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Sustainability Reporting, Global Uncertainty, and Firm Performance in Vietnam: Evidence from Panel GLS

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KEYWORDS

Sustainability report, Global Economic policy uncertainty, The World Uncertainty Index, Firm performance.

ABSTRACT

This study examines how sustainability reporting (SR) and global uncertainty affect firm performance in Vietnam. Using a balanced panel of 145 listed firms during 2021–2023 and estimating panel generalized least squares (GLS), we find that issuing a sustainability report is positively associated with profitability. Specifically, SR increases ROA by about 0.080 ($p<0.01$). In contrast, global uncertainty measured by the World Uncertainty Index (WUI) is negatively related to performance ($\beta\approx-0.402$, $p<0.10$), suggesting that higher global uncertainty erodes firms' profitability. However, the Global Economic Policy Uncertainty (GEPU) index shows no statistically significant effect on ROA ($p>0.10$). The results highlight the role of sustainability reporting in enhancing firm performance, while emphasizing firms' vulnerability to global uncertainty. Practical implications are provided for managers and policymakers to strengthen sustainability disclosure and risk management under uncertain global conditions.

1. Introduction

In the current business environment, sustainable development is mentioned as one of the types of risks, so it has also become one of the central issues that businesses must face. To ensure benefits and commitments to stakeholders, businesses publish sustainable development reports. This is shown through a KPMG (2017) report when two-thirds of the businesses surveyed published this type of report. In Vietnam, Circular No. 155/2015/TT-BTC dated October 6, 2015 developed and issued by the State Securities Commission to guide information disclosure on the stock market has integrated information on environment, society and corporate governance. This document has increased businesses' awareness of the need for sustainable development reporting, and listed companies have begun to publish information related to sustainable development in their annual reports from January 1, 2016.

Economics policy uncertainty (EPU) is a situation in which economic entities are unable to make accurate predictions about changes surrounding the operation of government economic policies, and of course, how it affects the micro and macro economy (Baker, Bloom, & Davis, 2016). Uncertainty causes the business environment to constantly change, thereby affecting the decision making of managers (Gulen & Ion, 2016). EPU has become a topic of interest for researchers and policymakers in recent years. Many studies have

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examined the effects of EPU on various factors such as bank value, perceived investment risk, and cash holdings (He & Niu, 2018; Zhang, 2019).

FP in a dynamic and unpredictable environment, where different factors influence how well they perform. Some of these factors are stock return volatility, firm operations, sales, and purchase prices (Gulen & Ion, 2016). However, a critical review of the existing literature reveals three significant gaps that this study aims to address. First, while the relationship between SR and firm performance (FP) has been studied extensively, the findings remain highly inconsistent - ranging from positive value-creation effects to value-destroying outcomes due to high implementation costs. Second, most existing research on global uncertainty (measured by WUI or GEPU) focuses on developed markets, leaving a void in understanding how emerging economies like Vietnam - which are highly sensitive to external shocks - respond to these fluctuations. Third, there is a scarcity of research that simultaneously examines the internal transparency mechanism (SR) and external macro-uncertainty (WUI/GEPU) within a single framework to determine which factor dominates firm performance in a transitioning economy

This study aims to examine how SR and EPU are related to FP. The first research findings reveal why businesses in Vietnam disclose SR, since this kind of reporting is optional and not mandatory. Second, although many studies deal with the effect of EPU, none of them explore how EPU relates to FP, so this study will enhance the knowledge of all parties about this relationship.

This study contributes to the sustainability reporting literature by providing Vietnam-specific evidence on how sustainability reporting and global uncertainty relate to firm performance. Using a panel of 145 listed firms during 2021-2023 and panel GLS estimation, we show that sustainability reporting is positively associated with profitability, while global uncertainty measured by the World Uncertainty Index (WUI) is negatively related to performance; in contrast, the Global Economic Policy Uncertainty (GEPU) index is not statistically significant. Given Vietnam's transitioning sustainability disclosure regime, these findings offer timely implications for managers and policymakers seeking to strengthen transparency and risk management under global uncertainty.

The remainder of this paper is organized as follows: Section 2 provides the theoretical background and develops the research hypotheses. Section 3 describes the research methodology, including sample selection and variable measurement. Section 4 presents the empirical results and discussion. Finally, Section 5 concludes the paper with policy implications and suggestions for future research.

