability. In addition, we include both year and industry fixed effects in the regression and cluster the standard errors at the firm level.

Data and Sample

To construct our sample, we use the GRI database for five years (2012-2016) to compile data regarding the SA quality and quantity. Following Barth, Landsman, Lang, and Williams (2012), we first match the firms which disclose at least one SA, according to the GRI database. The sample size for our regression analyses consist of a total of 1,350 firm-year observations between 2012 and 2016, which is evenly distributed among years and industries.

Regression Results

Panel A of Table 3 provides the descriptive statistics of the variables used in our regression analyses. To reduce the impact of outliers, we winsorize all continuous variables at 1% and 99%. Panel A presents the mean, median, Q1 and Q3, and standard deviation of all variables used in our analyses for the 1,350 firm-years in our sample. For the SAQ1 and SAQ2 variables, the mean (median) of Panel A are 0.404 and 0.401 (0.000), respectively. In Table 3, Panel B presents a Pearson correlation matrix for these variables. The correlations between SAQ1 and SAQ2 and the SDGs are positive suggesting that SA reports are linked to the UN SDGs. The signs and significance levels of the correlations between short interest and control variables are largely consistent with the results presented in prior research. The only relatively high correlation between control variables is the positive correlation between ROA/ROE and SA.

Table 3

Regression Analyses of sustainability Assurance

Panel A: Descriptive statistics for ordinary least squares (OLS) regression

Variable	Mean	Std. Dev.	Q1	Median	Q3
SAQ1	0.404	0.491	0.000	0.000	1.000
SAQ2	0.401	0.490	0.000	0.000	1.000
SRQ1	0.915	0.279	1.000	1.000	1.000
SRQ2	2.311	2.959	0.000	1.000	3.000
ESG score	62.546	15.049	54.664	64.724	72.762
DJSI	0.541	0.499	0.000	1.000	1.000
SDGI rank	33.874	29.782	18.000	18.000	27.000

SDG 5	59.006	8.933	60.674	60.674	63.504
SDG 13	77.057	8.595	79.790	79.950	79.950
SDG 15	56.152	12.382	48.280	64.946	64.946
SDG 17	51.782	7.051	52.281	52.281	53.905
Big 4	0.206	0.405	0.000	0.000	0.000
Size	10.286	0.593	9.867	10.243	10.811
ROA	2.880	4.300	1.764	4.395	7.233
ROE	13.588	44.008	6.177	10.000	16.000

Note. This table illustrates the descriptive statistics for regression sample which includes 1,350 firm-year observations between 2012 and 2016. The descriptions of all the variables contained in this table can be found in the Appendix.

Panel B: Pearson correlations for the regression sample

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 SAQ1	1.000														
2 SAQ2	0.994	1.000													
3 SRQ1	0.241	0.239	1.000												
4 SRQ2	0.521	0.523	0.238	1.000											
5 ESGscore	0.250	0.252	0.130	0.147	1.000										
6 DJSI	0.084	0.085	(0.036)	0.053	0.153	1.000									
7 SDGrank	0.286	0.288	(0.002)	0.368	0.050	0.117	1.000								
8 SDG 5	(0.186)	(0.189)	0.033	(0.208)	(0.050)	(0.081)	(0.790)	1.000							
9 SDG 13	0.024	0.022	0.048	(0.095)	0.008	0.093	0.017	(0.137)	1.000						
10 SDG 15	(0.279)	(0.278)	(0.012)	(0.326)	(0.003)	0.016	(0.356)	0.123	0.660	1.000					
11 SDG 17	0.173	0.171	0.066	0.046	0.050	0.123	0.199	(0.182)	0.863	0.514	1.000				
12 Big 4	0.618	0.622	0.155	0.440	0.134	0.021	0.201	(0.111)	(0.021)	(0.319)	0.071	1.000			
13 Size	0.056	0.056	(0.061)	0.051	0.108	0.146	(0.092)	0.058	0.108	0.127	0.100	0.034	1.000		
14 ROA	(0.032)	(0.032)	0.020	(0.033)	(0.032)	0.062	(0.003)	0.030	(0.008)	(0.015)	(0.025)	(0.007)	(0.026)	1.000	
15 ROE	(0.013)	(0.012)	0.012	0.064	(0.008)	(0.022)	0.077	(0.025)	(0.147)	(0.190)	(0.106)	(0.035)	(0.105)	(0.010)	1.000

