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Impact of voluntary integrated reporting on firm value: Evidence from Asia

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Abstract
This study employs a rigorous quasi-experimental design to examine whether voluntary adoption of Integrated Reporting (IR) enhances firm value in emerging Asian markets. Using a combination of Propensity Score Matching (PSM) and staggered Difference-in-Differences (DiD) methodologies, we address potential endogeneity issues by creating a matched control group of non-adopting firms with similar pre-treatment characteristics. Our results indicate that voluntary IR adoption does not produce a statistically significant improvement in firm valuation, challenging the prevailing assumption that sustainability reporting automatically creates shareholder value in these markets. The findings suggest that the benefits of IR may be contingent on factors such as reporting quality, institutional context, and market maturity rather than mere adoption. This research contributes to the literature by providing robust causal evidence from understudied Asian emerging markets, complementing existing Western-centric studies. The null results have important implications for corporate managers considering IR implementation and regulators evaluating disclosure frameworks in developing economies.

Keyword: Firm value, integrated reporting, sustainability disclosure, emerging markets, difference-in-differences, propensity score matching

Introduction
In an era marked by rapid economic transformation and heightened societal expectations, businesses are no longer judged solely on their financial performance but also on their ability to address pressing environmental and social challenges (Freeman *et al*., 2020; Schaltegger & Burritt, 2018) [24, 52]. The traditional financial reporting model, long regarded as the cornerstone of corporate transparency (Leuz & Wysocki, 2016) [40], has come under scrutiny for its inability to account for intangible assets, long-term sustainability risks, and broader stakeholder impacts (Adams & Abhayawansa, 2022; Dumay *et al*., 2016) [2, 19]. This gap has fueled demand for alternative reporting frameworks that align corporate disclosures with the complexities of modern business ecosystems (KPMG, 2022) [35]. The rise of sustainability reporting—exemplified by frameworks such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB)—has sought to address these deficiencies by encouraging firms to disclose non-financial performance metrics (Hahn & Kühnen, 2013) [30]. However, critics argue that such frameworks often lead to fragmented disclosures, inconsistent metrics, and superficial compliance rather than genuine accountability (Michelon *et al*., 2015; Talbot & Boiral, 2018) [46, 58]. The lack of integration between financial and sustainability reporting has further exacerbated concerns about greenwashing and the reliability of corporate sustainability claims (Bowen, 2014; Lyon & Montgomery, 2015) [8, 41]. Against this backdrop, Integrated Reporting (IR) has emerged as a potential solution, promising to bridge the divide between financial and non-financial disclosures by presenting a cohesive narrative of value creation (Adams, 2017; IIRC, 2021) [1, 32]. Proponents argue that IR fosters "integrated thinking," encouraging firms to consider how environmental, social, and governance (ESG) factors influence long-term profitability (Eccles & Krzus, 2014; Stubbs & Higgins, 2018) [20, 55]. Yet, despite its theoretical appeal, the practical impact of IR remains contested. While some studies suggest that IR enhances transparency and stakeholder trust (Cheng *et al*., 2014; Zhou *et al*., 2017) [11, 63], others question whether it has been co-opted by corporate interests, serving more as a public relations tool than a driver of substantive change (Brown & Dillard, 2014; Flower, 2015).

Moreover, the global adoption of IR has been uneven, shaped by divergent regulatory environments and cultural attitudes toward sustainability (De Villiers *et al*., 2017) [17]. In regions like the European Union, regulatory mandates have accelerated IR adoption, whereas in the United States, political resistance to ESG initiatives has hindered its progress (Kölbel *et al*., 2020) [34]. This polarization raises critical questions about whether IR can function as a universal reporting standard or if its effectiveness is contingent on institutional and market conditions. Given these unresolved debates, this study seeks to contribute to the literature by examining the real-world implications of IR adoption, particularly in voluntary settings where firms choose to implement IR beyond regulatory requirements. While prior research has predominantly focused on mandatory regimes (e.g., South Africa), less attention has been paid to whether voluntary adopters experience tangible benefits, such as improved financial performance, enhanced investor confidence, or stronger ESG integration (Dumay *et al*., 2016; Rinaldi *et al*., 2018) [19, 49]. By addressing this gap, our research aims to provide empirical insights into whether IR fulfills its promise as a transformative reporting mechanism or remains an aspirational yet underutilized framework. Ultimately, this study not only advances academic discourse on corporate reporting but also offers practical guidance for policymakers, standard-setters, and business leaders navigating the evolving landscape of sustainability disclosure. As the debate over the future of corporate accountability intensifies, understanding the efficacy of IR is crucial for shaping the next generation of financial and non-financial reporting standards