2. Background and literature review

2.1. Sustainability reporting in Vietnam

The concept of SR, also known as corporate social responsibility reporting, has been a subject of significant interest within academic and management circles since the 1970s. It was initially defined as "the process of identifying, measuring, monitoring, and reporting the economic and social impacts of an entity on society", "serving both internal management purposes and external accountability responsibilities" (Epstein, Flamholtz, & McDonough, 1976). However, due to the lack of institutionalization of reports and economic downturns leading to increased focus on the economy and unemployment, attention shifted away from social and environmental issues, with market-oriented policies emerging and accountability for these matters seemingly becoming less important. It was not until non-financial issues, particularly environmental concerns, gained significant attention that SR saw notable development, often in the form of separate reports (Kolk, 2005).

Data on SR practices over more than a decade have been compiled by KPMG through surveys conducted every three years since 1993. SR involves the assessment, disclosure, and transmission of data concerning sustainability matters, encompassing sustainable practices, corporate attitudes, and policies (Christensen, Hail, & Leuz, 2019). Accordingly, the purpose of SR is to provide comprehensive information based on evaluating the performance of an organization to meet the needs of various stakeholders, not limited to investors and creditors but also including employees, customers, suppliers, and government (Dienes, Sassen, & Fischer, 2016). It is widely regarded as a management tool that assists businesses establish internal systems to better understand risks, new business strategies, community responsibilities, enhance competitiveness, and gradually improve firm performance (Abeysekera, 2022). By the GRI 2016 guidelines, Sustainability Reporting offers a comprehensive examination of a company's economic, environmental, and social effects resulting from its routine operations. It demonstrates the company's dedication to a sustainable global economy, facilitating organizations in evaluating, comprehending, and conveying their economic, environmental, and social performance, thereby establishing objectives for the organization, and enhancing change management processes more efficiently.

In Vietnam, alongside commitments to promote sustainable development, businesses are now mandated to adhere to global sustainability reporting standards in order to address the needs of their stakeholders. The country has introduced regulations and guidelines for sustainability reporting within enterprises, including Circular 96/2020/TT-BTC, Circular 116/2022/TT-

BTC, the Sustainability Reporting Handbook tailored for Vietnamese companies, Environmental and Social Disclosure Guidelines, and Vietnam's governance best practices. The State Securities Commission of Vietnam mandates that companies listed on the Vietnamese stock market disclose information related to sustainable development and risk management. Nevertheless, the legal framework and institutional infrastructure in Vietnam remain underdeveloped, with deficiencies in shareholder engagement, investor safeguarding, and robust enforcement and monitoring of regulations. Consequently, Vietnamese listed companies have not placed a strong emphasis on implementing sustainable development information disclosure practices. Moreover, when such disclosures are made, there is inconsistency in the quality of reporting and analysis across firms compared to international standards.

2.2. Theory and hypotheses

Several theories can account for the study's relationships. The Value-Creating Theory is an idea that proposes the incorporation of environmental and social responsibility into business strategies and practices can lower firm risk and enhance long-term value creation (Yu & Zhao, 2015). In relation to FP, should boost shareholder value. It also implies that successful strategies for handling externalities and creating knowledge that enables innovation can improve performance and raise profitability.

The Value-Destroying Theory is a concept that implies managers may take part in socially responsible activities that harm shareholders. In the context of firm performance, the Value-Destroying Theory suggests that managers' involvement in socially responsible activities could result in a decline in shareholder value. This could happen if these activities take away resources from profit-making activities or if they do not fit with the firm's strategic goals (Ali & Cottle, 2021).

Real Options Theory (Myers, 1977) provides a theoretical lens for the impact of global uncertainty. It posits that when EPU or WUI increases, the 'option to wait' becomes more valuable, leading firms to delay capital investments and research, which eventually erodes operational efficiency and ROA

The Legitimacy Theory is a common theoretical framework in social, environmental, and sustainability accounting research. It assumes that there is a social contract between business and society. In the context of sustainability reporting, the Legitimacy Theory emphasizes how corporate social and environmental disclosures are affected by the limits set by the society to be recognized and avoid being seen as unfavorable by the community where the company operates (Crossley, Elmagrhi, & Ntim, 2021). This theory is often applied to explain social, environmental, and sustainability disclosure.

