Impact of State Ownership on Stock Liquidity in the Vietnam Stock Market

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ABSTRACT

In VietNam, State divestment has been strongly promoted since 2016, however, state ownership from 2011-2018 did not change much, fluctuating only within the range of 22.28% - 25.22%, and by 2019, it had dropped sharply to 10.4%. Some listed companies still maintain a relatively high level of state ownership, especially in the VN30 group and some sectors such as banking and oil & gas. It can be seen that although the process of transformation and equitization of state-owned enterprises has been active, by 2019, state ownership remained substantial, with the proportion of state ownership greater than 11.72% accounting for about 40%. The research results with 681 enterprises from 2014 to 2019 suggest that: a 95% confidence interval of state ownership in the threshold (0.1086; 0.1182) will help increase stock liquidity. In particular, at effectively operating enterprises with high sustainable growth rates, this will promote an increase in asset value for the State and improve stock liquidity.

1. INTRODUCTION

The stock market ensures the stability and development of the national financial system. Therefore, an efficient market is the goal of economies. Market efficiency is considered in three aspects: operational efficiency, informational efficiency, and allocative efficiency. Harris's (2003) research affirmed that liquidity is an important function of an efficient market. Securities liquidity is reflected through short transaction times, low transaction costs, and price resilience to market shocks. Demsetz's (1968) research suggests that transaction costs typically include existing costs such as market participation fees, transaction fees paid to securities companies, and income taxes. These costs are collectively referred to as liquidity costs. Therefore, for investors, liquidity increases the flexibility and safety of capital; the higher the liquidity, the lower the transaction costs and the more efficient the trading activity.Demsetz (1968); Harris (2003)

Different ownership structures will have different organizational and governance structures. The ownership structure shows the allocation of ownership by right, and ownership is expressed through the ownership percentage of shareholders. This is a characteristic of joint-stock companies where capital is owned by different shareholders, creating different ownership structures between companies. If a few strategic shareholders hold the main control of the company, the public nature of the company is not guaranteed, and governance policies are strongly influenced by the interests of shareholder groups. Ownership structure is considered a decisive factor in stock liquidity (Holmström & Tirole, 1993). The impact of ownership structure on stock liquidity is through two channels: "adverse selection" and "information asymmetry" between investor groups (Agarwal, 2007). In addition, the regular activities of owners have a strong impact on stock liquidity through trading activities or corporate governance.(Agarwal, 2007; Holmström & Tirole, 1993)

Porta et al. (1996) argue that legal regulations and enforcement policies regarding the protection of outside shareholders' rights differ systematically across countries. Porta et al. (1996) made a comparison of rights protection laws in two groups of countries: those with legal systems based on case law (UK, US) and those with legal systems based on ancient Roman law (continental Europe such as France, Germany, Italy). The rights of shareholders and the information disclosure policies of public companies are better implemented in the UK and US stock markets. Laws protecting shareholder rights and information disclosure policies have a direct impact on stock liquidity. At the same time, these regulations have an indirect impact on stock liquidity by affecting corporate governance efficiency. Weak political institutions negatively impact business valuation and increase the cost of capital. In developing countries like Vietnam, the characteristics of institutions, management systems, information environment,

ownership structure, or the quality of listed companies are different. Therefore, the impact of state ownership on the liquidity of listed stocks in the Vietnamese stock market will also be different.

2. LITERATURE REVIEW AND HYPOTHESIS OF STUDY

Liquidity is a complex concept, understood in various ways with different characteristics and measurement methods. Firstly, asset liquidity refers to the ease of conversion into cash. Money is the most liquid asset due to its immediate convertibility and usability (James, 2019). Shirazian (1384) (cited in (Dalvi & Baghi, 2014)) also states: "Liquidity is the ability of investors to easily convert financial assets into cash at the same price." This definition addresses the costs associated with converting financial assets into cash. Similarly, Gopalan, Kadan, and Pevzner (2010) define asset liquidity as the ability to convert it into cash immediately without significant loss of value.(Dalvi & Baghi, 2014); Gopalan, Kadan, and Pevzner (2010); (James, 2019)

According to Black (1971), a market ensures liquidity if: it requires minimal cost for stock prices to recover within a short period (high market tightness); the market can absorb large volumes of stock without impacting prices (non-absolute depth); and market prices revert to the intrinsic value of stocks after information shocks. Black's perspective was highly regarded at the time, but this research is subjective and lacks empirical evidence, while also not explaining the causes of stock liquidity in the market.Black (1971)