Note. This table illustrates the Pearson Correlations for regression sample, which includes 1,350 firm-year observations between 2012 and 2016. The descriptions of all the variables contained in this table can be found in the Appendix. Correlations significant at the 10% level are marked in bold.

A summary of the OLS regression relation between the dependent variable of SAQ, explanatory variables of ESG score, SDGs, DJSI, Big 4, and control variables of Size, ROA, and ROE is presented in Table 5. *R*-squared in the models for SAQ1 and SAQ2 are 0.523 and 0.526, respectively. Results indicate that the models for SAQ1 and SAQ2 are highly associated with SRQ1. SRQ2 acts as a proxy for SR in terms of quantity and quality. Our results also indicate that SAQ is significantly associated with ESG score. One possible explanation is that Asian companies have been encouraged to disclose their ESG sustainability performance in previous decades. Currently, Hong Kong listed companies are required to disclose such information. These results are consistent with those of Ng and Rezaee (2015) and P. Jain, A., Jain, and Rezaee (2016) that suggest a positive and significant relationship between sustainability performance and disclosures. Our results also indicate that SAQ determinants are significantly associated with Big 4 and several SDGs variables (5, 13, 15, and 17), reflecting environmental and social attributes that are deeply embedded in GRI standards. Our results also indicate that SAQ is significantly associated with Big 4. An explanation for higher quantity and QSA is that the accounting profession in Asian countries has been more actively involved in issuing guidelines for attestation and assurance services in the past decade. The result is in line with Simnett et al. (2009a) that indicate a stronger legal system lead to the decision to assure better quality for SAQ.

Results of the OLS regression models for relation between SAQ and industries is presented in Table 4,

with *R*-squared in the models for SAQ1 and SAQ2 being 0.042 and 0.041, respectively. In summary, the results indicate that SAQ is significantly associated with five industries, namely: (a) energy; (b) financial; (c) material; (d) telecom services; and (e) health care. Results suggest that the above industries have more incentives to disclose their SA to signal their commitment to sustainability issues. Our results are in line with Patten (2002) which found that there is an association between the environmental and social risks and the level of SA. In summary, our results indicate that companies that have better legal environment, responsible consumption and production, and social attributes, as determined by the UN SDGs, are more likely to reflect their ESG sustainability ranking rather than DJSI index to increase the credibility of reports, consequently enhancing their corporate reputation. Additionally, our results indicate that companies with higher ESG scores are more likely to recognize and honor exceptional SA practices in Asia. Overall, sustainability rankings using ESG scores have significantly greater explanatory capability than models of sustainability using the DJSI.

Table 4

The OLS Regression Relation Between SAQ and SDG

	A	B
	SAQ1	SAQ2
SRQ1	0.168*** (8.460)	0.164*** (8.290)
SRQ2	0.0374*** (9.540)	0.0375*** (9.580)
ESG score	0.00416*** (6.900)	0.00420*** (6.990)
DJSI	0.020 (1.220)	0.020 (1.250)
SDGI rank	0.000 (1.850)	0.000 (1.710)
SDG 5	0.00491* (2.540)	0.00491* (2.540)
SDG 13	0.00658* (2.160)	0.00675* (2.220)
SDG 15	0.00702*** (4.480)	0.00652*** (4.190)
SDG 17	0.0211*** (5.930)	0.0205*** (5.800)
Big 4	0.497*** (19.820)	0.505*** (20.230)
Size	0.020 (0.970)	0.020 (0.930)
ROA	0.000 (1.100)	0.000 (1.080)
ROE	0.000 (1.610)	0.000 (1.510)
Cons	(0.230) (0.990)	(0.210) (0.930)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Observations	1,350	1,350
<i>R</i> -square	0.523	0.526

Note. *T*-statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$. This table illustrates the OLS regression sample, which includes 1,350 firm-year observations between 2012 and 2016. The descriptions of all the variables contained in this table can be found in the Appendix.