Expanding beyond legitimacy, Stakeholder Theory (Dmytriyev & Freeman, 2023) suggests that firms are not only accountable to shareholders but must also manage the interests of a broader set of stakeholders (employees, communities, and regulators) to ensure sustainable political and economic viability. SR serves as a vital communication channel to align these diverse interests, thereby enhancing firm value.

Sustainability reporting and firm performance

Previous studies have examined the connection between SR and FP extensively. However, Christensen, Hail and Leuz (2021) comprehensive review shows that the findings are not consistent. First, most of the existing studies confirm the positive link between SR and FP. This implies that making and publishing SR will enhance FP (measured by ROA, ROE...). Dincer, Keskin and Dincer (2023) explore how sustainability reporting and corporate financial performance are related. The results indicated that sustainability reporting has a significant positive effect on financial performance based on the ROA model. Or the study of Mohanty et al. (2023) examines seventy-four BSE-listed companies from different industries that have been reporting on sustainability metrics according to the GRI principles for the financial years 2014-2015 to 2021-2022 and discovers a significant and positive association between corporate sustainability reporting practices and the firm performance of the chosen Indian companies.

Some studies, though few, have contrasting outcomes. Murray et al. (2006) examines two data sets from the CSEAR database of UK companies, and the stock market returns of the biggest UK companies as ranked by The Times 1,000 to investigate if there is any link between social and environmental disclosure and the financial market performance of the UK's largest companies. The results show that there was no direct link between share returns and disclosure. eporting has a negative impact on firm performance. Detre and Gunderson (2011) observed that there is a negative correlation between a company's share value and its SR. In particular, the market tends to respond unfavorably, at least in the short run, when a company declares its intention to join the DJSI. This reaction is indicative of investors' short-term perspective, as they may anticipate a drop in the company's value due to the heightened expenses associated with sustainability efforts. This viewpoint aligns with the value-destroying theory, which posits that SR leads to a decrease in a firm's value. Recently, a paper used a research design that analyzes data with 167 listed firms as the population and discovered that the sampled firms' compliance level with sustainability reporting requirements for the four dimensions are below average, and sustainability reporting does not significantly influence firm performance (Taiwo et al., 2022).

No official research has looked into this relationship in Vietnam, but the government and related parties are always interested in the current topic of sustainable development. It is hoped that this is the cause and motivation for encouraging businesses to pay more attention to reporting on sustainable development. The research findings in this field are still not very consistent, but this study in Vietnam's emerging markets will help to increase the knowledge of this relationship. Like most previous findings, the author predicts a positive link between SR and FP.

H1. Disclosure of sustainability information is positively associated with firm performance in Vietnam firms.

Economy policy uncertainty, world uncertainty index and firm performance

EPU is the term used for the unclear or uncertain nature of government policy choices that could affect economic results. The effect of EPU on how firms perform has been a subject of study in recent research. EPU can affect how well firms do in different ways. For example, when EPU is high, it can cause lower investment and financial performance. This is because firms are unsure about what policies will be in the future, and this makes it hard to prepare for the future, leading to careful actions such as investing less in capital, research, and development, and hiring. The study by Iqbal et al. (2020) explores how EPU affects the performance of non-financial firms listed in the US. They use four indicators of firm performance, such as Return on Assets, Return on Equity, Net Profit Margin and Tobin's Q, and they find that EPU has a negative and significant impact on all of them. In 2023, a paper studies how firm-level investment and corporate financial leverage are influenced by EPU. The fixed-effect model was used to analyze the panel data of 1072 firms listed on the New York Stock Exchange (NYSE), New York Stock Exchange Market (NYSE MKT) (previously known as American Stock Exchange—AMEX), or NASDAQ during 2012–2021. The empirical results indicate that EPU has a negative impact on the financial leverage of a firm. Moreover, EPU reduces firms' investment choices and debt financing (Almustafa, Jabbouri, & Kijkasiwat, 2023).