Kyle's (1985) research aimed to answer the questions: "How do stock prices fluctuate when noise trading from informed investors occurs? What determines market liquidity?" The results were obtained by modeling informed investors' trading in an informationally efficient model. In continuous trading and market equilibrium, the volume and price executed by uninformed investors follow "Brownian motion." The constant volatility of trading volume reflects the fact that information is transmitted into stock prices at a fixed rate. Furthermore, all insider information used by investors to influence stock prices before trading ends is utilized under continuous order matching and market equilibrium. Increased trading volume by uninformed investors impacting informed investors' trading activities, along with stable stock prices, are two key factors contributing to informed investors' excess returns. Thus, Kyle asserts that stock liquidity stems from information asymmetry among investor groups. As information asymmetry increases, information risk rises, thereby reducing stock liquidity.

Studies by Demsetz (1968), Black (1971), Ho & Stoll (1980), Stoll (1989), Copeland & Galai (1983), Kyle (1985), and French & Roll (1986) are considered pioneering works in stock liquidity theory. These authors demonstrated that stock liquidity arises from information asymmetry among investor groups and stock trading activities in the stock market. Firstly, low market trading activity increases securities transaction costs, such as order processing time and stock holding costs (considered inventory), reducing stock liquidity. Secondly, information asymmetry increases stock trading risk. Uninformed investors tend to set lower buy prices and higher sell prices to mitigate potential losses. Conversely, informed investors, with more accurate stock valuations, engage in transactions that deviate from market supply and demand, leading to imperfect market competition and reduced stock liquidity.(Black, 1971; Copeland & Galai, 1983; Demsetz, 1968; French & Roll, 1986; Ho & Stoll, 1980; Kyle, 1985; Stoll, 1989)

Consistent with the research of Kyle (1985) and French & Roll (1986), Admati and Pfleiderer (1988) defined empirical research on stock liquidity based on the time and cost to sell shares when observing short-term price changes in the US stock market. Liquidity is determined based on the price change of a stock when impacted by changes in trading volume. Incurred costs can be due to price changes or transaction costs.Admati and Pfleiderer (1988); (French & Roll, 1986; Kyle, 1985)

Previously, Amihud and Mendelson (1986) studied the spread between the bid and ask prices impacting asset valuation. The spread is calculated based on the bid and ask prices of the last trading session of the year. Therefore, this measure is controversial as the cost is only determined at one trading point. Transaction costs should be determined throughout the entire process. Campbell et al. (1997) (cited in Fehle, 2004) identified three components in the spread measure: order processing costs, security holding costs, and adverse selection costs.Amihud and Mendelson (1986); Campbell et al. (1997); (Fehle, 2004)

Lawrence's (1990) research, following Black (1971), considers liquidity as a multidimensional concept expressed through properties such as width, depth, timing, and the resilience of stocks after shocks. These characteristics are reflected in Liu's (2006) research, which defines liquidity as the ability to trade quickly with minimal price impact and low transaction costs. The measure is defined as follows:(Black, 1971); Lawrence (1990); Liu (2006)

$$LM_{ix} = \left[NoZV_{i,x-1} + \frac{\frac{1}{turnover_{ix}}}{Deflator} \right] * \frac{21\_x}{NoTD_x}$$

Với: turnover; NoTD (Number of trading daily); NoZV (number of zero daily volumes); Deflator follows x.

The higher the LM index, the lower the stock's liquidity, and vice versa. LM focuses particularly on the speed of transactions but also reflects many aspects of liquidity. This indicator integrates many aspects of liquidity but does not consider how the stock price will change when trading volume changes.

Following the studies of Copeland & Galai (1983), Glosten & Harris (1988), Hasbrouck (1991), and Kyle (1985), Amihud (2002) proposed a measure of stock liquidity based on the ratio of price change to daily trading value, calculated as follows:Amihud (2002); (Copeland & Galai, 1983; Glosten & Harris, 1988; Hasbrouck, 1991; Kyle, 1985)

$$\text{ILLIQ}_{iy} = \frac{1}{D_{iy}} \sum_{y=1}^{D_{iy}} \frac{|R_{iyd}|}{\text{VOLD}_{ivyd}}$$

Where, Diy: the number of daily transactions of the stock in the year
Riyd: daily rate of return of the stock
VOLDivyd: daily trading value (in millions of dollars)