Table 5

Regression Relation Between SAQ and Industries

	A	B
	SAQ1	SAQ2
Consumer staples	0.020 (0.340)	0.020 (0.340)
Energy	0.389*** (4.840)	0.389*** (4.840)
Financials	0.162** (3.090)	0.162** (3.090)
Health care	0.160* (2.290)	0.160* (2.290)
Industrials	0.020 (0.540)	0.020 (0.470)
Info technology	0.040 (0.820)	0.040 (0.820)
Materials	0.152** (2.770)	0.130* (2.360)
Real Estate	0.100 (1.460)	0.100 (1.460)
Telecom services	0.176* (2.280)	0.176* (2.280)
Utilities	0.000 (0.060)	0.000 (0.060)
Cons	0.344*** (9.580)	0.344*** (9.590)
Year fixed effects	Yes	Yes
Observations	1,350	1,350
<i>R</i> -square	0.042	0.041

Note. *T*-statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$. This table illustrates the OLS regression sample, which includes 1,350 firm-year observations between 2012 and 2016. The descriptions of all the variables contained in this table can be found in the Appendix. Table 9 reports regression estimates of the relation between sustainability ranking determinants and SDGs as well as SRA variables.

Table 6

Regression Relation Between SAQ and Countries

	A	B
	SAQ1	SAQ2
Japan	0.524*** (13.350)	0.525*** (13.330)
Korea	0.140** (3.010)	0.125** (2.680)
Malaysia	0.080 (1.140)	0.080 (1.130)
Philippines	0.396*** (5.020)	0.396*** (5.000)

Singapore	0.468*** (8.500)	0.468*** (8.470)
Thailand	0.188** (2.920)	0.188** (2.910)
Cons	0.738*** (20.330)	0.738*** (20.260)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Observations	1,350	1,350
R-square	0.2916	0.2848

Note. T-statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. This table illustrates the OLS regression sample, which includes 1350 firm-year observations between 2012 and 2016. The descriptions of all the variables contained in this table can be found in the Appendix. Table 9 reports regression estimates of the relation between sustainability ranking determinants and SDGs as well as SRA variables.

Conclusions

Global public companies have issued integrated reporting on both financial ESP and non-financial GSEE dimensions of sustainability. Global business organizations report their integrated financial ESP and non-financial GSEE sustainability performance in creating shared values for all stakeholders from shareholders to customers, employees, suppliers, creditors, environmental agencies, and governments. Public companies in Asia have also produced sustainability reports in the past decade. The credibility of these sustainability reports can be significantly improved if assured by third-party assurance providers.

We focus on business sustainability in Asia for several reasons. First, sustainability activities in Asia have significantly grown in the past decade as business organizations in the region have faced greater pressure from regulators to engage in sustainability and CSR programs. Second, this trend is expected to continue as Asian countries in general and mainland China are stepping up to forge alliances with European countries to take a leading role on CSR and environmental initiatives through addressing product quality, safety, and tackling climate change. Third, the recent decision of the United States to exit the 2015 Paris Agreement is expected to encourage other countries (e.g., Mainland China, India, and Singapore) to accelerate their pace by allowing leadership roles in sustainability initiatives. Finally, the achievement of sustainable economic growth, prosperity, and performance has been observed in Asia.