Literature review and hypothesis development

The relationship between Integrated Reporting (IR) and firm value has been extensively studied, yielding mixed findings. Proponents argue that IR enhances firm value by reducing information asymmetry, lowering information processing costs, and improving investor confidence through higher-quality, interconnected disclosures (Lee & Yeo, 2016; Barth *et al*., 2017; Sun *et al*., 2022) [38, 7]. Studies in South Africa, China, and GCC countries support this view, showing that IR adoption positively influences Tobin's Q, particularly in complex firms with high external financing needs (Alatawi *et al*., 2025; Radwan & Xiongyuan, 2024) [5, 47]. Additionally, IR's principles of materiality and connectivity help mitigate information overload, strengthening governance and strategic disclosures (IIRC, 2021; Reimsbach *et al*., 2018) [32, 48]. However, critics highlight potential drawbacks, such as proprietary costs, regulatory burdens, and impression management risks, which may offset IR's benefits (Landau *et al*., 2020; Stubbs *et al*., 2014) [36, 54]. While some studies report neutral or negative effects—attributing them to implementation costs—the prevailing evidence suggests that IR's transparency and signaling benefits outweigh its drawbacks, particularly in markets with strong disclosure incentives. Thus, H3 posits that voluntary IR adoption significantly enhances market-based financial performance (Tobin's Q), aligning with signaling theory and agency theory perspectives. The literature presents competing perspectives on whether Integrated Reporting (IR) enhances firm value. Proponents argue that IR improves information quality, reduces asymmetry, and lowers processing costs by integrating financial and non-financial disclosures, thereby strengthening investor confidence and valuation metrics like Tobin's Q (Lee & Yeo, 2016; Barth *et al*., 2017) [38, 7]. Conversely, critics highlight proprietary costs and implementation burdens that may negate these benefits (Landau *et al*., 2020) [36]. Empirical evidence from emerging markets (e.g., GCC, China) supports the positive view, particularly for firms with high external financing needs or complex operations (Alatawi *et al*., 2025; Radwan & Xiongyuan, 2024) [5, 47]. Given IR's role in signaling long-term value creation (per signaling theory) and mitigating agency conflicts (per agency theory), we hypothesize:

H3: Firms that voluntarily adopt Integrated Reporting (IR) exhibit higher firm value than non-adopters.

Research design

Sample

This study investigates the effects of voluntary Integrated Reporting (IR) adoption among publicly listed non-financial firms across Asian markets, analyzing companies that explicitly adopted the IIRC framework between 2008-2023 while excluding financial sector firms due to their distinct reporting requirements.

Table 1: Sample distribution by Country

Country of Headquarters	Freq.	Percent	Cum.
India	43	12.68	12.68
Japan	195	57.52	70.21
Korea; Republic (S. Korea)	19	5.60	75.81
Malaysia	30	8.85	84.66
Sri Lanka	52	15.34	100.00
Total	339	100.00	

Table 2: Sample distribution by Industrial Sector

GICS Sector Name	Freq.	Percent	Cum.
Communication Services	10	2.95	2.95
Consumer Discretionary	58	17.11	20.06
Consumer Staples	61	17.99	38.05
Energy	7	2.06	40.12
Health Care	24	7.08	47.20
Industrials	105	30.97	78.17
Information Technology	2	0.59	78.76
Materials	56	16.52	95.28
Real Estate	7	2.06	97.35
Utilities	9	2.65	100.00
Total	339	100.00	

The sample selection required continuous IR publication and at least three years of pre-adoption data, with firms identified through LSEG Data & Analytics, the IIRC database, and manual verification of corporate reports. Using propensity score matching, each Asian IR-adopting firm was paired with comparable non-adopters from the same country and industry with similar size characteristics, with the 2008-2023 study window enabling comprehensive pre- and post-adoption performance analysis to isolate IR's specific impacts in Asian markets. The final sample consists of 339 IR firms that voluntarily adopted Integrated reporting across Asia as shown in Table 1 and 2.