However, the link between EPU and FP is not simple and can depend on different factors. For instance, the effect of EPU on FP can change depending on the firm's sector, nation, and corporate governance system (Almustafa, Jabbouri, & Kijkasiwat, 2023; Feng, Luo, & Wang, 2023). Some studies have shown that firms with solid corporate governance structures or those working in some sectors may have more ability to deal with the uncertainties related to EPU and therefore reduce its harmful impact on performance (Kahloul, Grira, & Hlel, 2023). Moreover, some studies indicate that EPU and firm performance may not have a purely negative link. For example, high EPU periods can also offer chances for firms to reassess their strategies and make changes that could result in better performance over time.

As an emerging economy, Vietnam's businesses are also very sensitive to changes in global economic policies. Vietnam's economic growth fell from 8% in 2022 to 3.7% in the first six months of 2023 because of external and internal challenges. The World Bank projects a modest growth of 4.7% in 2023, slowly picking up to 5.5% in 2024 and 6.0% in 2025. Economic uncertainty has reached its peak level ever recorded with 68% of businesses in Vietnam seeing this as a barrier to growth. Even so, more than 63% of the businesses anticipate yearly rises in revenue and profit. Despite the positive remarks from businesses, the authors still think that global EPU in the future will still hurt FP, which agrees with the World Bank's views on how global EPU affects Vietnam's macro economy.

H2. Global EPU is negatively associated with firm performance in Vietnam firms.

When viewed from a more expansive perspective, WUI is formulated through the process of text-mining the country-specific reports generated by the Economist Intelligence Unit. These reports encompass the economic, policy, and political landscape of each respective country (Ahir, Bloom, & Furceri, 2020). WUI encapsulates the uncertainty associated with economic and political events, addressing concerns that span both the immediate and distant future. WUI experiences surges around significant global events such as the Gulf War, the Eurozone debt crisis, the Brexit referendum, and the COVID-19 pandemic. The degree of uncertainty is elevated in developing nations, yet it exhibits a higher degree of synchronization across advanced economies due to their more intertwined trade and financial networks. This implies that while both indices gauge uncertainty, the WUI boasts a more comprehensive scope, encompassing a larger number of countries and a more extended time frame, and captures uncertainty pertaining to both economic and political events. Given the empirical findings established by the authors concerning the correlation between EPU and firm performance, it provides a foundational premise to anticipate a parallel relationship between WUI and firm performance.

H3. WUI is negatively associated with firm performance in Vietnam firms.

3. Research design

This section outlines the research methodology employed to investigate the impact of sustainability reporting and global uncertainty on firm performance. Given the potential for heteroscedasticity and autocorrelation inherent in panel data of emerging markets, the Panel Generalized Least Squares (GLS) method is selected. This approach provides more

Table 1. Summary of previous empirical studies on Sustainability Reporting, Economic Policy Uncertainty, and Firm Performance

Author (Year)	Country	Research Methodology	Research Results
Iqbal, Gan and Nadeem (2020)	USA	System-GMM estimation; used quarterly observations (2000-2016) of US-listed non-financial firms from the S&P 500.	Economic Policy Uncertainty (EPU) has a significant and negative effect on firm performance across all four proxies: ROA, ROE, Net Profit Margin, and Tobin's Q.
Taiwo et al. (2022)	Nigeria	Adopted an ex post facto research design; used purposive sampling of 28 quoted firms (2009-2018) and analyzed disclosures via content analysis and pooled ordinary least square regression.	Sustainability reporting does not have a significant effect on market value growth (MVG). The compliance level of sampled firms with reporting requirements was found to be below average.
Murray et al. (2006)	UK	Conducted cross-sectional and longitudinal analysis (10 years, 1988-1997) of the UK's Top 100 companies using the CSEAR database and stock market returns.	No direct relationship was found between share returns and disclosure in cross-sectional data. However, longitudinal data revealed a convincing relationship between consistently high (or low) returns and disclosure predilection.
Mohanty et al. (2023)	India	Investigated 74 BSE-listed companies (2014-2022) using GRI principles. Sustainability reporting disclosures were analyzed as independent variables with ROA and MBR as performance proxies.	Found a significant and positive relationship between corporate sustainability reporting practices and the firm performance of the selected Indian companies.
Dincer, Keskin and Dincer (2023)	Turkey	Used pooled ordinary least square (OLS) method for panel data regression (Tobin's Q and ROA models) with a total of 920 quarterly observations for 46 companies (2016-2020).	Sustainability reporting has a significant positive impact on financial performance according to the ROA model. There is also a significant negative correlation between risk and financial performance.
Christensen, Hail and Leuz (2021	USA	Performed a comprehensive economic analysis and literature review across accounting, finance, economics, and management regarding mandated CSR and sustainability reporting	Mandated disclosure can benefit capital markets through greater liquidity and lower cost of capital, but it also induces proprietary/litigation costs and potential unintended real behavioral changes in firms.
Baker, Bloom and Davis (2016)	USA & Global	Developed a new EPU index based on newspaper coverage frequency; used human audit of 12,000 articles and applied micro (firm-level) and macro (VAR) estimation.	Policy uncertainty is associated with greater stock price volatility and reduced investment and employment in policy-sensitive sectors. At the macro level, it foreshadows declines in investment, output, and employment.
Ahir, Bloom and Furceri (2020)	Global (143 countries)	Constructed the World Uncertainty Index (WUI) by text-mining quarterly country reports from the Economist Intelligence Unit (EIU) covering the past 60 years.	Global uncertainty has increased significantly since 2012. The aggregate index is associated with greater economic policy uncertainty, stock market volatility, and lower GDP growth.
Almustafa, Jabbouri and Kijkasiwat (2023)	USA	Analyzed panel data of 1072 firms (2012-2021) traded on the NYSE, NYSE MKT, or NASDAQ using a fixed-effect model.	Financial leverage of a firm is negatively affected by EPU. Additionally, EPU depresses firms' investment decisions and debt financing.

