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THE INFLUENCE OF OWNERSHIP STRUCTURE ON FINANCIAL PERFORMANCE OF GASOLINE FIRMS

A INFLUÊNCIA DA ESTRUTURA DE PROPRIEDADE NO DESEMPENHO FINANCEIRO DAS EMPRESAS DE COMBUSTÍVEIS

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Abstract
The purpose of this research is to investigate the impact of Foreign Ownership (FO), Organizational Ownership (IO), Internal Ownership (MO), Ownership Concentration (OC), and State-Owned (SO) on financial performance, measured by return on assets (ROA), of gasoline enterprises on the Vietnamese stock market. The research sample consists of 20 listed gasoline firms observed over the period 2021–2024, employing a combination of qualitative and quantitative research methods. A regression model is developed to examine the relationships between the explanatory variables and ROA, while ensuring the validity of key linear regression assumptions. The empirical results reveal that no effect of organizational ownership (IO) on ROA was found; no effect of

Resumo
O objetivo desta pesquisa é investigar o impacto da Propriedade Estrangeira (PE), Propriedade Organizacional (PO), Propriedade Interna (PI), Concentração de Propriedade (CP) e Estatismo (E) no desempenho financeiro, medido pelo retorno sobre ativos (ROA), de empresas de combustíveis listadas na bolsa de valores vietnamita. A amostra da pesquisa consiste em 20 empresas de combustíveis listadas, observadas no período de 2021 a 2024, utilizando uma combinação de métodos de pesquisa qualitativos e quantitativos. Um modelo de regressão foi desenvolvido para examinar as relações entre as variáveis explicativas e o ROA, garantindo a validade das principais premissas da regressão linear. Os resultados empíricos revelam que não houve

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foreign ownership (FO) on ROA was found; internal ownership (MO) had a negative effect with a coefficient of -.0818785; ownership concentration (OC) had a positive effect with a coefficient of .0432445; and state-owned (SO) had a negative effect with a coefficient of -.0423326. The findings provide valuable empirical evidence for corporate managers, investors, and policymakers in designing financial strategies and improving the business performance of gasoline enterprises in Vietnam.

Keywords: Foreign Ownership (FO). Organizational Ownership (IO). Internal Ownership (MO). Ownership Concentration (OC). and State-Owned (SO). Financial Performance. Gasoline Firms. Finance. Accounting.

efeito da propriedade organizacional (PO) sobre o ROA; não houve efeito da propriedade estrangeira (PE) sobre o ROA; a propriedade interna (PI) teve um efeito negativo com um coeficiente de -0,0818785; a concentração de propriedade (CP) teve um efeito positivo com um coeficiente de 0,0432445; e o estatismo (E) teve um efeito negativo com um coeficiente de -0,0423326. Os resultados fornecem evidências empíricas valiosas para gestores corporativos, investidores e formuladores de políticas na elaboração de estratégias financeiras e na melhoria do desempenho empresarial de empresas de combustíveis no Vietnã.

Palavras-chave: *Propriedade Estrangeira (PE). Propriedade Organizacional (PO). Propriedade Interna (PI). Concentração de Propriedade (CP). e Estatal (EE). Desempenho Financeiro. Empresas de Combustíveis. Finanças. Contabilidade.*

1 INTRODUCTION

In many countries around the world, including Vietnam, state and foreign ownership are two important forms of ownership in corporate ownership structures and receive much attention from researchers. Furthermore, for many years, ownership structure in firms has been a topic of great interest in Vietnam. This topic has received even more attention since the privatization of state-owned enterprises in Vietnam began in 1992. One of the key aspects of corporate restructuring is the divestment of state capital or the increased participation of other shareholders, especially foreign shareholders. Different shareholder groups have different rights and interests and different relationships with the government, banks, and strategic partners, so ownership structure significantly influences corporate decisions and contributes to the financial performance of the enterprise.

In a joint-stock company, share capital is owned by many different shareholders, thus forming the company's ownership structure. Owners have different objectives when holding shares, therefore contributing to the company's financial performance in different ways. Furthermore, under the influence of the ownership structure, company managers can manipulate earnings to affect the accuracy, quality, and transparency of disclosed

information, thereby contributing to financial performance.

To date, there are 20 petroleum companies listed on the Vietnamese stock market (https://24hmoney.vn/companies) with varying sizes, financial performance, and ownership structures. The petroleum production and business sector has a significant impact on the economy and society because it is an essential commodity in many countries, including Vietnam. Furthermore, this commodity has a major impact on the environment, causing air and water pollution. Therefore, the scope of petroleum companies is of great interest to researchers, information users, and society as a whole.

