Are ESG Ratings Noisy for Stock Returns? Evidence from Thailand's Stock Market

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SET: Capital Market Research Forum
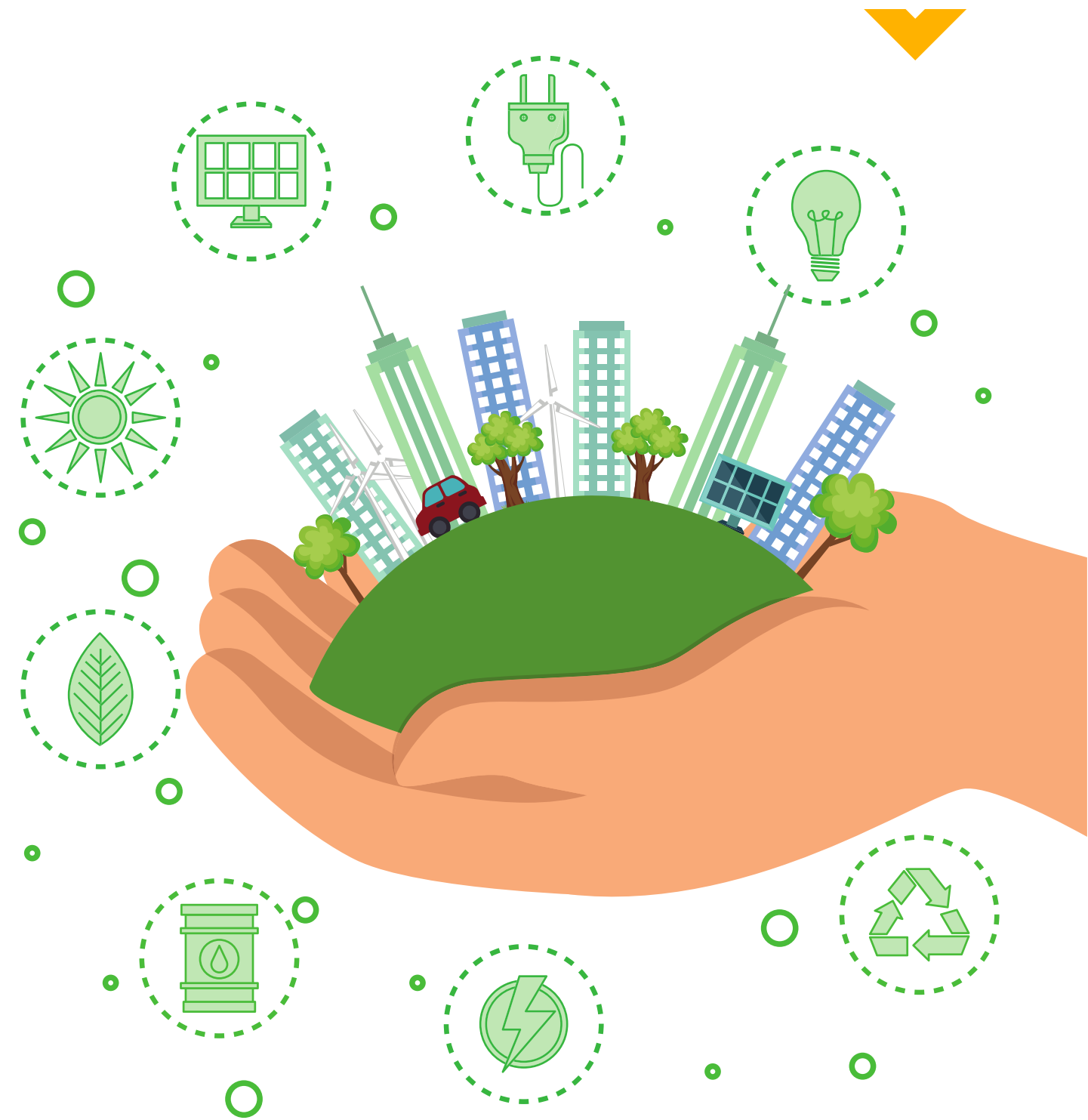"ESG and Sustainability in Emerging Market: Shaping Thailand's Future"
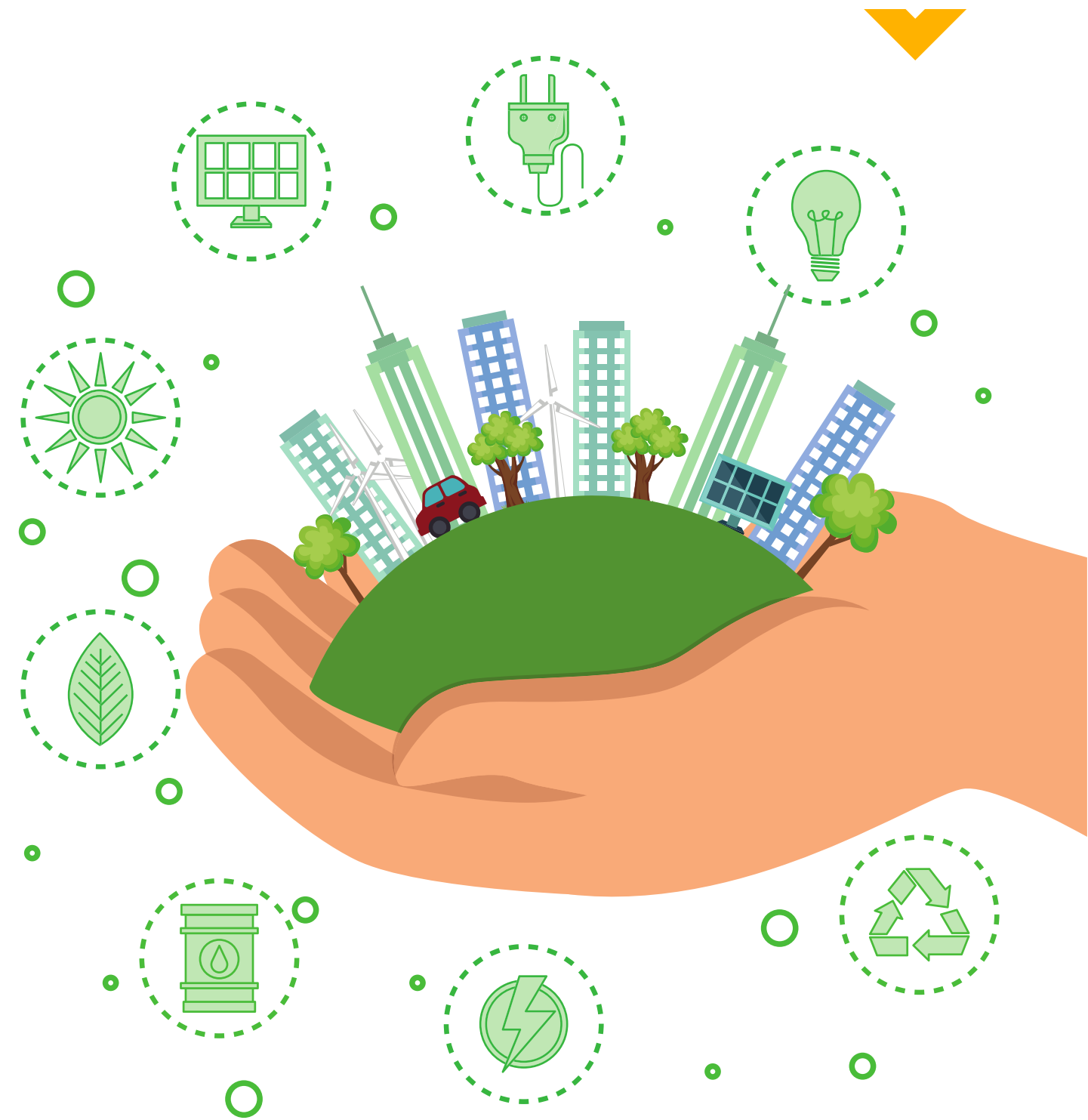13 November 2024