This measure represents the relationship between the stock's rate of return and its trading value. In this measure, the rate of return and trading value are collected daily over a long period, making it highly representative and readily collectible across markets. This measure is particularly suitable for studies on stock liquidity using time-series data. The smaller the index, the less significant the change in stock price when there is a large trading value in a short period. With the price factor measure, Amihud (2002) used daily and monthly data of stocks listed on the NYSE from 1963 to 1997, collected from the CRSP database, and performed linear regression tests with cross-sectional and time-series data for monthly returns.Amihud (2002)

In summary, stemming from information asymmetry among investor groups in the market, which causes poor stock liquidity, is one of the reasons why the stock market is imperfect. Stock liquidity is a quantity that cannot be directly observed but must be estimated based on liquidity characteristics. Based on the theoretical and empirical research of scientists worldwide, Amihud's (2002) ILLIQit measure is considered appropriate and encompasses most of the properties of stock liquidity(Aitken & Comerton-Forde, 2003; Goyenko, Holden, & Trzcinka, 2009; Lou & Shu, 2017).

Furthermore, efficient market theory posits that stock prices change randomly, stocks are traded at par value, sellers cannot inflate prices, and buyers cannot suppress them. Market participants believe the market treats all investors fairly. However, Kyle's (1985) research indicated that while stock prices don't depend on past prices, they can reflect varying levels of private information about future cash flows. Consequently, stock prices fluctuate when noise trades from informationally advantaged investors occur. Evidently, ownership structure creates differences in the information environment, corporate governance activities, and stock trading activities. Therefore, the impact of ownership structure on stock liquidity varies.

Jensen and Meckling's (1979) research suggests that moderate ownership by shareholders significantly reduces agency cost problems compared to owners entirely outside company control. Stemming from information asymmetry between major and minority shareholders within companies' ownership structures, Burkart, Gromb, & Panunzi (1997) and Bolton and Von Thadden (1998) concur that the conflict between owners and managers has both positive and negative aspects when considering the relationship between major shareholders, corporate governance, and stock market liquidity. When major shareholders are institutional investors, there's a positive correlation with corporate governance effectiveness but a decrease in stock liquidity. The reasons for reduced stock liquidity in companies with major shareholders are: First, owning a large number of shares gives these shareholders an informational advantage over others; when they use this advantage for trading, it causes information asymmetry and reduces liquidity. Second, major shareholders tend to hold stocks long-term, reducing trading frequency and the number of shares readily available on the market. Amihud & Mendelson's (1980) research on financial asset valuation confirms that insiders always have better information and returns than outside investors, and illiquid assets are typically held long-term.(Amihud & Mendelson, 1980); Bolton and Von Thadden (1998); (Burkart, Gromb, & Panunzi, 1997); Jensen and Meckling (1979)

The objective of state-owned enterprises is not to maximize shareholder profit but sometimes to regulate the economy or serve political goals, differing entirely from a typical business's objectives, as noted by (Boubakri, Cosset, & Guedhami, 2009; Boycko, Shleifer, & Vishny, 1994; Megginson & Netter, 2001; Shleifer & Vishny, 1994)

Sharing this viewpoint, Megginson and Netter (2001) demonstrated that during the period 1983-1999, the reduction of state ownership (privatization) significantly impacted the capital market, with the total market capitalization globally increasing tenfold, particularly in developing countries, from $83 billion in 1983 to approximately $2,185 billion in 1999 (a 26-fold increase). Along with the increase in market capitalization, stock trading value also increased dramatically from $1.2 trillion to $37.5 trillion; the increased liquidity of securities is partly due to liberalization and increased capital flows into emerging markets from institutional investors and investment funds. Simultaneously, the study also indicates that under state control and ownership, enterprises have less incentive for information transparency. With specific evidence, the study suggests that reducing state ownership increases stock liquidity in national markets. The research by (Shleifer & Vishny, 1994) also shares the view that privatization will increase operational efficiency in businesses, but privatization must be accompanied by commercialization to limit stringent regulations on the transfer of ownership. Commercialization will also reduce the control of politicians in businesses and orient companies towards effective business operations.Megginson and Netter (2001); (Shleifer & Vishny, 1994)

Additionally, the empirical research of Boutchkova and Megginson (2000) demonstrates the impact of privatization in promoting market growth and reducing the role of commercial banks in corporate finance. Public offerings of shares with the participation of institutional and individual investors have strongly impacted the national stock market. Using market liquidity measured by Turnover (TO - total trading value of the current year divided by the market capitalization of the previous year), the study demonstrated that privatization in enterprises has improved stock liquidity.Boutchkova and Megginson (2000)