Given the characteristics of a transitional economy, the stock market is in a frontier state, and the entire society is undergoing digital transformation. Therefore, studying the impact of ownership structure on the financial performance of petroleum companies listed on the Vietnamese stock market is necessary and significant both scientifically and practically. The results of this research will contribute to providing empirical evidence on the influence of ownership structure on the financial performance of firms in a developing country like Vietnam.

2 THEORETICAL BASIS AND RESEARCH HYPOTHESIS

2.1 Theoretical basis

According to agency theory, agency conflict arises when the interests of managers differ from those of owners. When shareholding is concentrated in individuals—particularly founders, family members, or major shareholders—the level of direct oversight increases, and the information gap decreases. This reduces agency costs, which can then improve financial performance (Jensen & Meckling, 1976).

Ownership structures that lead to excessive dominance by a group of shareholders (e.g., excessive individual or insider ownership) can weaken oversight mechanisms, facilitate power-grabbing behavior, and reduce financial performance. Therefore, agency theory is a crucial foundation for explaining why different components of ownership structure can have inconsistent, or even contradictory, impacts on a company's financial performance.

In the context of oil and gas companies listed on the stock market, information

asymmetry is a prominent issue due to the industry's characteristics being affected by fluctuations in energy prices, oil reserves, and government policies. Ownership structure plays a crucial role in reducing information asymmetry: large foreign ownership, institutional ownership, or individual ownership often requires higher disclosure standards, thereby reducing information risk and improving financial performance.

When internal or private ownership becomes excessively dominant, managers may gain an informational advantage and reduce disclosure levels, increasing information asymmetry and negatively impacting financial performance. Therefore, the theory of information asymmetry provides an important theoretical basis for explaining why different components of ownership structure lead to different impacts (positive or negative) on the financial performance of oil and gas companies listed on the stock market.

The owner-manager theory explains that both managerial ownership and significant personal ownership can enhance financial performance through a mechanism of shared interests. When individuals in the executive team or board members hold substantial shareholdings, they are more likely to focus on risk management, capital efficiency, and long-term decisions, thereby improving financial performance.

The theory of power consolidation helps explain the non-linear relationship between ownership structure and financial performance: at low or moderate ownership levels, financial performance increases due to the alignment of interests, but when ownership is too high, power is consolidated, leading to decreased performance. In the oil and gas industry—where firms are characterized by large capital, high risk, and strong regulation—this impact is even more pronounced because large shareholders can easily use their power to shape internal policies in a way that is unfavorable to small shareholders. Therefore, the theory of power consolidation is an important foundation for explaining the differences in the impact of each type of ownership on financial performance.

2.2 The impact of Foreign Ownership on financial performance

Foreign ownership (FO) brings about improvements in governance, transparency, and supervisory capacity (Nguyen & Rugemintwari, 2021).

H_1: Foreign ownership (FO) has a positive impact on the financial performance of gasoline enterprises on the Vietnamese stock market.

2.3 The impact of Organizational ownership on financial performance

Institutional investors have the ability to monitor effectively (Bushee, 1998; Machado *et al*., 2025).

Organizational ownership (IO) is a crucial factor in corporate governance. Professional investment organizations possess analytical capabilities, strategic oversight abilities, and significant influence on the quality of corporate governance. Numerous studies have shown that IO correlates positively with ROA, ROE and Tobin's Q (Bushee, 1998; Machado *et al*., 2025).

H_2: Organizational ownership (IO) has a positive impact on the financial performance of gasoline enterprises on the Vietnamese stock market.

2.4 The impact of internal ownership on financial performance

Moderate levels of managerial ownership (MO) increase the alignment of interests; excessive managerial ownership reduces transparency (Morck *et al*., 1988).

Internal ownership (MO) has a non-linear impact. Low levels of internal ownership help align the interests of managers and shareholders, increasing financial performance; however, when MO is too high, the executive board tends to cling to power, reducing transparency and undermining performance (Morck *et al*., 1988).

In many oil and gasoline enterprises listed on the Vietnamese stock market, the participation of large individual shareholders or family-owned groups is often accompanied by a high level of commitment and deep understanding of the company's operations and strategy. This aligns with the stewardship theory, which suggests that shareholder-management engagement and consensus can reduce oversight costs, accelerate decision-making, and improve financial performance, especially in a volatile industry like oil and gas.