MOTIVATION

- Despite the growing global interest in ESG, including in Thailand, which reflects the theory that high ESG scores positively impact stock prices, the importance of ESG in investment varies, and there is no definitive empirical evidence

    - Friede et al. (2015) found a positive correlation between ESG and company performance, particularly in North America and emerging markets.
    - La Torre et al. (2020) concluded that the efforts of Eurostoxx50 companies in terms of ESG commitments did not appear to affect their performance in the European market.
    - Garcia et al. (2017) discovered that profitability of firm assets was only correlated with environmental performance among ESG performance proxies, and companies with superior ESG performance were generally less profitable in BRICS (Brazil, Russia, India, China, and South Africa) markets.

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- The current empirical studies are inconclusive, leading to ongoing debates on the importance of ESG metrics in portfolio allocation, and there is no consensus on the application of ESG in investment management.

- Berg, Kölbel, and Rigobon (2022), one reason for the lack of standard criteria for applying ESG scores is the varying evaluation criteria among providers and the differing processes for creating models to calculate certain metrics for each aspect of ESG.
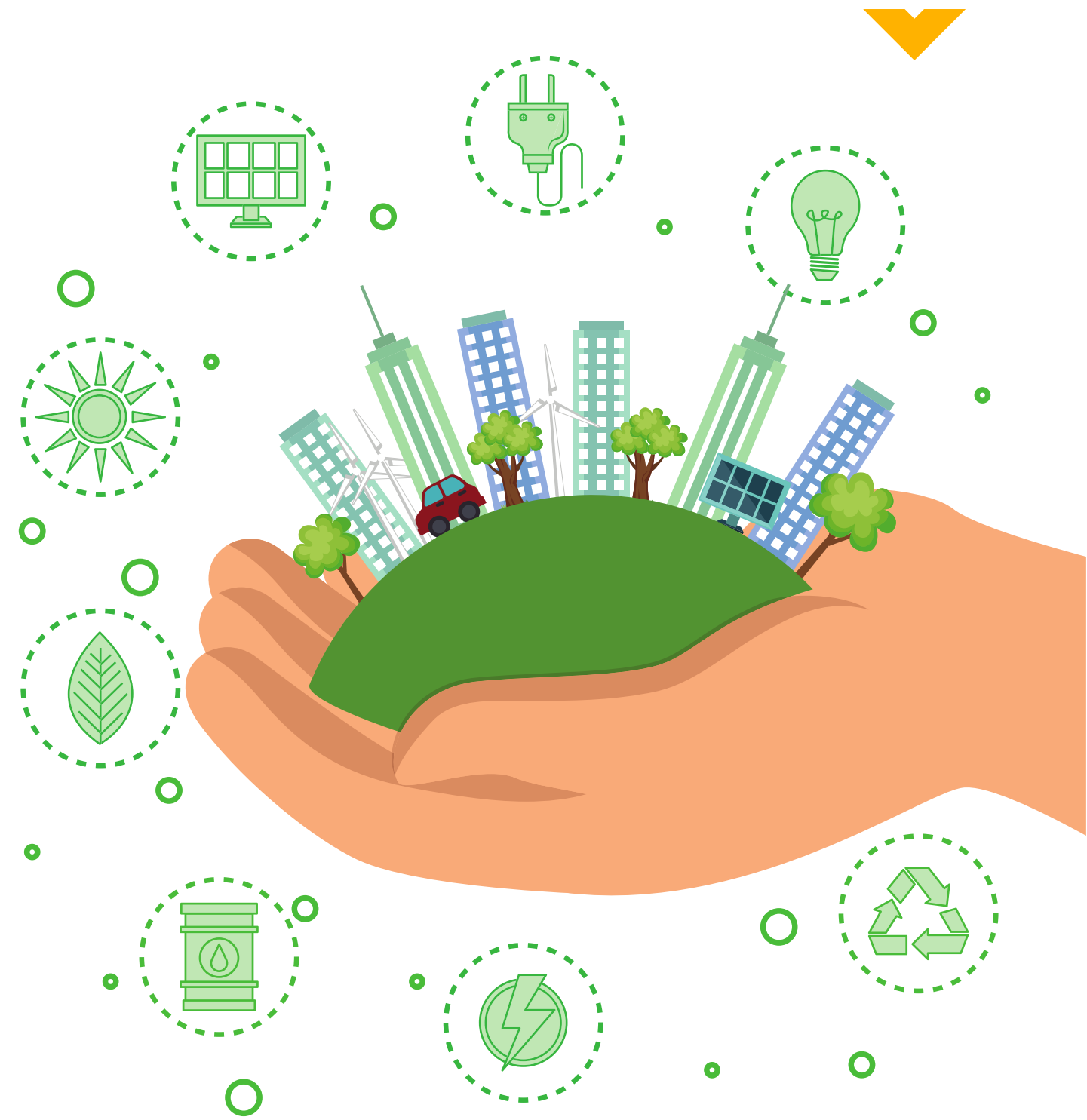
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Berg et al. (2022) interpret the divergence in ESG ratings as a measurement error that diminishes the true effect of ESG performance on stock returns in standard regressions. They propose two noise-correction procedures, where ESG ratings are instrumented with ratings from other ESG rating agencies, similar to the classical errors-in-variables problem.