The research by Borisova et al. (2015) suggests that state-owned enterprises are considered an "implicit guarantee" of safety or limited risk of bankruptcy. These enterprises have better access to preferential credit sources, and during economic crises, government bailouts are prioritized for them over other businesses. This is a strength in attracting risk-averse investors due to this "implicit guarantee" characteristic. Therefore, bonds of these enterprises will attract more investors in the market, especially during financial crises. With a research sample of approximately 6,670 bonds from 43 countries during the period 1991-2010, the research results show higher borrowing costs in non-crisis years and conversely, lower borrowing costs during financial crises.

Recent research by Boubakri, Chen, El Ghoul, Guedhami, and Nash (2017), conducted on 478 companies from 54 countries from 1994-2014, indicates that newly privatized companies have better stock liquidity than previously listed companies. This result aligns with the research of (Boutchkova & Megginson, 2000; Boycko et al., 1994; Megginson & Netter, 2001), which suggests that stock liquidity increases after the privatization of state-owned companies. However, when considering partially and fully privatized companies, the results regarding stock liquidity before and after privatization are inconsistent. Testing this relationship through a model, the results at a 1% significance level, with the opposite effect on the State variable and the same effect on the State2 variable, demonstrate a non-linear relationship between state ownership and stock liquidity. The study also identified 42% state ownership as the point where the impact on stock liquidity changes direction. If state ownership exceeds this "inflection point" of 42%, it will reduce stock liquidity. This reflects the apprehension of external investors because when state control and ownership are too large, political objectives will overshadow the profit objectives of the enterprise. Simultaneously, corporate governance effectiveness will be weaker, combined with increased information asymmetry, leading to a decrease in demand for shares. Conversely, if state ownership is below 42%, it will increase stock liquidity as the "implicit guarantee" of the state increases access to credit at preferential costs, consistent with the view of (Borisova, Fotak, Holland, & Megginson, 2015). This advantage is even more evident during financial crises. However, this "inflection point" varies across countries with different political systems, information environments, and market development levels.Boubakri, Chen, El Ghoul, Guedhami, and Nash (2017); (Boutchkova & Megginson, 2000; Boycko et al., 1994; Megginson & Netter, 2001)$Liquidity = \alpha + \beta_1 State + \beta_2 State^2 + \beta_i Controls + \varepsilon$(Borisova, Fotak, Holland, & Megginson, 2015)

From the early 1980s to the early 21st century, a global trend of reduced state ownership emerged, with governments divesting partially or fully and converting state-owned enterprises into private entities (Megginson, 2017). In Vietnam, state-owned enterprise equitization began experimentally in 1990-1991, proceeded from 1992, and aimed for completion by 2020. However, the equitization process only gained momentum from 2016 until mid-2019, with 162 enterprises equitized with a total capital scale of over 205 trillion VND, compared to over 189 trillion VND in the 2011-2015 period.(Megginson, 2017)

The impact of state ownership on stock liquidity is an open question with two opposing views: the impact is negative because, considering corporate governance effectiveness, state-owned enterprises not focused on profit demonstrate poor operational efficiency, failing to attract investors. Conversely, the implicit guarantee from the state attracts risk-averse, long-term investors. Therefore, the impact of state ownership on stock liquidity requires more comprehensive verification. Given the market's specific characteristics, the author expects state ownership to have a non-linear impact on listed stock liquidity in the Vietnamese stock market and aims to determine the level of state ownership that enhances listed stock liquidity.

3. METHODOLOGY

3.1. Data

Data on stock prices and trading volume were collected daily, while state ownership ratio and freely transferable share ratio were determined on December 31st each year. Data was collected from websites such as: https://www.ssc.gov.vn/; https://www.hsx.vn/; https://hnx.vn/vi-vn/; https://www.bloomberg.com/quote/VHINDEX:IND and several other securities company websites. The research sample includes all listed companies on HSX (316 companies) and HNX (365 companies) from 2014 to 2019.