Variables description

Dependent Variable

The study employs Tobin's Q as the primary measure of firm value, representing investor expectations and market valuation. Calculated as (market value of equity + total assets - book value of equity) / total assets, Tobin's Q effectively captures intangible assets and systematic risks that traditional financial metrics may overlook (Lang & Maffett, 2011; Lee & Yeo, 2016) [37, 38]. This forward-looking indicator is widely used in corporate finance and sustainability research due to its ability to reflect both current performance and future growth potential. Compared to accounting-based measures, Tobin's Q provides a more comprehensive assessment of firm value by incorporating market perceptions, making it particularly suitable for evaluating the impact of voluntary disclosures such as Integrated Reporting (IR). The use of this market-based measure helps mitigate potential accounting distortions while aligning with prior studies examining the relationship between corporate transparency and firm valuation (Dhaliwal *et al*., 2011; Eccles *et al*., 2014) [18, 20].

Independent Variable

Following Gerwanski, 2020; Flores *et al*., 2019) [27, 22] this study defines IR as a manually collected binary variable that equals 1 if a firm issues an integrated report in year t explicitly referencing the IIRC Framework, and 0 otherwise

Control variables

This research incorporates fundamental firm-level variables that affect both IR implementation and corporate outcomes, specifically: firm scale (SIZE) quantified as the natural logarithm of total assets, financial leverage (LEV) calculated as the ratio of total debt to total assets, expansion rate (Sales Growth), and earnings performance (ROA) (Cooray *et al*., 2020; Buallay *et al*., 2020) [14, 10]. Corporations with larger asset bases demonstrate greater propensity for IR adoption, attributable to enhanced resource availability and heightened stakeholder expectations (Sampong *et al*., 2018; Chouaibi *et al*., 2022) [51, 12]. The leverage ratio serves as a dual indicator of financial risk and potential performance enhancement (Maniora, 2015; Gal & Akisik, 2020) [42, 25]. These control variables are essential for accurately determining the independent influence of IR on corporate valuation

Research Methods

This study employs a robust quasi-experimental design combining Propensity Score Matching (PSM) and staggered Difference-in-Differences (DiD) to estimate the causal effect of voluntary Integrated Reporting (IR) adoption on firm value while addressing endogeneity concerns (Rosenbaum & Rubin, 1983) [50]. This study first uses PSM to match IR adopters with comparable non-adopters based on pre-treatment characteristics like size, profitability, and leverage (Zhao & Omran, 2024; Dutillieux) [62], then apply staggered DiD to compare firm value trajectories while accounting for varying adoption timing and controlling for firm/year fixed effects (Meyer, 1995; Gow *et al*., 2016) [45, 28]. This approach simultaneously addresses observable selection bias through matching and unobserved heterogeneity through differencing, with diagnostic tests validating the parallel trends assumption (Heckman *et al*., 1998; Flores *et al*., 2019) [31, 22], while the staggered specification properly handles heterogeneous treatment effects across adoption cohorts (Zhang & Zhao, 2023; Angrist & Pischke, 2009) [61, 6], ultimately providing more credible causal estimates than conventional methods for assessing voluntary disclosure impacts.

