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Analyzing the determinants of operational efficiency in VN30 companies on the Vietnamese stock exchange

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Abstract: This study analyzes the factors that influence the business performance of VN30 companies listed on the Vietnamese stock market between 2010 and 2020. The primary objective is to evaluate how macroeconomic factors, such as GDP, inflation, interest rates, and exchange rates, along with corporate governance factors like credit risk, operational risk, and liquidity risk, affect business performance, measured by return on assets (ROA). To assess these effects, the study uses the FMOLS regression model for long-term impacts and the ECM model for short-term effects. The results suggest that in the long run, GDP has a slight positive impact, though not statistically significant, while inflation and credit risk have a significantly negative effect on performance. Exchange rates and interest rates, on the other hand, do not exhibit clear statistical significance. Based on these findings, the study offers several policy recommendations aimed at improving the performance of companies, particularly in managing inflation and credit risk, to strengthen their business outcomes in the context of Vietnam's evolving economic environment.

Keywords: *Business performance, Vietnam stock market, VN30.*

1. Introduction

According to the Ho Chi Minh Stock Exchange [1] companies listed in the VN30 group in 2020 were primarily concentrated in sectors such as Banking (30%), Real Estate (20%), Manufacturing (10%), Finance (6.7%), Telecommunications (6.7%), Construction (6.7%), and Oil & Gas (6.7%). Other sectors, including Insurance, Food, Securities, and Aviation, collectively accounted for 13.33%. This group of 30 top-listed companies represents over 80% of the total market capitalization of the VN-Index.

From 2010 to 2021, these companies received substantial attention from the government, especially in sectors like Construction, Energy, Oil & Gas, Telecommunications, and Finance. Yelery [2] emphasized the central role of state-owned enterprises and the private sector as key drivers of the economy. In line with this, the government introduced several strategic development policies, such as the National Energy Strategy Nguyen, et al. [3] and the Financial Strategy [4].

However, questions remain regarding the performance efficiency of these companies, particularly those in the VN30. Efficiency, as defined by Farrell [5] includes technical and allocative efficiency, with many internal factors influencing performance. These include board characteristics Belkhir [6] and O'Connell and Cramer [7] ownership structure Yermack [8]. External factors, such as national economic conditions Guest [32] and government policies Hansen and Wernerfelt [9] also play a role.

This study aims to assess the impact of these internal and external factors on the performance of VN30 companies, providing insights for future policy recommendations.

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2. Literature Review

Corporate performance has long been a critical topic of research, especially as businesses face increasingly complex and volatile environments. International studies demonstrate that corporate financial performance is influenced not only by internal factors such as organizational structure and management strategies, but also by external elements such as macroeconomic conditions and political contexts Venkatraman and Ramanujam [10] and Kaplan and Norton [11]. Financial performance indicators like Return on Assets (ROA) and Return on Equity (ROE) are widely used to assess a company's profitability and overall business health Ang, et al. [12] and Demsetz and Lehn [13].

In Vietnam, research on corporate performance has been conducted using various methods to analyze both internal and external factors. However, most domestic studies have primarily focused on internal factors, overlooking the broader impacts of macroeconomic variables and market risks. To gain a more comprehensive understanding of the determinants of corporate performance, it is essential to consider both internal and external factors simultaneously.

2.1. Internal Factors Affecting Corporate Performance

Several domestic and international studies highlight the influence of internal factors on corporate performance. For instance, Au Thi Phuong Thao [14] analyzed the impact of state ownership, corporate risk, financial leverage, company size, and age on the performance of listed companies on HOSE and HNX from 2010 to 2016. Her findings revealed that state ownership, corporate risk, and financial leverage negatively impacted performance, while company size and age positively affected it. Larger, more experienced firms tend to have competitive advantages and market leverage [15].

Similar studies in the Mekong Delta by Tran Cuong [16] and Tran and Dang [17] found that firm size and asset composition positively correlated with corporate performance, while high financial leverage increased financial risk. These findings align with international research, which suggests that larger firms with substantial fixed assets can leverage economies of scale to enhance efficiency [18, 19].