3.2. Measurement of Research Variables

Following the research of (Copeland and Galai, 1983; Kyle, 1985; Glosten and Harris, 1988; Hasbrouck, 1991), Amihud (2002) proposed a measure of stock illiquidity based on the ratio of price change to daily trading value. The stock illiquidity measure ILLIQit is calculated as follows:

$$ILLIQ_{it} = \frac{1}{D_{it}} \sum_{t=1}^{D_{it}} \frac{|R_{itd}|}{VOLD_{itd}}$$

Where Dit is the number of trading days of the stock calculated by day of the year; Ritd is the daily return on the stock; VOLDitd is the daily trading value (million VND). The numerator is the daily rate of return of the stock with P1: the next day's price, P0: the previous day's price, and |Rid| is the absolute value of the rate of return of stock i on day d. VOLDid: the trading value of stock i on day d is recorded on two exchanges. The ILLIQit measure of security i in year t is measured by the average value of daily stock liquidity in year t. The ILLIQit measure will not have a negative value, and a large ILLIQit represents a large price change relative to the traded value of the stock, corresponding to low stock liquidity, and vice versa. Since ILLIQ has a very small value, the study will transform the natural logarithm of ILLIQ. $R_{id} = \frac{P_1 - P_0}{P_0}$

State Ownership: The objective is to examine the influence of state ownership (State) on the liquidity of listed stocks in the Vietnamese stock market. The ownership ratio is determined by the number of shares held by shareholders divided by the total number of outstanding shares. State shareholder ownership data is collected from the audited financial statement notes as of December 31st each year.

The model's control variables include: Free-float, Size, Dividend Policy, Sustainable Business Growth, Rate, Risk, stock return, Volume.

3.3. Research Hypotheses and Research Model

State ownership in enterprises in countries with transitioning economies often belongs to founding members and representatives holding positions on the Board of Directors. With the goal of controlling the enterprise's operations, state ownership accounts for a high proportion but rarely engages in trading activities. At the same time, enterprises with large state ownership are thought to have a high risk of information asymmetry, which is a component that increases liquidity costs. Therefore, the shares of these enterprises have poor liquidity, and the author proposes the following hypothesis regarding state ownership:

H_0: State ownership has an inverse effect on stock liquidity.

In addition to the linear impact of state ownership on stock liquidity, the research by Boubakri et al. (2017) suggests that state ownership has a non-linear impact on stock liquidity in the form of an "inverted U" function. This is because state-owned enterprises after equitization are often larger than other enterprises in the same industry, combined with the psychology of having an "implicit guarantee" from the state, so the shares of these enterprises are attractive to cautious investors. Differences in ownership structure create different impacts on stock liquidity. Based on the characteristics and level of state ownership in enterprises in the Vietnamese market, the author hypothesizes that state ownership has a non-linear impact on stock liquidity and conducts additional tests in the following section:

H_0: State ownership has a non-linear impact on stock liquidity.

To test the pair of research hypotheses, the author builds a panel data regression model with the following research variables: the dependent variable is ILLIQit – representing the illiquidity of the stock; the independent variable is State (Percentage of state ownership); Controlsit are control variables for firm-specific characteristics. The regression model is defined as follows:\

$$\mathbf{ILLIQ_{it} = \beta_0 + \beta_1 State_{it} + \beta' Controls_{it} + \varepsilon_{it}} \quad \textbf{(MH1)}$$
$$\mathbf{ILLIQ_{it} = \beta_0 + \beta_1 State_{it} + \beta_2 State^2_{it} + \beta' Controls_{it} + \varepsilon_{it}} \quad \textbf{(MH2)}$$

According to Hsiao's (2003) testing criteria, the author selects the appropriate estimation method in the following order: Pooled Ordinary Least Squares (POLS), Random Effects (RE), Fixed Effects (FE).Hsiao (2003)

4. RESEARCH RESULTS

The results of the Hausman test to choose between the fixed effects (FE) test and the random effects (RE) test are based on the hypothesis that if there is a correlation between the independent variables and the unobserved individual-specific effects, the FE method yields more reliable results, and vice versa, the RE method will be more effective. With Prob = 0.000 < 1% significance level, there is sufficient basis to reject the null hypothesis H0: "H0: The difference between the coefficients is random." Thus, the research model using the FE (fixed effect) test will provide more reliable estimation results.

Autocorrelation test to examine whether there is a correlation of random errors at different time points. The expectation of the research model is that there is no autocorrelation. The Wooldridge test (2010) gives the result F(1, 671) = 65.56 and Prob > F = 0.0000 < 0.05, so the model exhibits autocorrelation.Wooldridge (2010)

Heteroscedasticity test to determine whether the error variance in the model is equal at all observations, with the author's expectation that the model does not have heteroscedasticity so that the estimated values are not biased. The Wald test for panel data with fixed effects gives the result: chi2(676) = 3.0e+05 and Prob > chi2 = 0.000 < 0.05, providing sufficient statistical evidence to reject the null hypothesis H0: "H0: The error variance is homogeneous across ui." In conclusion, the research model exhibits heteroscedasticity.