Model specification

This study uses a Staggered Two-way fixed effects Difference-in-Differences (DiD) regression to test the impact of voluntary Integrated Reporting (IR) adoption on firm value**.**

$$TOBINQ_{it} = \theta\left(POST_{IR_{it}} \times TREATED_i\right) + \beta_1 SIZE_{it} + \beta_2 LEV_{it} + \beta_2 ROA_{it} + SALES\_GROWTH_{it} + Firm\ FE_i + Year\ FE_t + \epsilon_{it}$$

Results and Discussion

Univariate Analysis

The descriptive statistics as depicted in Table 3,4 and 5 provide a comprehensive overview of the financial and reporting characteristics across the sample. For the full sample of 9,637 firm-year observations, Tobin's Q averages 1.399 with a standard deviation of 0.862, indicating moderate variation in firm valuations. The substantial right skewness (2.497) and high kurtosis (9.941) reveal a distribution where most firms cluster at lower valuation multiples while a few demonstrate exceptionally high valuations. Profitability metrics show Return on Assets (ROA) averaging 4.333% with a near-normal distribution (skewness of -0.023), suggesting balanced performance across the sample. When examining the subsamples, IR-adopting firms (5,301 observations) show marginally better performance metrics compared to non-adopters (4,336 observations), with higher mean Tobin's Q (1.418 versus 1.376) and ROA (4.468% versus 4.168%). These preliminary differences suggest potential performance advantages for IR adopters, though they require more rigorous analysis to establish causality. The leverage ratios average 51.954% across all firms with minimal variation between adopters and non-adopters, while firm size exhibits negative skewness (-0.57) reflecting the predominance of smaller firms in the sample. Sales growth displays positive skewness (1.375), indicating that while most firms experience modest growth, a subset achieves exceptional growth rates.

Table 3: Summary statistics

	N	SD	Mean	Min	Median	Max	Skewness	Kurtosis
Tobinq	9637	.862	1.399	.51	1.087	5.071	2.497	9.941
Roa	9637	4.808	4.333	-20.899	3.801	19.22	-.023	5.116
Post IR	9637	.427	.24	0	0	1	1.215	2.476
Lev Percent	9637	20.017	51.954	2.071	52.754	107.282	-.114	2.251
Size	9637	2.148	20.991	13.474	21.286	27.056	-.57	3.163
Sales Growth	9004	19.318	3.749	-58.906	1.881	114.057	1.375	9.319

Table 4: Summary statistics

	N	SD	Mean	Min	Median	Max	Skewness	Kurtosis
Tobinq	5301	.85	1.418	.523	1.108	5.071	2.516	10.131
Roa	5301	4.688	4.468	-20.899	3.88	19.22	.041	5.355
Post IR	5301	.496	.437	0	0	1	.254	1.064
Lev percent	5301	18.99	52.292	2.071	52.669	91.929	-.133	2.244
Size	5301	2.179	21.08	13.474	21.367	27.056	-.537	3.148
Sales Growth	4955	18.185	3.553	-58.906	1.902	114.057	1.28	9.094

Table 5: Summary statistics

	N	SD	Mean	Min	Median	Max	Skewness	Kurtosis
Tobinq	4336	.875	1.376	.51	1.059	5.071	2.483	9.753
Roa	4336	4.947	4.168	-20.899	3.671	19.22	-.079	4.845
Post IR	4336	0	0	0	0	0	.	.
Lev Percent	4336	21.2	51.541	2.071	52.808	107.282	-.085	2.208
Size	4336	2.105	20.881	14.171	21.186	26.012	-.631	3.168
Sales Growth	4049	20.62	3.989	-58.906	1.822	114.057	1.433	9.21

Bivariate Analysis

Table 6 presents result of the correlation matrix which reveals several important relationships among the study variables. The weak negative correlation between Tobin's Q and firm size (-0.192) suggests that larger firms in the sample tend to have slightly lower valuation multiples on average. Return on Assets demonstrates theoretically consistent relationships, showing positive correlation with firm size (0.202) and negative correlation with leverage (-0.231). The IR adoption variable shows modest positive correlation with firm size (0.199), implying that larger firms are more likely to adopt integrated reporting frameworks, possibly due to greater resources or stakeholder pressure. However, its negligible correlations with both Tobin's Q (0.009) and ROA (0.039) suggest that adoption alone may not directly translate to superior financial performance. The strongest correlation for Tobin's Q is with sales growth (0.134), highlighting how market valuations positively respond to growth prospects. These bivariate relationships provide important context for interpreting the subsequent multivariate analysis, particularly the need to control for firm size and profitability when examining the impact of reporting practices.