Recent studies further support these findings. For instance, Askarany and Mao [20] analyzed the interplay of internal and external factors on corporate performance during the COVID-19 pandemic, showing that internal factors like company size and corporate governance had a significant impact, while macroeconomic conditions also played an important role. Similarly, Wang, et al. [21] found that effective internal control systems combined with integrated information systems positively impacted the performance of firms in Saudi Arabia. Moreover, Li and Yang [22] highlighted that ESG rating discrepancies negatively affected the productivity of firms in China, especially state-owned and high-tech firms. These recent studies further underline the importance of internal factors, such as company size, governance, and internal control systems, in influencing corporate performance across various global contexts.

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2.2. External Factors Affecting Corporate Performance

While internal factors have been extensively studied, external factors such as macroeconomic conditions and political risks have received less attention, particularly in Vietnam. International studies indicate that variables like GDP growth, inflation rates, and financial market conditions significantly

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influence corporate performance by affecting capital costs, product demand, and competitiveness Zeitun and Tian [19]. For example, Zeitun and Tian [19] found that in emerging markets, political and economic stability can positively affect performance, while instability tends to have a negative impact [23, 24].

Building on this, several recent studies have further explored the impact of external factors on corporate performance in Vietnam. A study by Nguyen [25] analyzed data from 1994 to 2021 and found that political risk variables, including governance quality and military involvement, significantly affect foreign direct investment (FDI) inflows into Vietnam. The research suggests that enhancing governance and reducing military influence are crucial for attracting FDI, offering valuable insights for policymakers and investors navigating Vietnam's investment landscape.

Furthermore, research by Nguyen, et al. [26] examined the relationship between state ownership and corporate performance in Vietnam, utilizing data from 2010 to 2021. The study revealed that state ownership positively influences corporate performance up to a certain threshold (approximately 32%), beyond which the effect becomes negative, indicating an inverted U-shaped relationship. This finding underscores the importance of balancing state ownership levels to optimize corporate performance

Current research primarily focuses on internal factors, often relying on traditional quantitative methods like FEM-REM, GLS, and OLS. However, more advanced analytical approaches are needed to fully capture the multifaceted impacts of both internal and external factors. Therefore, this study seeks to analyze the combined effects of macroeconomic and internal factors on corporate performance, offering a more holistic perspective for researchers and business managers.

3. Research Hypothesis

Yen and Joe [27] argue that fluctuations in GDP can significantly impact corporate performance. When GDP grows, companies are more inclined to invest, creating a foundation for future economic growth. They may also hire more workers and offer higher wages. However, in periods of low GDP growth or economic recession, companies are less likely to invest, and employees may face layoffs or wage cuts. Barro [28] further supports this notion, showing that the relationship between GDP growth and business performance is positive, particularly during periods of economic expansion, when companies increase investments and hiring. Similarly, Romero [29] suggests that macroeconomic GDP growth fosters a favorable environment for companies to expand production and make long-term investments. Additionally, Feldstein and Horioka [30] emphasize that as GDP rises, businesses tend to increase investments and utilize more labor, while Gali [31] also notes that changes in GDP have a significant impact on investment decisions and production expansion strategies. Blanchard and Leigh [32] add that during recessionary periods, a decline in GDP leads to reduced business investment and labor force, resulting in diminished performance. Based on this, the following hypotheses are proposed:

H_1: GDP positively affects the long-term performance of VN30-listed companies.

H_{1a}: GDP positively impacts the short-term performance of VN30-listed companies.

Numerous studies have shown that inflation can negatively impact corporate performance through various mechanisms. Rodeck [33] argues that when inflation rises, workers demand higher wages, which forces companies to increase product prices to maintain profitability, thereby significantly affecting revenues and business performance. Friedman [34] also demonstrates that prolonged inflation increases production costs and diminishes consumers' purchasing power, ultimately impacting companies' revenues and profits. Similarly, Mundell [35] highlights that in an inflationary context, firms face higher production costs and pressures to adjust wages, which can lead to a decrease in operational efficiency. Taylor [36] investigates the relationship between inflation and production costs, indicating that if companies are unable to pass on the increased costs to consumers through higher prices, they will experience negative effects on profits and performance. Furthermore, Blanchard [37] suggests that inflation can induce instability in the economic environment, reducing firms' ability to forecast and influencing strategic decisions, including pricing and investment. Finally, Stiglitz [38] emphasizes that inflation not only raises costs but also creates economic instability, thereby diminishing

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corporate efficiency. These studies collectively confirm that inflation not only increases production costs but also undermines firms' ability to sustain profitability in an unstable economic environment.Therefore, the following hypotheses are suggested:

H_2: Inflation negatively impacts the long-term performance of VN30-listed companies.