The fixed-effects (FE) test for the research model, with stock liquidity (ILLIQ) as the dependent variable, revealed no multicollinearity but indicated autocorrelation and heteroskedasticity. To address these issues, the feasible generalized least squares (FGLS) estimation method will be employed. The estimation results are presented in Table 4.1.

Table 4.1. Results of the State Ownership Impact Test on Stock Liquidity

Variable	Coefficient
State	**0.27801***
Free-float	-0.17610***
Pcs	-2.68273***
2.Type.KH	-0.14991**
3.Type.KO	0.46698***
4.Type.TM	0.46565***
VSGR	-1.50928***
Size	-0.23277***
Volume	-0.87604***
Rate	10.82147***
Risk	69.29304***
SR	-1.45392***
Constant	6.03882***
Observations	3862
Number of Stocks	676

Standard errors in parentheses
*** p<0.01; ** p<0.05; * p<0.1
Source: Processed by the author using Stata software

The test results show that, ceteris paribus, with 95% confidence, the estimated coefficient of the State variable is 0.278 (z-stat = 4.82; p-value = 0.0000 < 1%), indicating a positive relationship between State ownership and ILLIQ. This implies that increasing State ownership in businesses reduces stock liquidity. This aligns with the argument that companies with high State ownership have less incentive for information transparency, leading to increased asymmetry among shareholder groups. Joint-stock companies with significant State capital contributions, where the objective isn't primarily economic profit, face unique challenges. Furthermore, State representatives, not being true shareholders, can create conflicts with actual owners regarding company performance. Poor performance reduces stock attractiveness, thus lowering liquidity. Additionally, substantial long-term State ownership reduces the number of shares available for trading. This finding is consistent with global research (Boycko et al., 1994; Boubakri et al., 2009; Shleifer & Vishny, 1994; Megginson & Netter, 2001). However, a non-linear impact of State ownership on stock liquidity in the Vietnamese market is anticipated. Risk-averse investors might prefer these stocks due to the perceived implicit guarantee of State ownership. This "implicit guarantee" also facilitates access to bank loans, preferential policies, and greater capital competitiveness. Therefore, a reasonable level of State ownership could enhance corporate governance, improve information transparency, and increase stock liquidity. The non-linear impact of State ownership will be examined further.

To test the hypothesis of model (2), the State2 variable is defined as the square of the State variable. Hypothesis H_1 is accepted if the estimated coefficients of State and State2 have opposite signs and are statistically significant. The abbreviated test results for Model (MH2) are shown in Table 4.2.

Table 4.2. Results of the Non-linear Impact Test of State Ownership

Variable	Coefficient
State	**-1.37957***
State2	**1.46176***
Constant	18.58697***
Observations	3862
Number of Stocks	676

Standard errors in parentheses
*** p<0,01; ** p<0,05; * p<0,1
Source: Processed by the author using Stata software

The abbreviated regression results are presented in Table 4.2. The regression shows that the State variable has a negative impact on ILLIQ at the 1% significance level, while State2 has a positive impact at the 10% significance level. This provides sufficient statistical evidence to accept hypothesis H1: the State ownership ratio has a non-linear impact on the liquidity of listed stocks in the Vietnamese stock market. The estimated coefficient for State is -1.37957 (P-value < 1%), and for State2 it is 1.46176 (P-value < 10%). It can be predicted that low State ownership positively affects stock liquidity, while excessively high ownership negatively impacts it. Hansen's (1999) threshold model test for panel data will be used to determine if a "threshold" exists in the impact of the State ownership ratio on stock liquidity.Hansen (1999)

- **Threshold model testing with the State ownership ratio impacting ILLIQ.**

To determine the existence of a single threshold for the State ownership variable, the author uses the F-statistic test with the hypothesis "H0: $\theta1 = \theta2$ - The model has no threshold" and "H1: $\theta1 \neq \theta2$ - The model has a single threshold" with the research model as follows:

$$ILLIQ_{it} = \begin{cases} \mu_i + \beta'X_{it} + \theta_1 State_{i,t} + \varepsilon_{i,t}, & STATE_{i,t} \leq \gamma \\ \mu_i + \beta'X_{it} + \theta_2 State_{i,t} + \varepsilon_{i,t}, & STATE_{i,t} \geq \gamma \end{cases} \qquad (MH3)$$