H_3: Internal ownership (MO) has a two-way impact on the financial performance of gasoline enterprises on the Vietnamese stock market.

2.5 The impact of ownership concentration on financial performance

High levels of ownership concentration increase oversight but also increase the risk of misappropriation (Claessens *et al*., 2002).

The degree of ownership concentration (OC) also has mixed effects: high concentration increases oversight but risks appropriating the interests of minority shareholders (Claessens *et al*., 2002).

H_4: The level of ownership concentration (OC) has a positive impact on the financial performance of gasoline enterprises on the Vietnamese stock market.

2.6 The impact of state-owned (SO) on financial performance

State ownership (SO) is often associated with non-profit objectives and lacks flexibility (La Porta *et al*., 1999; Megginson & Netter, 2001).

In Vietnam's petroleum industry, the level of state regulation and supervision is very high due to its connection to socio-economic stability, fuel prices, and energy security. According to political cost theory, businesses in this industry face risks of price scrutiny, profit control, or interference in financial policies. Therefore, ownership structures—especially state ownership (SO) and large institutional ownership—can be designed to reduce political pressure, increase stability, and maintain a compliant image before regulatory authorities.

H_5: State ownership (SO) has a negative impact on the financial performance of gasoline enterprises on the Vietnamese stock market.

3 RESEARCH METHODOLOGY

3.1 Methodology

This study uses both research methods, including qualitative research methods and quantitative research methods.

Qualitative research methods: We used techniques of synthesis, analysis, and comparison to evaluate the financial performance of the gasoline firms and to measure

the effects of Foreign Ownership (FO), Organizational Ownership (IO), Internal Ownership (MO), Ownership Concentration (OC), and State-Owned (SO) on financial performance (ROA). In addition to collecting previous studies, we interviewed experts. Qualitative research methods oriented and refined the research results of previous studies; from there, this study inherited and applied them.

Quantitative research methods are based on table data; data are aggregated over 4 years, from 2021 to 2024. We used Stata 13 software in the quantitative research method.

3.2 Data collection

The list of 20 gasoline firms listed on the Vietnamese stock market is collected from the websites cophieu68.vn and https://24hmoney.vn/companies.

In order to learn, analyze, evaluate, and measure the financial performance of the gasoline firms and measure the effects of Foreign Ownership (FO), Organizational Ownership (IO), Internal Ownership (MO), Ownership Concentration (OC), and State-Owned (SO) on financial performance, we use the data and information of the financial statements that have been audited, approved, and published on reputable websites, such as https://finance.vietstock.vn/ and cafef.vn, and the data service provider. In addition, they also refer to the analysis and comments of experts in the media and specialized journals.

Besides, we collected from research documents and semi-structured interviews. First of all, previous papers are reviewed to examine similar studies and get an overview of key discussions. After that, we interviewed chief accountants and management boards from three listed gasoline firms and two lecturers with high experience in finance in gasoline firms at top economic universities in Vietnam. All recorded interviews create a large data set to analyze and evaluate the attributes of the characteristics of the Foreign Ownership (FO), Organizational Ownership (IO), Internal Ownership (MO), Ownership Concentration (OC), and State-Owned (SO) of gasoline firms. All interviewed individuals have experience in the field of research. Respondents are guaranteed the confidentiality of the information they provide.

We designed a construct of Foreign Ownership (FO), Organizational Ownership (IO), Internal Ownership (MO), Ownership Concentration (OC), State-Owned (SO), and

financial performance observed variables based on previous studies and interview results. Table 1 was officially sent to the data collection in 2025. They collected and calculated the actual level of the six (6) observed variables of Foreign Ownership (FO), Organizational Ownership (IO), Internal Ownership (MO), Ownership Concentration (OC), State-Owned (SO), and financial performance in listed gasoline firms in the period from 2021 to 2024. Meanwhile, the shortcomings of data processing will be overcome, and the study will be more convincing for a long time.

Data collection results received 20 responses from 20 listed gasoline firms. Of which, there were no invalid responses, and all 20 responses of 20 companies were retained, meeting the required sample to reach 95% of the statistical results (Hair *et al*., 2006).