H_{2a}: Inflation negatively affects the short-term performance of VN30-listed companies.

Jensen and Meckling [39] notes that interest rate changes can influence corporate operations. Rising interest rates increase borrowing costs, which can hinder business expansion and profitability. Similarly, Bernanke and Gertler [40] emphasize that rising interest rates, by increasing the cost of capital, can dampen business investment incentives, especially in industries that require substantial capital investment. Fama and French [41] also highlight that high interest rates can escalate capital costs and influence financial decision-making, causing firms to become more risk-averse in expanding production and business development. Kashyap and Stein [42] further argue that small and medium-sized enterprises, which are heavily reliant on bank credit, will be most adversely affected by rising interest rates, as they may encounter difficulties in accessing necessary capital. Finally, Taylor [43] posits that higher interest rates could lead to reduced consumer and investment demand, thereby decreasing aggregate demand in the economy and directly impacting corporate performance. These studies collectively confirm that interest rates are a critical factor in shaping corporate financial strategies and investment decisions.Thus, the study proposes:

H_3: Interest rates negatively affect the long-term performance of VN30-listed companies.

H_{3a}: Interest rates negatively impact the short-term performance of VN30-listed companies.

According to [44] exchange rates are crucial for export-import businesses. Currency devaluation benefits exporters but increases costs for importers. The research by Krugman and Obstfeld [45] also indicates that exchange rates have a significant impact on the prices of both exports and imports, directly influencing pricing strategies and profitability for businesses in an open economy. Ghosh and Ostry [46] assert that currency depreciation can support exporters, but it also exposes importers to higher costs, reducing their competitiveness and operational efficiency. Furthermore, Cheng and Hsu [47] highlight that exchange rate volatility can erode the profit margins of export-oriented firms, particularly for those with significant international operations, while simultaneously increasing costs for importers. Mundell [48] research on exchange rate theory further emphasizes that fluctuations in exchange rates not only affect the production costs of importers but also impact the revenues of exporters, thereby influencing the financial stability and strategic decisions of firms on a broader scale. This translation incorporates specialized financial terminology and maintains a formal, academic tone. The hypotheses are:

H_4: Exchange rates negatively affect the long-term performance of VN30-listed companies.

H_{4a}: Exchange rates negatively impact the short-term performance of VN30-listed companies.

Miller and Noulas [49] found a negative relationship between credit risk and company performance, suggesting that higher credit risk is associated with inefficiency. Altman [50] study on the Z-score model also indicates that companies with high levels of credit risk often face weak financial conditions and low debt repayment capacity, which subsequently reduces their financial performance. Similarly, Beneish [51] asserts that companies confronting high credit risk tend to employ unsustainable financial practices to maintain operations, leading to poor performance and an increased likelihood of bankruptcy. Jensen and Meckling [39] in their agency theory, further argue that when a company faces high credit risk, managers may act in their own self-interest, thereby increasing financial costs and diminishing the company's operational efficiency. Goh [52] also points out that companies dealing with high credit risk must bear higher financial costs, which directly affects their profitability and operational performance. Finally, Diamond [53] emphasizes that companies with high credit risk encounter difficulties in accessing capital, which limits their ability to finance activities and negatively impacts their business performance. These studies collectively affirm that high credit risk not only increases financial costs but also has profound implications for corporate performance and sustainability. Therefore:

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H_{5}: Credit risk negatively affects the long-term performance of VN30-listed companies.

H_{5a}: Credit risk negatively impacts the short-term performance of VN30-listed companies.

Aruwa and Musa [54] argue that managing operational risks enhances performance, as future cash flow predictability is improved. Similarly, Koumanakos [55] emphasizes that effective operational risk management helps firms mitigate uncertainty in their operations, thereby optimizing cash flows and enhancing overall performance. Culp [56] highlights that risk control is a critical factor in maintaining financial stability and sustainable growth, as it aids in improving cash flow projections and minimizing financial risks. The study by Smith and Stulz [57] also confirms that risk management has a significant impact on firm performance, as it not only shields the firm from volatile factors but also provides a solid foundation for making more accurate financial decisions. These studies collectively affirm that operational risk management has a positive effect on cash flow forecasting and the financial performance of firms. Based on this, the hypotheses are:

H_{6}: Operational risk negatively affects the long-term performance of VN30-listed companies.