Tale 6: Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) Tobinq	1.000					
(2) Roa	-0.064	1.000				
(3) Post_IR	0.009	0.039	1.000			
(4) Lev	0.007	-0.231	0.021	1.000		
(5) Size	-0.192	0.202	0.199	0.152	1.000	
(6) Sales Growth	0.134	0.065	-0.015	-0.020	-0.050	1.000

Pre diagnostic tests

Rigorous diagnostic testing was conducted to ensure the validity of the econometric models. The Cameron & Trivedi test for heteroskedasticity yielded highly significant results (χ^2=2,497.6, p<0.001), indicating the presence of non-constant variance in the error terms across observations. This finding necessitated the use of robust standard errors in all regression models to ensure reliable statistical inference. Multicollinearity tests produced reassuring results, with all Variance Inflation Factors (VIFs) well below conventional thresholds (maximum VIF=1.312, mean VIF=1.158), confirming that the explanatory variables are sufficiently independent for regression analysis. The Wooldridge test for autocorrelation (F=162.159, p<0.001) detected significant first-order autocorrelation in the panel data, which was subsequently addressed through clustering standard errors at the firm level. These diagnostic procedures strengthen confidence in the subsequent regression results by ensuring that key statistical assumptions are properly addressed and potential biases are minimized.

Table 7: Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	2497.600	19	0.000
Skewness	528.250	5	0.000
Kurtosis	185.550	1	0.000
Total	3211.400	25	0.000

Table 8: Variance inflation factor

	VIF	1/VIF
Lev	1.312	.762
Roa	1.299	.77
Size	1.102	.907
Sales Growth	1.068	.936
Post IR	1.008	.992
Mean VIF	1.158	.

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F (1, 620) = 162.159
Prob > F = 0.0000

DiD regression Results
Table 9 presents the core analysis employs a Difference-in-Differences framework to isolate the causal effect of integrated reporting adoption on firm valuation. Across five progressively controlled specifications, the coefficient for IR adoption (POST_IR) remains statistically insignificant (ranging from -0.009 to 0.000, all p>0.1), suggesting that voluntary adoption does not systematically enhance firm valuation in these Asian markets. Control variables demonstrate theoretically consistent relationships: ROA shows a strong positive association with Tobin's Q (coefficients 0.028-0.030, all p<0.001), confirming the fundamental relationship between profitability and market valuation. Sales growth exhibits a small but statistically significant positive effect (0.00112, p<0.001), while leverage and firm size show negligible impacts in the fully specified model. The high explanatory power of the models (R^2=0.803-0.824) and significant F-statistics indicate that the specifications effectively capture the key determinants of firm valuation. The inclusion of both firm and year fixed effects accounts for unobserved heterogeneity, strengthening the causal interpretation of the results while controlling for time-invariant firm characteristics and macroeconomic trends.

Table 9: Impact of Voluntary IR on Firm Value

	(1)	(2)	(3)	(4)
Variables	**Tobin's Q**	**Tobin's Q**	**Tobin's Q**	**Tobin's Q**
Post_IR	-0.00901	-0.00927	-0.00848	-0.00584
	(0.0296)	(0.0296)	(0.0298)	(0.0294)
Roa	0.0305***	0.0292***	0.0291***	0.0280***
	(0.00281)	(0.00284)	(0.00283)	(0.00299)
Lev		-0.00134	-0.000987	-0.00104
		(0.00155)	(0.00175)	(0.00186)
Size			-0.0404	-0.0807
			(0.0491)	(0.0516)
Sales growth				0.00112***
				(0.000366)
Constant	1.269***	1.345***	2.175**	3.042***
	(0.0137)	(0.0854)	(0.983)	(1.030)
Observations	9,637	9,637	9,637	9,004
R-squared	0.803	0.803	0.803	0.824
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Adjusted R	0.789	0.789	0.789	0.810
F-stat	58.77	40.45	32.16	27.51