Table 1

Independent variables and dependent variables

Code	Observed variable	Measurement	Sources
Independent variables			
FO	Foreign Ownership (FO)	Percentage of shares held by foreign investors	Compiled by the authors, based on the results of previous studies and expert opinion.
IO	Organizational Ownership (IO)	Percentage of shares held by institutional investors	
MO	Internal Ownership (MO)	Percentage of shares held by the executive board and the board of directors.	
OC	Ownership Concentration (OC)	Percentage of shares held by the 3 or 5 largest shareholders, or percentage of capital ownership by the largest shareholder (holding >= 5% of shares).	
SO	State-Owned (SO)	Percentage of shares held by the State.	
Dependent variables			
ROA	Financial Performance	Profit after tax / Average total assets	Alarussi & Alhaderi (2018), Do *et al*., (2021), Nguyen *et al*., (2022)

Source: Compiled by the authors

3.3 Data processing

The collected data will be checked for compliance information, then cleaned, synthesized, and analyzed according to the following steps:

Step 1: Encrypt data, declare and import data on Excel files

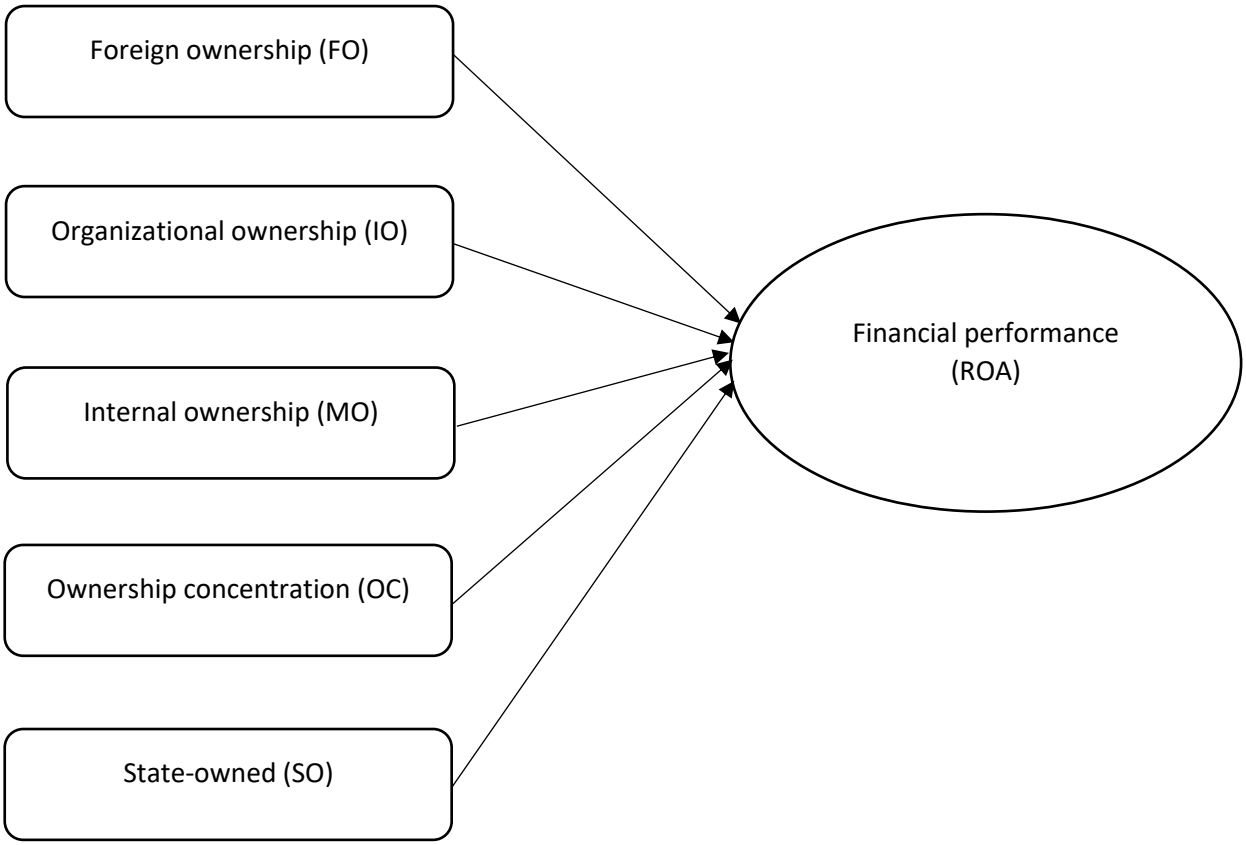
Step 2: Data processing using Stata 13 software, including descriptive statistics, correlation analysis, scale regression, and regression model testing.