H_{6a}: Operational risk negatively impacts the short-term performance of VN30-listed companies.

Finally, Tabari, et al. [58] found a negative correlation between liquidity risk and performance, noting that poorly managed liquidity risks harm corporate efficiency. Similarly, Holmström and Tirole [59] emphasized that mismanagement of liquidity risk can lead to severe financial issues for firms, reducing their ability to sustain operations and long-term performance. Deloof [60] also highlighted that inadequate liquidity management negatively impacts financial performance, as firms struggle to maintain short-term solvency and encounter difficulties in raising capital. Furthermore, Chen, et al. [61] argued that a lack of liquidity can erode a company's competitiveness, which in turn hampers its operational efficiency, especially during financial downturns. Almeida and Campello [62] reinforced this by stating that firms with low liquidity face serious financial challenges, leading to diminished performance and profitability. These studies collectively affirm that poor liquidity risk management significantly impacts a firm's financial performance and operational effectiveness. Thus:

H_{7}: Liquidity risk negatively impacts the long-term performance of VN30-listed companies.

H_{7a}: Liquidity risk negatively affects the short-term performance of VN30-listed companies.

4. Data and Methodology

4.1. Data

The research sample consists of companies listed on the stock exchange in the VN30 index during the 2010–2020 period. VN30 comprises 30 companies with the largest market capitalization in the top 50 of the market, selected through three criteria: market capitalization, free-float shares, and trading value. After screening for liquidity and free float, HOSE selects 40 stocks, with 30 included in the official VN30 portfolio and 10 as reserves. The weight of any single stock is capped at 10% to prevent over-concentration.

4.2. Dependent Variable

Corporate performance is often evaluated based on a company's profitability. In this study, profitability is measured using Return on Assets (ROA), which is calculated as.

$$\text{ROA} = \text{Net Income} / \text{Total Assets}$$

ROA reflects the company's ability to generate profit from its assets, serving as a reliable performance indicator. A higher ROA signals more efficient asset utilization, making the company more attractive to investors [63]. ROA has been used as a dependent variable in several studies, including [64-66].

4.3. Independent Variables

1. GDP Growth (Economic Growth)**:** This measures national income growth. A rise in GDP increases personal income, leading to higher capital accumulation and investment, including in the

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stock market. GDP growth also boosts consumption and export demand, prompting further capital needs and investments.

2. Inflation Rate (CPI)**:** Inflation, measured by the Consumer Price Index (CPI), reflects macroeconomic stability. High inflation can erode purchasing power and impact business costs and financial stability.
3. Interest Rate (IR)**:** The average interbank rate for one-month terms. When interest rates decrease, capital shifts from bank savings to other investments like stocks, increasing demand for securities. Conversely, higher interest rates may lead to lower stock prices, as investors move capital back to bank deposits.
4. Exchange Rate (ER)**:** The average daily interbank USD/VND exchange rate. Exchange rate fluctuations directly affect export-import companies by influencing the cost of imported raw materials and the competitiveness of exported goods.

4.4. Corporate Governance Factors

1. Credit Risk (CR)**:** Measured by the average collection period (Accounts Receivable / (Revenue/365)). Effective credit risk management helps firms minimize losses and maintain sustainable business growth.
2. Operational Risk (OR)**:** Measured by the operating margin (Operating Income / Sales). Managing operational risks is crucial for preventing unexpected losses and enhancing company performance Hemrit and Mounira [67].
3. Liquidity Risk (LR)**:** Measured by the current ratio (Current Assets / Current Liabilities). Liquidity management is vital for avoiding bankruptcy due to cash flow problems, ensuring financial stability, and supporting continued business operations.

5. Research Methodology

This study employs the FMOLS (Full Modified Ordinary Least Square) method to analyze the long-term relationship between various factors and corporate performance, with ROA (Return on Assets) as the key dependent variable. FMOLS is selected due to its ability to handle panel data with cointegration, addressing issues such as autocorrelation and endogeneity, common in macroeconomic and financial studies. It adjusts the model to correct for cointegration bias, ensuring robust and reliable estimates when investigating long-term equilibrium relationships.