Where, matrix $\beta'=(\beta1, \beta2 \dots \beta11, \beta12)$ and other independent variables in the model correspond to X_{it} = (Free-float$_{it}$, Pcs$_{it}$, VSGR$_{it}$, Size$_{it}$, Volume$_{it}$, Rate$_{it}$, beta$_{it}$). Bootstrapping techniques are used to simulate the normal distribution for the single threshold model test results, summarized below:

Table 4.3. Single Threshold Model Test Results for the State Variable

Threshold estimator (level = 95):			
Model	Threshold	Lower	Upper
Th-1	0.1172	0.1086	0.1182
Threshold effect test (bootstrap = 300):				
Threshold	RSS	MSE	Fstat	Prob
Single	3195.3190	0.9103	18.12	0.0067
R-squared: 0.4707				

Source: Processed by the author using Stata software

The threshold value of the research model is determined to be 0.1172 with a 95% confidence interval of (0.1086; 0.1182). The F-statistic value is 0.0067 < 1% significance level, so the H_1 hypothesis of the model is accepted (H_1: The model has a single threshold - $\theta1 \neq \theta2$), meaning State has a non-linear impact on stock liquidity listed on the Vietnamese stock market. The author continues to estimate the two-threshold model to determine the most appropriate State threshold. The two-threshold model is defined as follows:

$$ILLIQ_{it} = \mu_i + \beta'_1 X_{it} I(STATE_{it} \leq \gamma_1) + \beta'_2 X_{it} I(\gamma_1 < STATE_{it} \leq \gamma_2) + \beta'_3 X_{it} I(\gamma_2 < STATE_{it}) + e_{it} \qquad (MH4)$$

With matrix β' and variables X_{it} defined as in the single threshold model (MH3). The test results of model (MH4) are determined in Table 4.4.

The two-threshold model yields a P-value = 0.6833, greater than the 5% significance level, thus rejecting the hypothesis that the model has two thresholds for the State variable. Therefore, the single threshold model for the State variable impacting stock liquidity is determined to be the appropriate model with a relatively high R^2 of 0.4707, meaning 47.07% of the variation in ILLIQ is explained by the independent variables in the single threshold model for the State variable. This result is consistent with the study by Boubakri et al. (2017) conducted with 478 listed companies from 54 countries from 1994-2014, which also demonstrated that State ownership has a non-linear impact on stock liquidity.

Table 4.4. Two-Threshold Model Test Results for the State Variable

Threshold effect test (bootstrap = 300 300):				
Threshold	RSS	MSE	Fstat	Prob
Single	3195.3190	0.9103	18.12	0.0300
Double	3190.4297	0.9090	5.38	0.6833
R-squared: 0.4715				

Source: Processed by the author using Stata software

The test results of the estimated coefficients of the independent variables in the single threshold model for the State variable are shown in Table 4.4. The estimated coefficient of 0.State is -0.4962 with a P-value = 0.003 less than the 1% significance level, and the estimated coefficient of 1.State is 0.47564 with a P-value = 0.081 less than the 10% significance level.

In conclusion, other factors in the model being equal, if the State ownership ratio in listed companies is less than or equal to 11.72% with a 95% confidence interval (10.86%; 11.82%), then when State ownership increases by 1%, the average ILLIQ value decreases by 0.4962%; conversely, if the State ownership ratio is greater than 11.72%, increasing the State ownership ratio by 1% increases the average ILLIQ value by 0.4756%. Thus, the State ownership ratio has a non-linear impact on stock liquidity in an "inverted U-shape," and with the research model, the inflection threshold of the State ownership ratio's impact is 11.72%.

Table 4.5. Results of the Single Threshold Model Analysis for the STATE Variable

Variable	Coefficient	State≤11.72%	State>11.72%
Free-float	-0.62075***		
Pcs	-1.23007***		
VSGR	-0.55573***		
Size	-0.87380***		
Volume	-0.57382***		
Rate	23.43216***		
Beta	-0.94940***		
State		**-0.49620*****	**0.47564***
Constant	23.61560***		
Observations	3516		
Number of Stock	586		
R-squared	0.47070		

Standard errors in parentheses
*** p<0,01; ** p<0,05; * p<0,1
Source: Processed by the author using Stata software