This paper examines the association between SA factors (quality and quantity) and determinants across 1,350 observations, between 2012 and 2016, from various Asian countries. We find the quality and quantity of SA reports have made a steady improvement in recent years in Asia with a total of 2,196 assurance reports. We find that SA factors are associated with SR for quality and quantity reports (SRQ1 and SRQ2), Big 4, and some of the UN SDGs relevant to environmental (SDG 13 of CO2 emissions, Climate Change Vulnerability Monitor), social (SDG 5 of gender equality, female labor force, gender wage gap attributes; SDG 15 of life, land, biodiversity, forest), and governance (SDG 17 of public finance, Tax revenue, R & D spending and GDP) dimensions of sustainability. Among Asian countries, five countries that are significantly associated with the quantity and quality of SA are Japan, Singapore, Philippine, South Korea, and Thailand. In addition, five industries that are significantly associated with the quantity and quality of SA are energy, financial, material, healthcare, and telecommunication services.

References

- Account Ability. (2009). *Guidance for reporting organizations seeking assurance to AA1000AS*. Retrieved from <http://www.accountability.org/our-services/research/>
- Adams, C. A., & Evans, R. (2004). Accountability, completeness, credibility and the audit expectations gap. *Journal of Corporate Citizenship*, 14, 97-115.
- Adams, A., Fries, S., & Simnett, R. (2011). The journey towards integrative reporting. *Accountant's Digest*, 5, 558.
- Asia-Pacific Economic Cooperation (APEC). (2005). *Corporate social responsibility in the APEC region*. Retrieved from http://www.C:/Users/zrezaee/AppData/Local/Temp/05_hrd_CSR_summary.pdf
- Barth, M. E., Landsman, W. R., Lang, M., & Williams, C. (2012). Are IFRS-based and US GAAP-based accounting amounts comparable? *Journal of Accounting and Economics*, 54, 68-93.
- Brockett, A., & Rezaee, Z. (2012). *Corporate sustainability: Integrating performance and reporting* (Chapter 3). New Jersey: John Wiley and Sons.
- Brown-Liburd, H., & Zamora, L. (2015). The role of corporate social responsibility (CSR) assurance in investors' judgments when managerial pay is explicitly tied to CSR performance. *Auditing: A Journal of Practice and Theory*, 34(1), 75-96.
- The Canadian Institute of Chartered Accountants (CICA). (2000). *Standards for assurance engagements, in CICA handbook* (Vol. II, S5025). Toronto: The Canadian Institute of Chartered Accountants.
- Casey, R., & Grenier, J. H. (2015, February). Understanding and contributing to the enigma of corporate social responsibility (CSR) assurance in the United States. *Auditing: A Journal of Practice and Theory*, 34(1), 97-130.
- Cheam, J. (2015). The evolution of CSR in Singapore. *The Straits Times*.
- Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. *Strategic Management Journal*, 35(1), 1-23.
- Clarkson, P., Li, Y., Richardson, G., & Tsang, A. (2015). *Voluntary external assurance of corporate responsibility reports and Dow Jones sustainability index membership: International evidence* (Working paper). Canada: The University of Toronto.
- Cho, C. H., Michelon, G., Patten, D. M., & Roberts, R. W. (2014). CSR report assurance in the USA: An empirical investigation of determinants and effects. *Sustainability Accounting, Management and Policy Journal*, 5(2), 130-148.
- Cohen, J. R., & Simnett, R. (2015, February). CSR and assurance services: A research agenda. *Auditing: A Journal of Practice and Theory*, 34(1), 59-74.
- Cooper, S., & Owen, D. (2007). Corporate social reporting and stakeholder accountability: The missing link. *Accounting, Organizations and Society*, 32(7-8), 649-667.
- Darnall, N., Seol, I., & Sarkis, J. (2009). Perceived stakeholder influences and organizations' use of environmental audits. *Accounting, Organizations and Society*, 34(2), 170-187.
- Deegan, C., Cooper, B., & Shelly, M. (2006). An investigation of TBL report assurance statements: Australian evidence. *Australian Accounting Review*, 16(39), 2-18.
- Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science* (forthcoming).
- European Commission. (2014, September 29). *Disclosure of non-financial information: Europe information*. Europe Council, the European Economic and Social, Environmental Issues. Retrieved from http://ec.europa.eu/internal_market/accounting/non-financial_reporting/index_en.htm
- Ferreira G, S., Pereira-Eugénio, T. C., & Castelo-Branco, M. (2015). Sustainability reporting and assurance in Portugal. *Corporate Governance*, 15(3), 281-292.
- Global Reporting Initiative (GRI). (2016). *Sustainability disclosure database*. Retrieved from <http://database.globalreporting.org/benchmark>
- Gray, R. (2006). Social, environmental and sustainability reporting and organizational value creation? Whose value? Whose creation? *Accounting, Auditing and Accountability Journal*, 19(6), 793-819.
- Hong Kong Stock Exchange. (2015a). *ESG Reporting Guide and FAQs*. Retrieved from https://www.hkex.com.hk/Listing/Rules-and-Guidance/Other-Resources/Listed-Issuers/Environmental-Social-and-Governance/ESG-Reporting-Guide-and-FAQs?sc_lang=en
- Hong Kong Stock Exchange. (2015b). *Main board listing rules*. Retrieved from https://www.hkex.com.hk/Listing/Rules-and-Guidance/Listing-Rules-Contingency/Main-Board-Listing-Rules/Main-Board-Listing-Rules?sc_lang=en