We use data from three ESG rating providers: Refinitiv, S&P Global, and Bloomberg. Figure 2 presents the average ESG scores for each agency from 2015 to 2022.

Table 1: Descriptive Statistics for All Variables

	Mean	S.D.	Min	Max
ESG Scores				
Refinitiv	64.82	13.55	17.85	91.82
Bloomberg	3.65	1.38	0.85	6.62
S&P Global	66.90	20.46	14	93
Financial Variables				
Returns	0.25	2.40	−5.88	16.78
Dividend Yields	3.05	1.94	0.00	10.92
Market-to-Book	3.31	3.02	0.40	15.12
ROA	6.46	4.89	−7.44	26.66
Momentum	0.24	2.53	−6.62	19.41
Volatility	0.08	0.05	0.02	0.29
Asset Growth	10.23	16.34	−14.06	121.01

Note: Return is the average of monthly returns in percent from month +1 to +12,; Dividends are per share over the prior 12 months divided by price at the end of the prior month; Market-to-Book is the logarithm of market value of equity minus the logarithm of book value of equity at the end of the prior month,; Asset Growth is the logarithm of growth in total assets in the prior fiscal year,; ROA is income before extraordinary items divided by average total assets in the prior fiscal year; Momentum is return from month −12 to month −2; and Volatility is the monthly standard deviation, estimated from returns from months −12 to −1.
Source: Authors' calculation.