efficient and robust estimates than standard Pooled OLS or Fixed Effects models by correcting for non-constant variance and serial correlation across entities, ensuring the statistical validity of the findings.

3.1. Sample

The participants in this research are firms that are listed and have consistently appeared in the ranking of the 500 largest companies in Vietnam between 2021 and 2023. The research sample consists of 145 firms that meet the criteria mentioned above. Unlike many studies that focus solely on non-financial firms, this research includes a diverse cross-section of the Vietnamese economy to capture the broad impact of global uncertainty. Based on the sample analysis, the 145 firms represent multiple sectors: 31 firms from the Financial & Insurance sector (including major commercial banks and securities firms) and 114 firms from Non-financial sectors such as Manufacturing, Energy, Real Estate, and Logistics. We justify the inclusion of both groups because all VNR500 firms are subject to the same regulatory framework for transparency - specifically Circular 96/2020/TT-BTC - which mandates the disclosure of environmental and social impacts regardless of industry. Including financial institutions provides a more comprehensive view of how Vietnam's leading enterprises navigate global policy shocks. The data for this research consists of secondary data obtained from the websites of these firms and the website https://www.policyuncertainty.com/.

3.2. Model, variables

Model

$$FP = \beta 0 + \beta 1SR + \beta 2GEPU + \beta 3LEV + \beta 4SIZE + \mu i$$

Dependent variable

The dependent variable used as a measure of FP is Return on Assets (ROA). ROA is widely utilized for assessing FP. This is a profitability ratio that evaluates the income or achievement in a firm's activities during a specified period (Murphy, Trailer, & Hill, 1996).

Independent variables

SR – Sustainability reporting

In 2023, global policymakers implemented a range of new regulations concerning the disclosure of sustainable development information. More specifically, in June 2023, the International Sustainability Standards Board (ISSB) unveiled the initial two sustainability disclosure standards, IFRS S1 and IFRS S2. However, these standards are set to be enforced starting from January 1, 2024. The SR variable is measured as a binary (dummy) variable. To ensure precision, a value of 1 is assigned only if a firm publishes either a standalone Sustainability Report or a dedicated and structured section within its annual report detailing ESG (Environmental, Social, and Governance) performance in accordance with Circular 96/2020/TT-BTC or GRI standards. If the disclosure is only anecdotal or lacks structured data on sustainability impacts, it is assigned a value of 0.

GEPU – Global economic policy uncertainty

GEPU Index is a measure of economic policy uncertainty based on the frequency of newspaper articles that contain a trio of terms pertaining to the economy, policy, and uncertainty. The GEPU Index is available on the EPU website and the Federal Reserve Bank of St. Louis. The 21 countries that enter into the GEPU Index account for about 71% of global output on a PPP-adjusted basis and roughly 80% at market exchange rates.