3.4 Research model

Inheriting previous researches and based on expert interviews, we build a research model as follows (see Figure 1):

Figure 1

Rresearch model



4 RESULT

4.1 Descriptive statistic

Table 2 shows that the dependent variable includes 1 observed variable, and the independent variable includes 5 observed variables. Each observed variable is described by 80 observations. Basic indicators such as mean, max, min, standard deviation (SD), variance, skewness, coefficient of variation, sum of variables, range, coefficient of variation (P50), and coefficient of variation (CV) of each observed variable have been identified, and these basic indices accurately reflect the current state of financial performance and the impact of Foreign ownership (FO), Organizational ownership (IO), Internal ownership (MO), Ownership concentration (OC), and State-owned (SO) on the financial performance (ROA) of listed gasoline firms.

Table 2

General descriptive statistics and detail descriptive statistics

General descriptive statistics						
Variable	**Obs**		**Mean**	**Std. Dev.**	**Min**	**Max**
Dependent variable						
ROA	80		.0359924	.0441238	-.1713448	.1868993
Independent variable						
FO	80		.0391507	.0630092	0	.232
IO	80		1.068719	3.637804	.1626	33.15
MO	80		.0382305	.1084228	0	.521
OC	80		.6751075	.2169537	.2977	.994
SO	80		.157515	.2573965	0	.79
Detail descriptive statistics						
Stats	**ROA**	**FO**	**IO**	**MO**	**OC**	**SO**
N	80	80	80	80	80	80
Sum	2.879393	3.13206	85.4975	3.05844	54.0086	12.6012
Range	.3582441	.232	32.9874	.521	.6963	.79
Variance	.0019469	.0039702	13.23362	.0117555	.0470689	.066253
Cv	1.22592	1.6094	3.403893	2.83603	.3213617	1.634108
Skewness	-.3988765	1.684893	8.734125	3.631022	.0251039	1.433199
Kurtosis	9.632276	4.703104	77.53322	15.69506	1.583887	3.700185
p50	.0323356	.0048	.64065	.00015	.658	0

Source: Compiled by the authors and Stata software

4.2 Correlation analysis results

Table 3

Correlation analysis results of independent variable and dependent variable

	ROA	FO	IO	MO	OC	SO
ROA	1.0000					
FO	-0.1516	1.0000				
IO	-0.0586	-0.0561	1.0000			
MO	-0.1572	-0.2137	-0.0363	1.0000		
OC	0.1998	-0.0848	-0.1555	-0.0564	1.0000	
SO	-0.1927	0.3567	-0.0580	-0.1194	0.0625	1.0000

Source: Compiled by the authors and Stata software

When analyzing the correlation between the independent variable and the dependent variable, the results in Table 3 show that, between the independent variables and dependent variable, the absolute value of each correlation coefficient between 2 variables is less than 0.8; therefore, there is no multicollinearity phenomenon between the independent variable and the dependent variable and between the independent variables (Bryman & Cramer, 2001).

4.3 Regression Results

Table 4

OLS regression results

OLS regression						
Source	SS	df	MS	Number of obs = 80		
				F(5, 74) = 2.10		
Model	.01911138	5	.003822276	Prob > F = 0.0748		
Residual	.134694649	74	.001820198	R-squared = 0.1243		
	.153806029	79	.001946912	Adj R-squared = 0.0651		
Total				Root MSE = .04266		
ROA				P>|t|	[95% Conf. Interval]	
FO	-.0792369	.0838317	-0.95	0.348	-.2462752	.0878015
IO	-.0006632	.0013422	-0.49	0.623	-.0033376	.0020113
MO	-.0796821	.0455808	-1.75	0.085	-.1705039	.0111396
OC	.037121	.022675	1.64	0.106	-.00806	.0823019
SO	-.0326157	.0200856	-1.62	0.109	-.0726372	.0074058
_cons	.0229264	.0172037	1.33	0.187	-.0113527	.0572055

Source: Compiled by the authors and Stata software

With 95% confidence degree, Table 4 shows:

The value of F is equal to 2.10 (> 1.96); nevertheless, the value of Prob is greater than the value of F by 0.0748 (> 0.05). Thus, the model is consistent and statistically significant (Bryman & Cramer, 2001). R-squared is 0.1243, meaning that the independent variables in the research model explain 12.43% of the influence of the independent variable on the dependent variable. Therefore, the research results are accepted temporarily, but the suitability of the model needs to be tested (Bryman & Cramer, 2001; Torres-Reyna, 2007; Kohler & Kreuter, 2005; Ditzen, 2018).