Figure 1: Average ESG Scores on Thai Stocks for 2015-22 from Three ESG Rating Providers
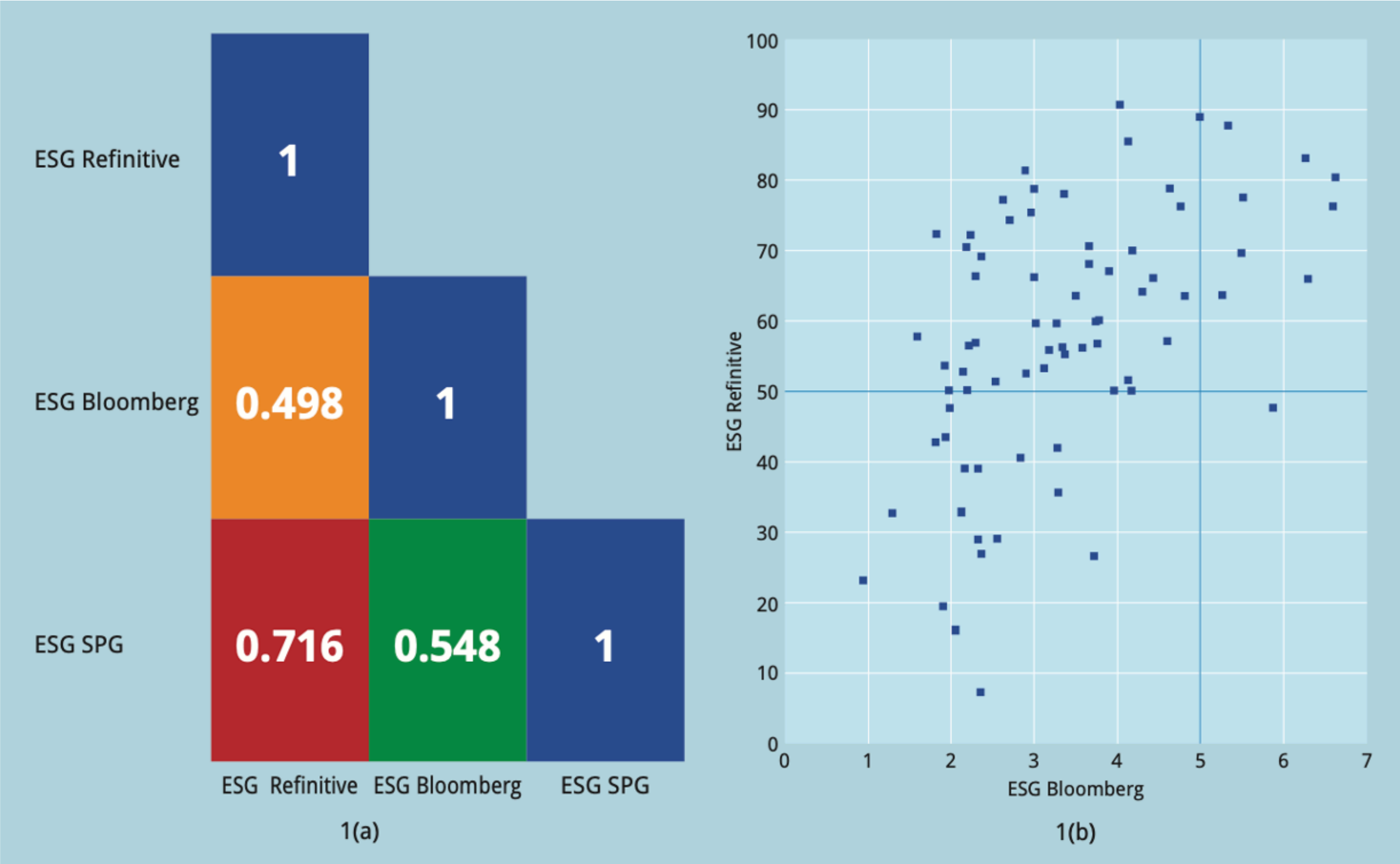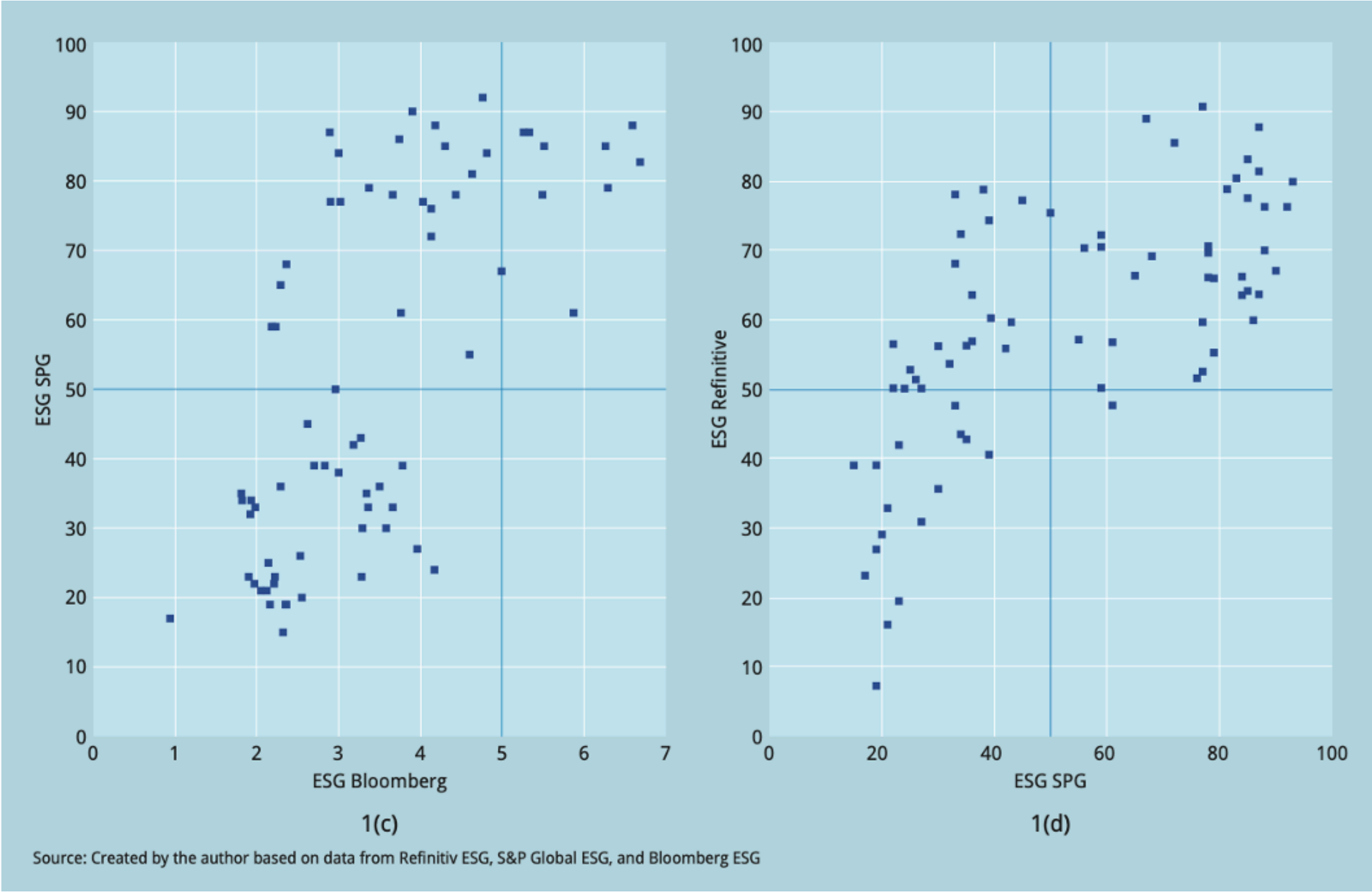