WUI – World Uncertainty Index

WUI is a measure of global economic uncertainty. It is constructed by text-mining the country reports from the Economist Intelligence Unit, a business intelligence company that provides country reports on a quarterly basis. The World Uncertainty Index is available on the IMF's website and the Federal Reserve Bank of St. Louis.

Control variables

The selection of control variables is grounded in established corporate finance theories. Firm Size (SIZE) is included to account for economies of scale and resource availability, as larger firms often possess greater capabilities to implement sustainability practices and absorb external shocks. Financial Leverage (LEV) is utilized to control for the impact of capital structure and financial risk, as highly leveraged firms may face stricter monitoring from creditors, influencing their performance and disclosure strategies.

LEV – Financial leverage is the primary control variable in this research. It is quantified by the percentage of total debt to total assets. High leverage ratios result in higher costs, increased financial risks, and may lead to reduced profitability for businesses.

SIZE – Firm size is an essential control variable in the relationship between SR and FP. In this research, firm size is determined by the natural logarithm of the firm. Experimental studies have shown a positive correlation between firm size and operational efficiency. Larger firms tend to have more potential opportunities as they can reduce information asymmetry among investors, enhance efficiency, and expand their firms.

Table 2. Summary of the impact direction of the variables in the proposed model

Variable	Expect the direction of the variable's impact on the dependent variable
SR	+
GEPU	-
WUI	-
SIZE	+
LEV	-

The Pooled OLS method is used to estimate the research model. After regression, tests for variance change or autocorrelation will be conducted to consider whether to implement FEM/REM/GLS regression methods or not. While the FEM helps to eliminate variables that do not change over time, the REM model assumes there is no correlation between the independent variable and the error term. Finally, appropriate tests will be conducted to select the optimal model for the study. All steps are performed using the Stata 17.

4. Results and discussion

4.1. Descriptive statistics

Table 3. Statistics describe the variables in the model

Variable	Obs	Mean	Std. dev.	Min	Max
Size	435	10.16766	0.8664021	7.94	13.25
LEV	435	0.6069655	0.2800847	0	4.05
GEPU	435	257.4467	28.94513	221.57	292.37
SR	435	0.4022989	0.4909262	0	1
FRROA	435	0.105977	0.5296631	-0.18	6.6
WUI	435	0.0735333	0.0306457	0.0418	0.1149

The descriptive statistics in Table 3 indicate that the average profitability (ROA) of the sampled Vietnamese listed firms is 10.59%, with approximately 40.2% of these enterprises issuing sustainability reports. The World Uncertainty Index (WUI) fluctuates significantly, averaging 0.0735 with a range from 0.0418 to 0.1149. Analysis of the annual trends in Figure 1 reveals a clear inverse relationship between global uncertainty and firm performance. Specifically, in 2022, as the WUI peaked at 0.1149, average ROA remained stagnant at 0.0576. However, in 2023, a sharp recovery to an average ROA of 0.2063 coincided with the WUI dropping to its period low of 0.0418. Regarding sustainability disclosure, the proportion of firms issuing reports declined slightly from 41.38% in 2021 to 38.62% in 2023, suggesting that firms may have prioritized core operations over voluntary disclosures during periods of peak global volatility. These visual trends provide preliminary evidence for the negative impact of global uncertainty on firm performance, a result further validated by the subsequent GLS regression analysis.

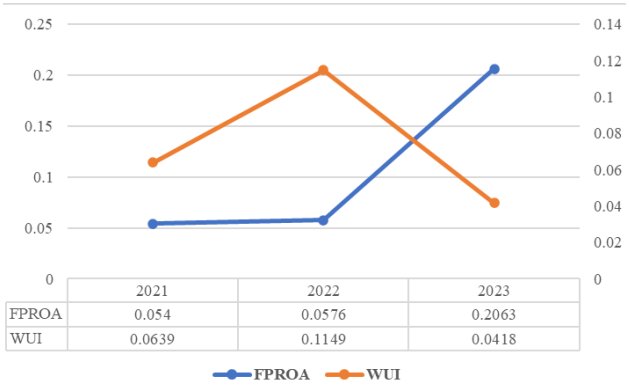

Figure 1. Trends of FPROA and WUI (2021–2023)

After performing Pooled OLS, the results of the White and Wooldridge tests showed that autocorrelation does not exist, but there is still heteroscedasticity. The author continued to run the FEM and REM models, and the Hausman test results were at $p < 5\%$, so FEM was chosen. Similarly, the phenomenon of continued heteroscedasticity still exists in this model. So GLS is the last regression option performed to ensure the appropriateness of the model.