Table 5

Result of the autocorrelation by VIF coefficient (estat vif) of ROA

Variable	VIF	1/VIF
FO	1.21	0.825784
IO	1.16	0.862016
MO	1.06	0.943378
OC	1.05	0.952056
SO	1.03	0.966414
Mean VIF	1.10	

Source: Compiled by the authors and Stata software

Table 5 shows that all the observed variables of the independent variables have VIF coefficients < 2, so it can be confirmed that 100% of all independent variables do not have autocorrelation (Bryman & Cramer, 2001; Torres-Reyna, 2007; Kohler & Kreuter, 2005; Ditzen, 2018).

Next, Table 6 shows the results of the Breusch–Pagan/Cook–Weisberg test used to examine heteroskedasticity in the regression model, with the null hypothesis H_0: the variance of the errors is constant. The results show that Prob > chi^2 = 0.8627, which is greater than the commonly accepted 5% significance level (0.05). Therefore, there is insufficient basis to reject the null hypothesis H_0 at the 5% significance level. The regression model with the dependent variable ROA does not have clear statistical evidence of heteroskedasticity. In other words, the homoskedasticity assumption of the linear regression model is satisfied (Bryman & Cramer, 2001; Torres-Reyna, 2007; Kohler & Kreuter, 2005; Ditzen, 2018). However, in academic studies, the use of higher-order regression models is encouraged to increase reliability.

Table 6

Results of heteroskedascity (estat hottest)

ROA
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of ROA
chi2(1) = 0.03
Prob > chi2 = 0.8627

Source: Compiled by the authors and Stata software

Prob > chi2 = 0.8627 > 0.05; thus, there is no heteroskedasticity, meaning the research model fits the input data. Therefore, it is tentatively accepted (Bryman & Cramer, 2001). Based on Table 4, the p>|t| column and the Coef column, with 95% confidence, no regression equation affecting ROA was found (the p>|t| column shows values greater than 0.05).

Next, we proceeded to perform regression analysis of fixed effects (FEM) and random effects (REM). The results showed that H0: difference in coefficients is not systematic, meaning there is no difference between the two models, FEM and REM; therefore, the REM model is chosen (Bryman & Cramer, 2001). However, when re-testing for heteroskedasticity using the estathottest test, the results showed that Prob > chibar2 < 0.05: therefore, there is heteroskedasticity, or the REM model does not fit the input data (Bryman & Cramer, 2001; Torres-Reyna, 2007; Kohler & Kreuter, 2005, Ditzen, 2018). Thus, the final regression, GLS regression, should be used (Table 7).

Table 7

GLS regression results

Cross-sectional time-series FGLS regression						
Estimated covariances = 20					Number of obs = 80	
Estimated autocorrelations = 0					Number of groups = 20	
					Time periods = 4	
Estimated coefficients = 6					Wald chi2(3) = 60.59	
					Prob > chi2 = 0.0000	
ROA	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]	
FO	-.0026675	.028842	-0.09	0.926	-.591967	.0538617
IO	-.0005348	.0009896	-0.54	0.589	-.0024743	.0014048
MO	-.0818785	.0125637	-6.52	0.000	-.1065028	-.0572542
OC	.0432445	.0116714	3.71	0.000	.020369	.0661201
SO	-.0423326	.0083947	-5.04	0.000	-.0587859	-.0258793
Cons	.0152505	.0080254	1.90	0.057	-.000479	.03098

Source: Compiled by the authors and Stata software

Table 7 shows that the research model is consistent with the input data (Bryman and Cramer, 2001). No effect of organizational ownership (IO) on ROA was found; no effect of foreign ownership (FO) on ROA was found; internal ownership (MO) had a negative effect with a coefficient of -.0818785; ownership concentration (OC) had a positive effect with a coefficient of .0432445; state-owned (SO) had a negative effect with a coefficient of -.0423326. With a significance level of 95%.

The regression equation of internal ownership (MO), ownership concentration (OC), and state-owned (SO) affects ROA as follows.

ROA = -.0818785* MO + .0432445 * OC -.0423326 * SO

In short, the results of the hypothesis testing are presented in Table 8.