1(a)

1(b)

Figure 1 (Cont's): Average ESG Scores on Thai Stocks for 2015-22 from Three ESG Rating Providers

1(c)

1(d)

Source: Created by the author based on data from Refinitiv ESG, S&P Global ESG, and Bloomberg ESG

Attenuation Bias (Measurement Error)

To quantify the problem of noise, we estimate the OLS regressions of stock returns on ESG ratings and compare them to the standard asset pricing model, which can be written as follows:

$$r_{k,t+1} = \alpha + \beta Y_{i,t}^* + controls_{i,t} + u_{\{i,t\}} \quad i = 1, \dots, n; t = 1, \dots, T \tag{8}$$

Where $Y^*_{i,t}$ denotes the ESG rating of firm k, by rater i, in year t. All returns are monthly. Using the same model specification in the work of Lewellen (2015), we include stock-level controls consisting of Dividends, Market Value, Market-to-Book, Asset Growth, ROA (Return on Assets), Momentum, and Volatility. All models are estimated with industry and month fixed effects.
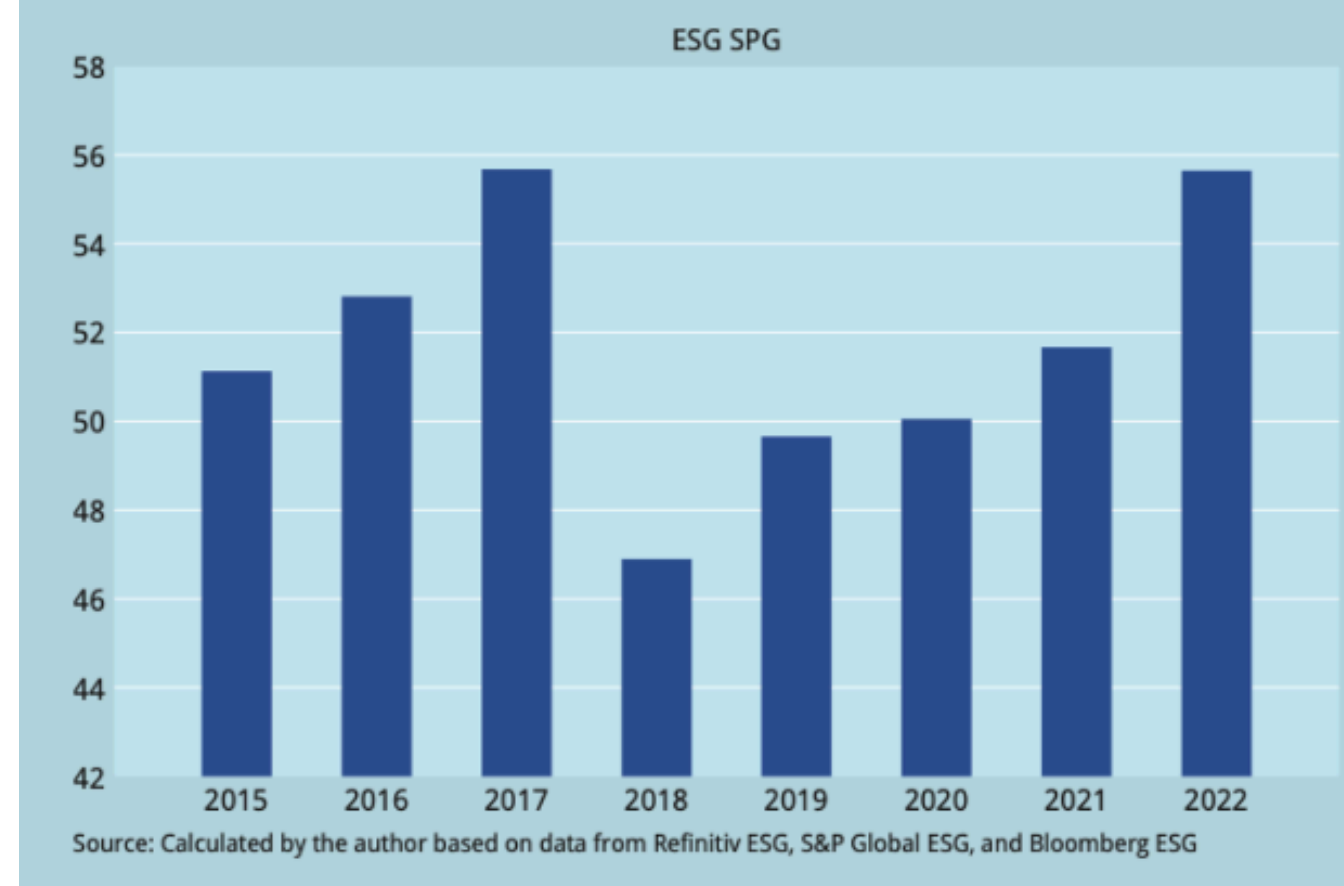
ESG Refinitive