FMOLS is particularly suitable for examining the impact of macroeconomic factors (e.g., GDP, inflation, interest rates) on corporate performance. Prior to applying FMOLS, variables are tested for stationarity and cointegration using Pedroni's panel unit root and cointegration tests (1999, 2004) to ensure the data meets the criteria for long-term analysis.

The study's regression model is as follows:

$$ROA_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 INF_{it} + \beta_3 IR_{it} + \beta_4 ER_{it} + \beta_5 CR_{it} + \beta_6 OR_{it} + \beta_7 LP_{it} + \varepsilon_{it}$$

Where:

- i represents VN30 companies.
- t is the year from 2010 to 2020.
- Independent variables include GDP (economic growth), INF (inflation), IR (interest rate), ER (exchange rate), CR (credit risk), OR (operational risk), and LR (liquidity risk).

To analyze short-term impacts, the ECM (Error Correction Model) is used, which captures the adjustment speed towards long-term equilibrium after short-term fluctuations. This approach is crucial for policy-makers to understand both the immediate and sustained effects of economic variables, allowing for more effective adjustments [68].

The short-term ECM model is specified as:

$$\Delta ROA_{it} = \beta_0 + \beta_1 \Delta GDP_{it} + \beta_2 \Delta INF_{it} + \beta_3 \Delta IR_{it} + \beta_4 \Delta ER_{it} + \beta_5 \Delta CR_{it} + \beta_6 \Delta OR_{it} + \beta_7 \Delta LR_{it} + \varepsilon_{it}$$

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6. Result Discussion

The descriptive statistics of variables used in this study provide a comprehensive overview of the financial performance and economic context of VN30 companies from 2010 to 2020. The return on assets (ROA) is used as the primary indicator of business efficiency. The average ROA of VN30 companies over the period was 5.7% ± 7%, with a minimum value of -78% and a maximum of 33.5%. This suggests that, while there is some variability in performance, the overall efficiency of these companies remained relatively stable.

Vietnam's GDP growth, representing the country's economic growth, averaged 5.41% ± 1.61% during the same period. The lowest growth was 2.74%, while the highest was 7.98%. Inflation, another key economic variable, averaged 5.82% ± 4.80%, with a peak of 18.58% and a low of 0.63%.

The average interbank interest rate over one-month terms was also examined, averaging 0.1%. The highest interest rate during this period was 0.1749%, and the lowest was 0.0178%. Exchange rates between USD and VND showed an average of 21,540 VND ± 1,484, with the lowest rate at 18,479 VND and the highest at 23,245 VND.

Credit risk was measured by the average collection period, which averaged 1,052.4 days ± 1,669.2%, indicating significant variance among firms, with some taking as long as 1,184.4 days to collect payments. Operational risk was represented by operating profit margin, which averaged 7.36% ± 14.1%, ranging from -4.6% to 123.2%.

Liquidity risk was evaluated through the current ratio, with an average of 0.104 ± 32.9%. This suggests that, on average, VN30 companies had 0.104 VND in short-term assets to cover every 1 VND of short-term liabilities, indicating potential liquidity management issues. The lowest ratio observed was 0%, while the highest was 3.16.

Table 1.
Descriptive Statistics of Observed Variables in the Research Sample.

Variable Name	Observations	Mean	Standard Deviation	Minimum	Maximum
ROA)	330	0.057	0.07	-0.78	0.34
GDP	330	5.41	1.61	2.74	7.98
INF	330	5.82	4.8	0.63	18.58
IR	330	0.10	0.43	0.0178	0.1749
EX	330	21540	1484.859	18479	23245
CR	330	1052.277	1669.179	0	11848.4
CR	330	0.074	0.14	-0.047	1.233
LR	330	0.105	0.33	0	3.16

6.1. Correlation Analysis

The correlation analysis results between the variables in the research model indicate several factors positively correlated with corporate performance (ROA). These include GDP (coefficient 0.0826), interest rates (0.0315), exchange rates (0.0722), and liquidity risk (0.5609). This suggests that favorable economic conditions and effective liquidity management can enhance business performance, particularly for large firms like those in the VN30 index.