- Holder-Webb, L., Cohen, J., Nath, L., & Wood, D. (2009). The supply of corporate social responsibility disclosures among U.S. firms. *Journal of Business Ethics*, 84(4), 497-527. Retrieved from <http://www.jstor.org/stable/40294758>
- Investor Responsibility Research Center Institute (IRRCI). (2016). *Tipping Points 2016*. Retrieved from http://irrcinstitute.org/wp-content/uploads/2016/11/TIIP-and-IRRCi_State-of-Industry_Nov-2016.pdf
- Investor Responsibility Research Center Institute (IRRCI). (2018, March). *Measuring effectiveness: Roadmap to assessing system-level and SDG investing*. Retrieved from <https://irrcinstitute.org/wp-content/uploads/2018/03/FINAL-TIPP-Report-Measuring-Effectiveness-Report-2018.pdf>
- Jain, P. K., Jain, A., & Rezaee, Z. (2016). Value-relevance of corporate social performance: Evidence from short selling. *Journal of Management Accounting Research*, 28(2), 29-52.
- Junior, R. M., Best, P. J., & Cotter, J. (2014). Sustainability reporting and assurance: A historical analysis on a world-wide phenomenon. *Journal of Business Ethics*, 120(1), 1-11.
- Kolk, A., & Perego, P. (2010). Determinants of the adoption of sustainability assurance statements: An international investigation. *Business Strategy and the Environment*, 29(3), 182-198.
- KPMG. (2013). *Corporate Responsibility Reporting Survey 2013*. Retrieved from <https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/corporate-responsibility/Documents/corporate-responsibility-reporting-survey-2013-exec-summary.pdf>
- Manetti, G., & Becatti, L. (2009). Assurance services for sustainability reports: Standards and empirical evidence. *Journal of Business Ethics*, 87, 289-298.
- McGuinness, P. B., Vieito, J. P., & Wang, M. (2017). The role of board gender and foreign ownership in the CSR performance of Chinese listed firms. *Journal of Corporate Finance*, 42(C), 75-99.
- Mock, T. J., Rao, S. S., & Srivastava, R. P. (2013). The development of worldwide sustainability reporting assurance. *Australian Accounting Review*, 23(3), 280-294.
- Ng, A. C., & Rezaee, Z. (2015, October). Business sustainability performance and cost of equity capital. *Journal of Corporate Finance*, 34, 128-149.
- O'Dwyer, B., Owen, D., & Unerman, J. (2011). Seeking legitimacy for new assurance forms: The case of assurance on sustainability reporting. *Accounting, Organizations and Society*, 36, 31-52.
- Patten, D. M. (2002, November). The relation between environmental performance and environmental disclosure: A research note. *Accounting, Organizations and Society*, 27(8), 763-773.
- Peters, G., & Romi, A. (2015). The association between sustainability governance characteristics and the assurance of corporate sustainability reports. *Auditing: A Journal of Practice and Theory*, 34(1), 163-198.
- Pricewaterhouse Coopers (PwC). (2015). *Assurance today and tomorrow*. Retrieved from <http://www.pwc.com/gx/en/services/audit-assurance/publications/investors-views-survey.html>
- Rezaee, Z. (2015, October). *Business sustainability: Performance, compliance, accountability and integrated reporting*. Greenleaf Publishing Limited.
- Rezaee, Z. (2016). Business sustainability research: A theoretical and integrated perspective. *Journal of Accounting Literature*, 36, 48-64.
- Rezaee, Z., Tsui, J., Cheng, P., & Zhou, S. (2019, March). *Business sustainability in Asia: Compliance, performance, and integrated reporting and assurance*. New Jersey: John Wiley and Sons.
- Scholtens, B., & Kang, F. C. (2013, March). Corporate social responsibility and earning management evidence from Asia economies. *Corporate Social Responsibility and Environmental Management*, 20(2), 95-112.
- Shen, H., Wu, H., & Chad, P. (2017). The impact of corporate social responsibility assurance on investor decisions: Chinese evidence. *International Journal of Auditing*, 18, 1-17.
- Simnett, R., Nugent, M., & Huggins, A. (2009a). Developing an international assurance standard on greenhouse gas statements. *Accounting Horizons*, 23(4), 347-364.
- Simnett, R., Vanstraelen, A., & Chua, W. F. (2009b). Assurance on general purpose non-financial reports: An international comparison. *Accounting Review*, 84(3), 937-967.
- The International Standard on Assurance Engagements 3000 (ISAE 3000). (2005). Assurance engagements other than audits or reviews of historical financial information. *ISAE*, 1-57. Retrieved from <http://www.accountability21.net>
- Unruh, G., Kirin, D., Kruschwitz, N., Reeves, M., Rubel, H., & Meyer zum Felde, A. (2016). Investing for a sustainable future. *MIT Sloan Management Review*. Retrieved from <http://sloanreview.mit.edu/projects/investing-for-a-sustainable-future/>
- Vermader, B. (2014). *Corporate social responsibility in China: A vision, an assessment and a blueprint*. Singapore: World Scientific Publishing Co. Pte. Ltd..