ESG SPG

Source: Calculated by the author based on data from Refinitiv ESG, S&P Global ESG, and Bloomberg ESG

ESG Bloomberg

Figure 2: Average ESG Scores on Thai Stocks for 2015-22 from Three ESG Rating Providers

Table 2: Estimation Results for Stock Returns and ESG Ratings

	FE	FE2SLS	FE	FE2SLS	FE	FE2SLS
ESG Scores						
Refinitiv	−.0396*	−0.0999***				
	(.0214)	(0.0356)				
Bloomberg			−0.8607***	−0.7545*		
			(0.2434)	(0.4086)		
S&P Global					−0.0230	−0.0803***
					(0.0160)	(0.0306)
Financial Variables						
Dividend Yields	−0.1606	−0.1695	−0.1001	−0.0676	−0.1072	−0.2391
	(0.1353)	(0.1419)	(0.1306)	(0.1311)	(0.1372)	(0.1525)
Market-to-Book	−0.5856***	−0.6682***	−0.6871***	−0.7577***	−0.6225***	−0.6610***
	(0.1493)	(0.1534)	(0.1495)	(0.1582)	(0.1477)	(0.1549)
ROA	0.1692***	0.1225**	0.1750***	0.1448***	0.1473***	0.1167**
	(0.0538)	(0.0563)	(0.0513)	(0.0526)	(0.0531)	(0.0578)
Momentum	0.3717***	0.3963***	0.4161***	0.4305***	0.3898***	0.3554***
	(0.0806)	(0.0821)	(0.0792)	(0.0803)	(0.0797)	(0.0843)
Volatility	10.0003**	11.1669***	9.4114**	8.5694**	6.7525*	7.0580*
	(4.1013)	(4.3006)	(3.9234)	(3.9305)	(3.9322)	(4.1314)
Asset Growth	−0.0008	−0.0011	0.0063	0.0017	0.0028	0.0034
	(0.0116)	(0.0118)	(0.0108)	(0.0116)	(0.0109)	(0.0122)
Constant	3.4307**	7.8158***	4.0986***	4.1476**	2.7048*	7.2177***
	(1.6400)	(2.5416)	(1.2298)	(1.8447)	(1.4395)	(2.4838)
Observations	203	200	209	200	205	200
R^2	0.2407	0.1986	0.2840	0.2778	0.2363	0.1821
OIR Test		2.1		0.0029		30.8
p-value		0.1473		0.9573		0.0793

Note: The numbers in parentheses are standard errors. ***, **, * denote statistically significance at level 0.01, 0.05, 0.1, respectively.
Source: Authors' calculation.

- Comparison between Fixed Effects (FE) and FE2SLS estimations.
- Key findings: FE estimations show attenuation bias, corrected in FE2SLS.
- Instrumental validity tested with Over-identifying Restrictions Test (OIR Test).

Table 3: Noise-to-Signal Ratio of Each Rating Score at Different Forecast Horizon

	Refinitiv	Bloomberg	S&P Global
$h = 0$	0.6035	−0.1408	0.7136
$h = 1$	0.8814	−0.0747	0.5493

Source: Authors' calculation.

1. Refinitiv and S&P Global scores significantly predict stock returns with 2SLS.
2. Bloomberg scores show lower significance.
3. Noise-to-signal ratios indicate robustness of findings.

KEY TAKEAWAYS

• Noise in ESG ratings leads to measurement error, affecting statistical analysis.

• Using multiple ESG scores as instruments improves the accuracy of ESG's effect on stock returns.

• Recommendation for investors: Reference multiple ESG ratings for reliable assessments.

THANK YOU