Table 4. Diagnostic Test Results for Model Selection

Order	Test Name	Null Hypothesis (H0)	Statistic	p-value	Conclusion
1	White Test	Homoscedasticity	chi^2= 100.42	p = 0.0000	Reject H0: Presence of heteroscedasticity
2	Wooldridge Test	No first-order autocorrelation	F = 2.228	p = 0.1377	Fail to reject H0: No autocorrelation
3	Hausman Test	Difference in coefficients is not systematic	chi^2= 188.56	p = 0.0000	Reject H0: Choose Fixed Effects Model (FEM)
4	Wald Test	No heteroscedasticity in FEM	chi^2= 3.6e+08	p = 0.0000	Presence of heteroscedasticity; use GLS

Table 5. Model estimation results

	(1) POOL	(2) FEM	(3) REM	(4) GLS
Size	-0.118*** [-4.03]	-1.196*** [-11.87]	-0.163*** [-4.88]	-0.0489*** [-6.35]
LEV	0.138 [1.54]	0.325** [2.49]	0.237** [2.49]	-0.00664 [-0.25]
GEPU	0.00237** [2.09]	0.00257*** [2.85]	0.00237** [2.26]	0.000323 [1.40]
SR	0.212*** [4.14]	0.179** [2.55]	0.252*** [4.68]	0.0803*** [7.04]
WUI	-3.062*** [-2.86]	-2.504*** [-2.93]	-2.999*** [-3.03]	-0.402* [-1.83]
_cons	0.754** [1.99]	11.52*** [10.85]	1.125*** [2.80]	0.485*** [5.76]
N	435	435	435	435
R-sq	0.079	0.432		

*t statistics in brackets * p<0.1, ** p<0.05, *** p<0.01*

Table 6. Multicollinearity Test Results (VIF)

Variable	VIF	1/ VIF
WUI	1.79	0.558555
GEPU	1.79	0.560054
LogTS	1.07	0.934506
SR	1.04	0.958331
LEV	1.04	0.963045
Mean VIF	1.35	

The specific values of the GLS model estimates are shown in Table 7. The business size variable (Size) has a negative relationship with business performance (β = -0.49, $p < 0.01$). This means that the larger the total assets of an enterprise, the less effective its operating performance will be. This result is contrary to many previous studies when most previous studies showed a positive relationship between business size and performance. Through the Covid-19 epidemic, all businesses in the economy have suffered heavy losses. But it seems that for large-scale businesses, these losses are more significant. They have to spend more on asset management costs, depreciation costs, and even funding sources to form assets at the enterprise.

The results of the GLS model also show a statistically significant relationship between the SR variable and business performance with high correlation and significance (β = 0.80, $p < 0.01$). This relationship is positive, meaning that businesses publishing sustainability reports will help improve performance. Creating a sustainable development report creates many benefits for business operations. SR is an effective way to enhance reputation and brand image, thereby helping businesses attract new customers and retain old customers. Or this is also a way to help businesses identify and manage environmental, social and governance risks better, thereby reducing risks and enhancing business efficiency. In particular, SR can help businesses improve relationships with stakeholders, including customers, investors, employees and the community.

Furthermore, the correlation between the World Uncertainty Index (WUI) and business performance has been substantiated to be statistically significant (β = −0.40, $p<0.1$). This correlation is inversely proportional, indicating that an elevated level of Vietnam's WUI would diminish the operational efficiency of businesses. This outcome can be rationalized by the fact that an escalation in the WUI index introduces uncertainty in the economic, political, and social landscape, invariably undermining investor confidence. In such a scenario, investors exhibit heightened risk sensitivity, refraining from making risky investments. All transactional costs witness an upsurge, inclusive of costs related to compliance with new regulations, costs associated with the modification of business contracts, and costs involved in adjusting business operations to accommodate changes in the business environment. Moreover, instability also impinges on businesses' capacity to penetrate new markets or sustain their standing in existing markets.