Table 8

Synthesize the results of the hypotheses

No	Proposed hypothesis	Result	Conclusion
1	H_1: Foreign ownership (FO) has a positive impact on the financial performance of gasoline enterprises on the Vietnamese stock market.	No impact of FO on ROA has been found.	Reject
2	H_2: Organizational ownership (IO) has a positive impact on the financial performance of gasoline enterprises on the Vietnamese stock market.	No impact of IO on ROA has been found.	Reject
3	H_3: Internal ownership (MO) has a two-way impact on the financial performance of gasoline enterprises on the Vietnamese stock market.	MO negatively impacts ROA.	Partial acceptance
4	H_4: The level of ownership concentration (OC) has a positive impact on the financial performance of gasoline enterprises on the Vietnamese stock market.	OC has a positive impact on ROA.	Accept
5	H_5: State ownership (SO) has a negative impact on the financial performance of gasoline enterprises on the Vietnamese stock market.	SO negatively impacts ROA.	Accept

4.5 Discussion

High stability and ownership concentration: Ownership structures in many firms remain stable over the years, especially with high Initial Investment (IO) and Initial Ownership (OC). This helps to provide clear strategic direction, reduce conflicts of interest, and facilitate long-term investment decisions. In the high-risk oil and gas industry, a high degree of ownership concentration ensures quick and consistent decision-

making.

Attracting a portion of foreign investors: Some firms, such as PVS, VIP, and PVD, have seen a significant increase in foreign direct investment (FDI), demonstrating the potential to attract international capital as businesses become more transparent and operate in the highly profitable upstream oil and gas sector. Foreign investors help strengthen corporate governance, oversight, and information transparency.

Expanding private ownership: The large proportion of private sector ownership reflects the policy of socialization and improved operational efficiency. The dynamism of the private sector provides impetus for improved financial performance.

Low FO ratios: Most FO ratios are below 1%, indicating that firms are not yet truly attractive to foreign investors due to unpredictable profit margins, policy risks, and a lack of transparency. This limits access to high-quality capital and international management expertise.

Low MO—lack of alignment of interests: The ownership stake of the management board is almost zero in most firms. This can lead to managers being out of sync with shareholder interests, reducing governance effectiveness and increasing agency risk.

High OC – Risk of abuse of power by major shareholders: An OC of 0.8–0.99 puts pressure on the allocation of power to become overly concentrated, easily leading to a situation where major shareholders dominate operations, disregarding the interests of minority shareholders. This also affects transparency and information disclosure.

Significant disparities between firms: Some firms, such as HFC and PVC, have low input-output (IO) and highly volatile ownership structures over the years, reflecting a lack of stability in governance control.

The results describing the ownership structure provide a crucial basis for building a regression model to test the quantitative impacts of each ownership component on the financial performance of gasoline enterprises on the Vietnamese stock market. Including FO, IO, MO, OC, SO, and PO in the model helps to better identify the mechanisms by which ownership power influences financial performance indicators such as ROA. The significant differences in ownership ratios among companies indicate the potential for heterogeneity effects, thereby increasing the analytical value of the model.

Specifically, ownership variables are expected to reflect differences in corporate governance: foreign ownership is often associated with modern governance standards;

institutional ownership is associated with strong oversight capabilities; internal ownership is associated with the motivation of aligning interests; while centralized or state ownership creates different forms of control. Therefore, the regression model not only helps assess the level of impact but also helps identify which ownership variables are drivers of increased efficiency and which create risks or hinder growth. This is an important basis for policy recommendations and solutions for restructuring ownership in the petroleum industry.

5 IMPLICATIONS

Increase Foreign Ownership: Increase foreign ownership (FO) through improved transparency and governance standards. Firms need to enhance information transparency, comply with international standards (IFRS, ESG), and publish sustainability reports to attract foreign capital. Relaxing foreign ownership limits or listing on international exchanges will help improve FO. More specifically, one of the major limitations of many oil and gas firms is the low level of foreign ownership (FO), which is not commensurate with the industry's development potential. To improve this, firms need to increase transparency in information disclosure, adopt modern governance practices, and gradually transition to international accounting standards (IFRS). Implementing sustainable development reporting (ESG reports) in accordance with international practices will help strengthen the confidence of foreign investors, thereby promoting long-term capital flows. In addition, exploring options for foreign ownership or considering cross-listing on regional exchanges is also a strategic solution to increase access to international capital.

Encouraging insider ownership to reduce agency problems: Firms should implement ESOP programs, award shares to the executive board, or set minimum ownership levels for management to align interests and reduce agency risks. Furthermore, the current low rate of insider ownership (MO) in many firms leads to a divergence in interests between managers and shareholders, increasing agency risk. To enhance this alignment, a viable solution is to implement stock issuance programs under the ESOP mechanism, award shares, or set minimum ownership levels for key positions such as the Board of Directors and the Executive Board. Increasing insider ownership not only

encourages managers to strive for improved financial performance but also helps improve shareholder stability and limit excessive risk-taking. Simultaneously, firms need to establish clear information disclosure mechanisms to avoid conflicts of interest when implementing ESOPs.