Discussion of Results
This study's finds that voluntary Integrated Reporting (IR) adoption does not significantly enhance firm value in emerging Asian markets—challenge the prevailing assumption that sustainability reporting inherently creates shareholder value (Maniora, 2017; Comerio & Tettamanzi, 2019) [43, 13]. The results align with concerns about "greenwashing" and superficial adoption, where firms implement IR symbolically rather than substantively (Ahmed Haji & Hossain, 2016; De Villiers *et al*., 2020) [4, 16], while also reflecting potential market inefficiencies where investors either cannot properly evaluate sustainability information or prioritize traditional financial metrics (Wahl *et al*., 2020; García-Sánchez & Martínez-Ferrero, 2017) [60, 26]. The findings underscore significant operational challenges in IR implementation, including weak integration of financial and non-financial information (Adams *et al*., 2016; Grassmann *et al*., 2019) [3, 29], redundancy in disclosures (Slack & Tsalavoutas, 2018) [53], and cultural resistance to integrated thinking (McNally & Maroun, 2018) [44]. Importantly, the results highlight the crucial distinction between voluntary and mandatory reporting regimes, with prior research demonstrating stronger financial impacts under mandatory adoption (Lee & Yeo, 2016; Barth *et al*., 2017) [38, 7], suggesting that regulatory enforcement may be necessary to drive meaningful implementation. For practitioners, these findings emphasize that mere compliance with IR frameworks is insufficient—strategic integration, reporting quality, and organizational buy-in are critical for value creation (Vesty *et al*., 2018; Stubbs & Higgins, 2014) [54, 59]. Policymakers should consider these results when designing disclosure frameworks, particularly in emerging markets where institutional contexts differ significantly from developed economies. By providing robust empirical evidence from Asian markets, this study addresses a key gap in the literature (Flores, 2019; Wahl *et al*., 2020) [22, 60] and suggests that future research should explore long-term

effects, cross-country comparisons, and the role of assurance mechanisms in enhancing IR's credibility and impact (Kılıç & Kuzey, 2018; Cortesi & Vena, 2019) [33, 15].

Conclusion

This study examined the effect of voluntary Integrated Reporting (IR) adoption on firm valuation across Asian markets through rigorous empirical analysis. The findings reveal several important insights about corporate reporting practices in emerging economies. The comprehensive analysis demonstrated no statistically significant evidence that voluntary IR adoption enhances firm valuation as measured by Tobin's Q. This null result remained consistent across all model specifications, even after controlling for key financial variables including profitability, leverage, size, and growth opportunities. While initial univariate analysis showed IR adopters with marginally better performance metrics, these differences proved insignificant in the multivariate framework. These findings carry important implications for theory and practice. The results challenge conventional assumptions about the automatic valuation benefits of improved disclosure, particularly in voluntary adoption contexts. They suggest that reporting quality alone may not constitute a strong enough market signal unless supported by substantive integration of sustainability into core business strategy. The study highlights how institutional environment and market maturity may influence the financial impact of reporting frameworks.

For practitioners, these results indicate that:

1. Mere adoption of IR frameworks may not yield short-term valuation benefits.
2. Firms should focus on strategic integration rather than compliance-oriented reporting.
3. Investors should look beyond reporting format to assess true sustainability performance.

The study's limitations point to valuable directions for future research, including examining longer-term effects, comparing mandatory versus voluntary regimes, and developing more nuanced measures of reporting quality. As corporate disclosure practices continue evolving globally, further investigation is needed into how different market conditions shape the relationship between reporting quality and financial outcomes.

Ultimately, this research contributes to our understanding of sustainability reporting by demonstrating that in Asian markets, voluntary IR adoption alone does not significantly enhance firm valuation. The findings emphasize the importance of moving beyond symbolic adoption to achieve meaningful integration of financial and non-financial reporting that genuinely reflects business value and informs stakeholder decisions.

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