In contrast to the significant negative impact of the World Uncertainty Index (WUI) on firm performance, the GEPU index was found to be statistically insignificant (β = 0.0003, $p > 0.05$). This suggests that large Vietnamese firms are more sensitive to localized uncertainties - captured by the WUI's country-specific reporting - than to generalized global news coverage measured by the GEPU. The lack of significance for GEPU may also be attributed to its focus on 21 major economies that do not include Vietnam, as well as the resilience of the sampled VNR500 firms, which often prioritize long-term sustainability strategies over short-term global policy fluctuations.

Similarly, financial leverage (LEV) was not statistically significant (β = -0.07, $p > 0.05$), indicating

Table 7. GLS model results

Estimated covariances =	145	Number of obs =	435		
Estimated autocorrelations =	0	Number of groups =	145		
Estimated coefficients =	6	Time periods =	3		
Wald chi2(5) =		89.09			
Prob > chi2 =		0.0000			
FPROA	Coefficient	Std. err.	z	P>|z|	[95% conf. interval]
Size	-0.0488675	0.007694	-6.35	0.000	-0.0639475 -0.0337874
LEV	-0.0066357	0.0264631	-0.25	0.802	-0.0585024 0.0452309
GEPU	0.0003225	0.0002303	1.40	0.161	-0.0001289 0.0007739
SR	0.0802741	0.0114073	7.04	0.000	0.0579163 0.102632
WUI	-0.4021419	0.2195305	-1.83	0.067	-0.8324137 0.0281299
_cons	0.4853235	0.0842879	5.76	0.000	0.3201223 0.6505247

that capital structure was not a primary determinant of performance for leading Vietnamese firms during the 2021–2023 period. This result likely reflects the robust debt management capabilities of VNR500 companies and the unique economic environment of the post-pandemic recovery, which may have temporarily decoupled a firm's debt levels from its immediate operational profitability.

In summation, the estimation results of the Generalized Least Squares model that have been delineated accept Hypotheses H1 and H3, while rejecting Hypothesis H2. Among the two control variables within the model, only the size of the business exhibits a statistically significant correlation with business performance. Conversely, the financial leverage (LEV) variable does not demonstrate any discernible correlation.

5. Conclusion and policy implications

The research has made significant contributions to understanding the relationship between SR, GEPU, WUI, and FP in Vietnam. The study emphasizes the crucial role of SR as a tool to enhance transparency and accountability, essential for building trust with stakeholders and improving long-term firm performance. The firms that prioritize SR as part of their overall business strategy are likely to see improved financial and non-financial performance outcomes. WUI can lead to increased risk and volatility, affecting various aspects of FP directly such as heightened volatility, disrupting supply chains, currency fluctuations, and legal environment changes. These factors can directly impact on FP. This underscores the importance for firm to prioritize risk management, drive innovation, and develop flexible strategic plans to adapt to global uncertainty economic environment in order to sustain firm performance.

However, the research also suggests that GEPU may not always impact FP. This could be explained by the fact that FP in multiple markets or industries may be less affected by GEPU. Some firms may have long-term business strategies focusing on sustainable growth rather than reacting to short-term fluctuations caused by GEPU.

Despite its contributions, this study has several limitations that should be acknowledged for a balanced interpretation of the results. First, the sample is restricted to the 145 largest companies in Vietnam (VNR500), which may limit the generalizability of the findings to small and medium-sized enterprises (SMEs) that operate under different resource constraints. Second, the balanced panel covers a relatively short period of three years from 2021 to 2023, which may not fully capture the long-term, cyclical effects of sustainability reporting initiatives. Finally, the measurement of SR as a binary variable captures only the presence or absence of disclosure rather than the substantive quality, depth, or specific ESG dimensions provided by the firms.

Future research lines can build upon these findings by addressing the aforementioned constraints to provide a more granular understanding of the SR-FP nexus. Subsequent studies could employ content analysis or utilize third-party ESG ratings to evaluate the qualitative aspects and transparency levels of sustainability disclosures beyond a simple binary classification. Additionally, exploring the potential moderating role of corporate governance mechanisms or ownership structures could provide deeper insights into how internal control environments influence the effectiveness of sustainability reporting as a risk-mitigation tool under global uncertainty. Finally, comparative analyses between financial and non-financial sectors within emerging markets would be beneficial to determine if industry-specific regulatory frameworks create varying sensitivities to localized shocks captured by the WUI.

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