Conversely, factors negatively correlated with ROA include inflation (coefficient -0.0890), credit risk (-0.4042), and operational risk (-0.1434). These findings indicate that rising costs due to inflation, as well as heightened financial and operational risks, can negatively impact profitability and corporate efficiency. A positive correlation exists between interest rates, exchange rates, and liquidity risk with business performance.

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Table 2.
Correlation Matrix Between Variables.

. corr roa gdp inf ir er cr or lr (obs=329)								
	roa	**gdp**	**inf**	**ir**	**er**	**cr**	**or**	**lr**
roa	1.000							
gdp	0.0826	1.000						
inf	-0.0890	-0.6478	1.000					
ir	0.0315	-0.0306	0.0297	1.000				
er	0.0722	0.9485	-0.6938	-0.0147				
cr	-0.4042	0.0227	-0.1467	-0.0411	0.0663			
or	-0.1434	0.0428	-0.1095	-0.0056	0.0471	0.2828	1.0000	
lr	0.5609	-0.0656	0.0271	0.0751	-0.0538	-0.1664	-0.0285	1.0000

6.2. Cointegration Testing

The results of the Pedroni and Kao cointegration tests in Table 3 provide strong evidence of long-term relationships among the variables in the model. Specifically, Pedroni's test statistics, including the Modified Phillips-Perron t (9.5230), Phillips-Perron t (-4.6190), and Augmented Dickey-Fuller t (-5.3414), all have p-values of 0.0000, allowing for the rejection of the null hypothesis of no cointegration. This suggests that the variables tend to maintain a stable long-term relationship, even in the presence of short-term fluctuations.

Similarly, the Kao cointegration test results support these findings, with statistics such as Dickey-Fuller t ($p = 0.0262$), Augmented Dickey-Fuller t ($p = 0.0041$), and Unadjusted Dickey-Fuller t ($p = 0.0052$), all indicating the rejection of the null hypothesis of no cointegration. The consistency of results from both the Pedroni and Kao tests strengthens the evidence of a cointegrated relationship among the variables in the model, confirming that factors like GDP, inflation, interest rates, exchange rates, credit risk, operational risk, and liquidity risk have a stable long-term impact on the performance of VN30 companies.

This finding justifies the use of the FMOLS (Full Modified Ordinary Least Squares) regression model to estimate the long-term effects of these variables, aligning with the research objective of examining the relationship between macroeconomic factors, firm-specific risks, and corporate performance.

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Table 3.
Panel Data Cointegration Test Results.

Pedroni test			
.xtcointtest pedroni roa gdp inf ir er cr or lr			
Pedroni test for cointegration			
H0: No cointegration Ha: All panels are cointegrated		Number of panels Avg. number of periods	= 30 = 9.9667
Cointegrating vector: Panel specific			
Panel means:	Included	Kernel:	Bartlett
Time trend:	Not included	Lags:	0.00 (Newey-West)
AR parameter:	Panel specific	Augmented lags:	1
		Statistic	p-value
Modidied Phillips-Perron t		9.5230	0.0000
Phillips-Perron t		-4.6190	0.0000
Augmented Dickey-Fuller t		-5.3414	0.0000
As a test			
.xtcointtest pedroni roa gdp inf ir er cr or lr			
Kao test for cointegration			
H0: No cointegration Ha: All panels are cointegrated		Number of panels Avg. number of periods	= 30 = 8.9667
Cointegrating vector: Panel specific			
Panel means:	Included	Kernel:	Bartlett
Time trend:	Not included	Lags:	1.43 (Newey-West)
AR parameter:	Panel specific	Augmented lags:	1
		Statistic	p-value
Modidied Dickey-Fuller t		-1.4400	0.0749
Dickey-Fuller t		-1.9396	0.0262
Augmented Dickey-Fuller t		-2.2893	0.0022
Unad-justed modified Dickey-Fuller t Unad-justed Dickey-Fuller t		-2.9911 -2.7958	0.0014 0.0026

6.3. Discussion of Research Results

The long-term estimates using the FMOLS model, as shown in Table 4, reveal that GDP has a positive impact on the performance of VN30-listed companies. Strong national GDP encourages companies to invest more, laying the groundwork for future economic growth. Companies may also hire more workers and pay higher wages during periods of strong GDP growth. However, this relationship lacks statistical significance (p-value = 0.448 > 0.05), suggesting insufficient evidence to accept Hypothesis H1.