The equitization and divestment of State capital were promoted during the 2016-2020 period, but the State ownership ratio in listed companies remains relatively high, with the number of listed companies having a State ownership ratio above 11.72% accounting for about 40% of the total 681 companies. The non-linear impact of State ownership on stock liquidity can be explained as follows:

Firstly, when the State's ownership ratio in enterprises is excessively large, and the State acts as the controlling shareholder, dominating business operations, the management effectiveness in these enterprises is assessed as less efficient because decisions are sometimes made not for economic purposes. Large State ownership in the corporate structure creates information asymmetry risks, increasing stock liquidity costs. The State shareholder, with the objective of long-term shareholding and divestment only when necessary through auctions, leads to limited stock trading activity, thus resulting in a low volume of freely transferable shares. Therefore, a large ownership ratio reduces the liquidity of listed stocks on the Vietnamese stock market.

Secondly, if the State shareholder holds a moderate ratio, it will support increased stock liquidity. State-owned enterprises are typically large-scale, creating a competitive advantage in the industry. Simultaneously, sectors requiring State control, crucial to the economy such as banking and utilities, exhibit good growth rates, attracting domestic and foreign investors. Large State-owned enterprises are perceived to have an "implicit guarantee" from the Government regarding safety, combined with their large scale, making these stocks favored by risk-averse investors. Especially during market crises, these stocks have an advantage over others. These reasons explain the non-linear impact of State ownership on stock liquidity in the Vietnamese stock market.

5. CONCLUSION AND IMPLICATIONS

The characteristics of a transitioning economy and the policy of equitization and State divestment in listed companies have impacted corporate governance, information disclosure policies, and stock trading activities. The State ownership ratio has decreased recently, but the average level remains high in the ownership structure of listed companies. The State Capital Investment Corporation (SCIC) was established in June 2005 and officially commenced operations in August 2006. SCIC's role is to enhance operational efficiency and increase the competitiveness of State-owned enterprises while separating the State's management function from its role as a representative of State capital in enterprises; transforming the management method from administrative orders to capital investment and business; with the State acting as an investor, equal to other investors in the market. The divestment process is expected to improve stock liquidity in the market.

The test results of model (MH3) provide statistical evidence of a non-linear impact of State ownership on stock liquidity in the Vietnamese stock market, with an 11.72% State ownership ratio as the inflection point, shifting the impact on liquidity from positive to negative with 95% confidence. The non-linear impact of State ownership on stock liquidity can be explained as follows:

Firstly, the State shareholder's mechanism reduces stock liquidity due to: *(i)* State-held shares belong to the group of non-freely transferable shares, and with the current large State ownership ratio, the number of listed shares readily available for trading

on the market decreases significantly. According to the offering regulations of some listed companies, specific sectors have restrictions on selling shares to foreign investors, shareholders are restricted from transferring shares to foreign investors after acquisition, and the low public offering ratio makes investors apprehensive about trading and transferability, making these companies' shares less attractive; *(ii)* State shareholders in listed companies have information advantages, thus increasing information asymmetry in the market; *(iii)* business objectives are sometimes not profit-driven, resulting in often low operational efficiency in listed companies with large State ownership, affecting the interests of other shareholders. These are the main reasons leading to less active trading of these companies' shares, increased average transaction costs, and reduced stock liquidity. The information asymmetry theory and agency theory explain the impact of large State ownership ratios on reducing the liquidity of listed stocks in the Vietnamese stock market.

Secondly, conversely, the case where state shareholders hold a moderate stake can be explained as supporting increased stock liquidity in the Vietnamese market as follows: *(i)* enterprises with large state ownership are often those with large market capitalization, specifically stock codes like VCB, BID, VNM, GAS, BVH, SSI, etc. A large number of outstanding shares and readily available company information increase investment opportunities for outside investors and save time and transaction costs; *(ii)* scale advantages have helped enterprises with large state ownership increase their competitiveness within the industry. At the same time, they have access to low-cost credit sources due to the "implicit guarantee" of the Government; *(iii)* besides the sectors and industries where the state needs to hold controlling stakes, SCIC invests capital in sectors, fields, and projects that bring economic efficiency according to legal regulations. Currently, the State still retains ownership in some sectors with good growth potential. According to research data, during the period 2011-2019, sectors such as insurance, banking, rubber products, and utilities had good profitability and average state ownership of 31%-52%. Thus, behavioral finance theory explains why state ownership below 11.72% has a positive impact on the liquidity of listed stocks due to the "psychological trust" factor of investors in the State's guarantee, so stocks of listed companies with state ownership ratios are selected for investment.

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