Wang, X., Cao, F., & Ye, K. (2018). Mandatory corporate social responsibility (CSR) reporting and financial reporting quality: Evidence from a quasi-natural experiment. *Journal of Business Ethics*, 152(4), 253-274.

Appendix Variables, definitions and data source

Variables	Definitions	Data sources
Dependent variables:	SAQ1 = Sustainability Assurance Quantity, a dummy variable which is equal to 1, if the firm prepare the sustainability assurance; zero otherwise.	GRI database
SAQ1	SAQ2 = Sustainability Assurance Quality, a dummy variable which is equal to 1, if the firm firms' sustainability reports are assured by accounting firms; zero otherwise.	GRI database
SAQ2		
Explanatory Variables:	SRQ1 = Sustainability Reporting Quantity, a dummy variable which is equal to 1, if the firm prepare the sustainability report; zero otherwise.	GRI database
SRQ1	SRQ2 = Sustainability Reporting Quality, the application level of GRI framework in preparing the sustainability report	
SRQ2		
ESG score	ESGScore = Thomson Reuters ESG Score – measures company's ESG	Data stream/Eikon
	ESGScore = Thomson Reuters ESG Score: Thomson Reuters ESG Combined Score (ESGC) – overlays the Thomson Reuters ESG Score with ESG controversies to provide a comprehensive evaluation on the company's sustainability impact and conduct. The ESG Combined scores provide a rounded and comprehensive scoring of a company's ESG performance based on the reported information in the ESG pillars with ESG controversies overlay captured from global media sources.	Data stream/Eikon
ESG score		
Big 4	Big4 = An indicator variable that equals 1 if a firm's auditor is a Big 4 auditor in a given year, and 0 otherwise	GRI database
DJSI	DJSI = An indicator variable that equals 1 if a firm is included in the Dow Jones Sustainability Index (DJSI) in a given year, and zero otherwise.	DJSI
	Quality Education = a measure of social dimension based on	
	Expected years of schooling (years) UNESCO (2016)	
	Literacy rate of 15-24 year olds, both sexes (%) 2001-2013 UNESCO (2016)	
SDG 4	Net primary school enrolment rate (%) 1997-2014 UNESCO (2016)	SDG index (2016)
	Population aged 25-64 with tertiary education (%) (a) - 2011 OECD (2016)	
	PISA score (0-600) 2012 OECD (2016)	
	Population aged 25-64 with upper secondary and postsecondary non-tertiary educational attainment (%) 2011-2013 OECD (2016)	
	Gender Equality = a measure of social dimension based on	
	Proportion of seats held by women in national parliaments (%) 2012-2014 IPU (2015)	
SDG 5	Female years of schooling of population aged 25 and above (% male) - 2014 UNDP (2015)	SDG index (2016)
	Female labor force participation rate (% male) - 2010-2014 ILO (2016)	
	Estimated demand for contraception that is unmet (% of women married or in union, ages 15-49) 2015 WHO (2016)	