Furthermore, the FMOLS estimates show a statistically significant negative long-term relationship (at the 5% level) between inflation and corporate performance in VN30 companies. This finding aligns with Rodeck [33] which notes that inflationary fluctuations can harm company operations. Employees tend to demand higher wages during inflation, believing that all prices will rise, which prompts employers to increase product prices to keep pace with costs. As a result, company revenue and profits are adversely affected as product prices rise [33]. This supports the acceptance of Hypothesis H2.

Interest rates are shown to have a negative long-term effect on corporate performance; however, this relationship is not statistically significant. Thus, there is insufficient evidence to accept Hypothesis H3. In practice, rising interest rates exert pressure on firms to repay loans and impact their financial leverage, potentially reducing profitability. High interest rates may also limit access to capital, affecting business plans aimed at improving investment and corporate performance.

The FMOLS model also indicates a negative long-term effect of exchange rates on corporate performance, although this effect is not statistically significant. Therefore, there is insufficient evidence to accept Hypothesis H4. Exchange rate fluctuations directly impact business operations, particularly for companies involved in importing and exporting goods. A depreciation of VND against USD benefits

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exporters as their goods become cheaper, while importers face higher costs. Conversely, a stronger VND reduces the competitiveness of exporters as their goods become more expensive.

The FMOLS model shows that credit risk has a statistically significant negative long-term effect on corporate performance (at the 1% level) for VN30 companies. This finding supports Hypothesis H5. It aligns with Marwan and Rohami [69] who suggest that companies with higher credit risk are less efficient, and bad debts directly hinder the efficient use of investment capital, affecting business development and profitability.

Additionally, the FMOLS model estimates indicate that operational risk has a negative long-term effect on corporate performance, though this relationship is not statistically significant. Marwan and Rohami [69] note that maximizing future cash flow predictions through operational risk management can improve corporate performance.

Finally, liquidity risk is found to have a significant positive long-term effect (at the 1% level) on corporate performance in VN30 companies. This result contrasts with Hypothesis H7 and the findings of Tabari, et al. [58] who identified a negative correlation between liquidity risk and corporate performance, as well as Marwan and Rohami [69] who argued that poor liquidity risk management can deteriorate corporate operations.

Table 4.
Long-Term Estimation Results (FMOLS).

. regress roa gdp inf ir er cr or lr						
Source	**SS**	**df**	**MS**		**Number of obs. =**	**329**
					F(7, 321) =	36.20
Model	0.701132878	7	0.100190411		Prob > F =	0.0000
Residual	0.888404883	321	0.002767616		R-squared =	0.4412
					Adj R-squared =	0.4290
Total	1.58973776	328	0.004846761		Root MSE =	.05261
roa	Coefficient	Std.err.	t	P>|t|	[95% conf.	interval]
gdp	0.004389	0.0057828	0.76	0.448	-0.0069879	0.0157659
inf	-0.001993	0.0008513	-2.34	0.020	-0.0036679	-0.0003181
ir	-0.0258988	0.0665756	-0.39	0.698	-0.1568784	0.1050808
er	-3.22e-06	6.61e-06	-0.49	0.627	-0.0000162	9.79e-06
cr	-0.0000134	1.87e-06	-7.17	0.000	-0.0000171	-9.74e-06
or	-0.0266092	0.0215574	-1.23	0.218	-0.0690209	0.0158025
lr	0.1085813	0.009003	12.06	0.000	0.0908689	0.1262937
_cons	0.1210965	0.1170813	1.03	0.302	-0.1092471	0.35144

The results of the ECM model analysis in Table 5 indicate that, in the short term, macroeconomic factors and internal company variables have minimal significant impact on the performance of VN30-listed companies in the Vietnamese stock market. Specifically, factors such as GDP growth (coefficient 0.004262, p-value = 0.726), inflation (coefficient -0.0006688, p-value = 0.127), interest rates (coefficient 0.015951, p-value = 0.551), exchange rates (coefficient -4.49e-06, p-value = 0.179), credit risk (coefficient -1.63e-06, p-value = 0.231), operational risk (coefficient 0.0058167, p-value = 0.623), and liquidity risk (coefficient 0.0158085, p-value = 0.215) all have p-values greater than 0.05, indicating no statistical significance. This suggests that these factors do not have a significant short-term impact on the operational performance of VN30 companies, measured by return on assets (ROA).