Reducing Ownership Concentration: Reducing ownership concentration (OC) enhances transparency and competition in governance. Firms should encourage greater ownership diversification through public offerings, selling off shares held by major shareholders, and creating conditions for increased transparency and competition in governance. Furthermore, excessive ownership concentration in some firms can lead to dominant governance, restrict the voice of minority shareholders, and reduce transparency. To address this, firms need to promote diversification of the shareholder structure through methods such as public offerings, private placements to strategic investors, or gradually reducing the ownership of the controlling shareholder group. Proper ownership diversification enhances accountability, limits manipulation, and creates healthy competitive pressure on the governance structure, thereby improving long-term financial performance.

Stabilizing and Standardizing Institutional Investment (IO): Stabilizing and standardizing the ratio of institutional ownership (IO) is crucial for enhancing financial sustainability. For firms with low and volatile IO, such as HFC, a strategy to attract long-term institutional shareholders is necessary to improve financial stability and governance. Some companies experience significant fluctuations in institutional ownership (IO), a group of shareholders that tends to invest long-term and positively impact corporate governance. To stabilize institutional capital, companies need to develop strategies to attract institutional shareholders through increased transparency, enhanced investor relations (IR), and the establishment of regular dialogue mechanisms with investment funds. A sustained presence of institutional investors will exert positive pressure on governance, compliance, and capital efficiency, especially in the context of a volatile oil and gas market.

Adjusting the State Ownership Ratio (SO) Appropriately: The state ownership ratio (SO) should be adjusted appropriately in line with restructuring guidelines. Enterprises with high SO ratios, such as PLX and PVD, need to assess a suitable divestment roadmap in accordance with the general policy, ensuring both attracting

private capital and maintaining national energy security. For enterprises with high state ownership ratios (SO) like PLX or PVD, the restructuring of state capital should be carried out according to a roadmap consistent with the general policy on restructuring state-owned enterprises and ensuring national energy security. Selective divestment not only helps attract more private resources but also increases flexibility in corporate governance. However, this process needs to be carried out cautiously, ensuring the State maintains control over key stages of the petroleum value chain to protect public interests and market stability. Simultaneously, enterprises can consider strategic cooperation with international energy corporations to enhance management and technological capabilities.

Furthermore, the current ownership structure shows a blend of market and state elements, but it has not yet achieved optimal results for improving financial performance. Imbalances in the allocation of capital and management power can inconsistently impact ROA. Therefore, quantitative analysis is necessary to verify which ownership elements truly create financial value and which diminish efficiency. This also serves as a basis for proposing appropriate ownership restructuring policies.

These solutions not only aim to overcome limitations in the ownership structure but also to enhance transparency, strengthen investor confidence, and create a foundation for the sustainable development of petroleum firms. Adjusting the ownership structure towards a modern, diversified, and internationally compliant approach will contribute to improving the financial efficiency and competitiveness of firms in the long term.

6 CONCLUSION

This study provides updated and significant empirical evidence on the relationship between ownership structure and financial performance in Vietnam's petroleum sector—a unique industry heavily impacted by global oil price fluctuations and macroeconomic policies. Based on a regression model using data from 2021–2024, the study reveals a relatively large difference between theoretical expectations and empirical results, particularly in the FO and IO variables—ownership components expected to have a positive impact but which were shown to have no empirical effect. This is a valuable contribution to supplementing evidence in the international debate on the effectiveness of ownership liberalization and the role of foreign investors in strategic industries.

The study found a prominent role of ownership concentration (OC) and state ownership (SO) on financial performance. While OC has a positive impact on ROA, implying that the concentration of ownership power can improve asset management performance and market expectations and increase profit margins, SO has a negative impact on ROA. This reflects the market's belief in the stability of SO companies, even if their business performance is not commensurate.

However, the study also has limitations, such as the research model not considering macroeconomic and industry-specific variables like Brent crude oil price, USD/VND exchange rate, inflation, or corporate governance quality (CGI). This could lead to the omission of important variables, causing the impact of ownership structure variables to be diluted or distorted. Therefore, the conclusions of the study need to be interpreted cautiously.

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Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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