	Gender wage gap (% of male median wage) - 2012 OECD (2016)	
	Clean Water and Sanitation = a measure of environmental dimension based on	
	Access to improved water sources (% of population) - 2011-2015 WHO & UNICEF (2016)	
SDG 6	Access to improved sanitation facilities (% of population) - 2011-2015 WHO & UNICEF (2016)	SDG index (2016)
	Freshwater withdrawal (% of total renewable water resources) 1999-2012 FAO (2016)	
	Responsible Consumption and Production = a measure of environmental dimension based on	
SDG 12	Percentage of anthropogenic wastewater that receives treatment (%) 2012 OECD (2016)	SDG index (2016)
	Municipal solid waste (kg/year/capita) - 2012 World Bank (2016)	
	Non-recycled municipal solid waste (kg/person/year) (a) o 2009-2013 OECD (2016)	
	Climate Change = a measure of Environmental dimension based on	
SDG 13	Energy-related CO ₂ emissions per capita (tCO ₂ /capita) - 2011 World Bank (2016)	SDG index (2016)
	Climate Change Vulnerability Monitor (0-1) - 2014 HCSS (2014)	
	LIFE ON LAND =a measure of social dimension based on	
SDG 15		SDG index (2016)
	Red List Index of species survival (0-1) 2016	

	IUCN and Bird Life International (2016)	
	Annual change in forest area (%) 2012 YCELP & CIESIN (2014)	
	Terrestrial sites of biodiversity importance that are completely protected (%) 2013	
	BirdLife International, IUCN & UNEP-WCMC (2016)	
	Peace and Justice = a measure of Social dimension based on	
	Homicides (per 100,000 people) 2008-2012 UNODC (2016)	
	Prison population (per 100,000 people) - 2002-2013 ICPR (2014)	
	Proportion of the population who feel safe walking alone	
	at night in the city or area where they live. (%) 2006-2015 Gallup (2015)	
SDG 16	Corruption Perception Index (0-100) - 2014	SDG index (2016)
	Transparency International (2015)	
	Proportion of children under 5 years of age whose births	
	have been registered with a civil authority, by age (%) 2014 UNICEF (2013)	
	Government efficiency (1-7) - 2015/2016 WEF(2015)	
	Property rights (1-7) - 2014/2015 WEF (2015)	
	Partnerships for the Goals = a measure of Social dimension based on high-income and all	
	OECD DAC countries:	
SDG 17	International concessional public finance, including	SDG index (2016)
	official development assistance (% of GNI) 2013 OECD (2016)	
	For all other countries: Tax revenue (% of GDP) 2013 World Bank (2016)	
	Health, education and R & D spending (% of GDP) - 2005-2014 UNDP (2015)	
Control		
variables:	Total Assets = The natural logarithm of a firm's total assets.	Data stream
SIZE		
ROA	ROA = Return on assets (ROA) is an indicator of how profitable a company is relative to its total assets.	Data stream

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