Additionally, the error correction term (ECM) coefficient is -0.0191593, with a p-value of 0.713, which also lacks statistical significance. This result suggests that, in the short term, the variables do not adjust quickly to return to long-term equilibrium after any fluctuations. This implies that VN30 companies do not tend to make short-term adjustments to adapt to changes in macroeconomic and internal company factors.

Overall, these findings suggest that, in the short term, the performance of the largest companies in Vietnam is not heavily affected by fluctuations in macroeconomic factors such as GDP, inflation, interest

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rates, exchange rates, or risk factors such as credit risk, operational risk, and liquidity risk. This implies that, to improve performance, VN30 companies need to focus more on long-term factors and develop sustainable management strategies, rather than relying on short-term adjustments in response to transient business environment fluctuations.

Table 5.
Short-Term Estimation Results Using the ECM Model.

D.roa	Coeficient	Std.er.	t	P>|t|	[95% conf. interval]	
gdp D1.	0.004262	0.0121464	0.35	0.726	-0.0196443	0.0281682
inf D1.	-0.0006688	0.0004373	-1.53	0.127	-0.015294	0.0001918
ir D1.	0.015951	0.8267415	0.60	0.551	-0.036681	0.068583
er D1.	-4.49e-06	3.33e-06	-1.35	0.179	-0.00011	2.07e-06
cr D1.	-1.63e-06	1.363-06	-1.20	0.231	-4.30e-06	1.04e-06
or D1	0.0058167	0.0118316	0.49	0.623	-0.0174701	0.0291034
lr D1	0.0158085	0.0127102	1.24	0.215	-0.0092075	0.0408245
ECM	-0.0191593	0.0519644	-0.37	0.713	-0.1214345	0.083116
cons	0.0033594	0.0111472	0.30	0.763	-0.0185802	0.0252991

7. Conclusion

This study was conducted to examine the combination of factors related to corporate governance mechanisms (such as board characteristics, financial policies, management ownership structure, board compensation, and certain financial indicators of companies) and external factors (primarily macroeconomic factors) to assess their impact on the business performance of companies listed on the VN30 index (referred to as VN30 companies) from 2010 to 2020. The research achieved several specific results:

Firstly, inflation was identified as a factor that negatively and significantly affects the return on assets (ROA) of businesses. This finding indicates that as input costs rise alongside inflation, the profitability of large companies is significantly impacted.

Additionally, credit risk was found to have an inverse relationship with operational performance. When the ability to recover receivables declines, it reduces the sustainability and profitability of a company. Specifically, liquidity management is a factor with a positive and significant impact, emphasizing that companies with high liquidity are better positioned financially, ensuring working capital availability for ongoing business activities.

In contrast, other macroeconomic factors such as GDP, exchange rates, and interest rates do not show significant long-term effects on the performance of VN30 companies. This suggests that these factors may not directly influence the business performance of the largest companies in Vietnam's stock market.

The study's results have important practical implications. For policymakers, the research emphasizes the role of controlling inflation and managing credit risk in creating a stable business environment and supporting sustainable business development. From the perspective of businesses, the study highlights the importance of developing an effective financial management strategy, with a focus on liquidity management and credit risk control, to optimize operational performance. Thus, this research not only contributes to the knowledge of factors affecting the operational performance of large companies in Vietnam but also opens the door for future research focusing on corporate governance factors and their short-term impacts, thus helping to build a more comprehensive picture of corporate performance.

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7.1. Limitations of the Study

There are some objective and subjective limitations in this study that affect the results, such as the short duration of the research, which led to the inability to collect extensive data or broaden the scope of other factors influencing the performance of VN30 companies. This limitation may have affected the results of the tests.

Additionally, the short-term impact estimation model (ECM) yielded results showing that none of the factors in the research model had a significant short-term impact on the performance of VN30-listed companies. This implies that the second goal of the research, to investigate the short-term impact of factors on corporate performance, was not achieved.

7.2. Future Research Directions

Based on the limitations of this study, the author proposes several directions for future research:

1. Future studies should review related literature and identify additional factors affecting the performance of companies with high market capitalization on the stock market.
2. Future research should selectively incorporate factors that significantly impact short-term performance into the research model to optimize the model and provide more accurate insights.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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