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Factors Affecting the Volatility of Post-IPO Stock Prices: Evidence from State-Owned Enterprises in Hanoi Stock Exchange

Phuong Lan LE¹, Duc Khoi THACH²

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Abstract

This paper examines the post-IPO price volatility in the first trading days after the IPO of SOEs that carry out equitization, on a sample of 76 IPOs on the Hanoi Stock Exchange (Vietnam) in the period 2013–2018. Oversubscription rate, firm size, issuance size, internal equity ownership, and listing delay are all factors that influence IPO price volatility in a primitive stock market. The results showed that the average initial market-adjusted return for the first three trading days was –11.95%; –9.58% and –7.29% and the level of price volatility is related to the rate of oversubscription and company size. Issuance price, issuance size, internal equity holdings, and listing delay do not seem to contribute significantly to post-IPO share prices. Individual investors based their valuation on information released during and after the IPO. In general, the number of IPOs that yield positive and negative returns in the first trading days is about the same, indicating that the two phenomena of undervaluation and overvaluation still occur in the process of valuing shares of Vietnamese SOEs for IPOs.

Keywords: Post-IPO Price Volatility, IPO Undervaluation, IPO Overvaluation, IPO Valuation

JEL Classification Code: G12, G32, O16, P45

1. Introduction

The extraordinary return of newly listed shares after IPOs has drawn scholars' attention. The rates of return vary among countries, developed markets, and emerging markets. Several empirical studies have shown that in the beginning there was a phenomenon of undervaluing newly listed stocks that led to a large degree of price volatility in the early days of trading. Previous research that has studied the results of IPOs in the US market, including Ibbotson (1975), has shown that firms tend to underestimate stock prices, so share prices jump on the first day of trading and record an extraordinary average return of 11.4%. Return rates range from 14% to 50%

depending on the used criteria as noted by Purnanandam and Swaminathan (2004).

In particular, researchers pay special attention to the undervaluation of stocks and don't focus on the phenomenon of high stock valuation which leads to the phenomenon of negative returns after the first days of trading. In the period 2010–2019, some empirical results have shown that in addition to undervalued stocks, there are cases where stocks are overvalued. Typically, by the second day after the IPO, the share price of the Facebook share in 2012 has decreased by 11% in value.

What matters is whether undervalued or overvalued stocks create large price fluctuations right after the IPO in Vietnam. And if yes, what are the factors affecting it, and will the level of concentration-effect? The determinants of price volatility level on the IPO value of shares as well as the factors affecting price volatility level are necessary to help evaluate the effectiveness of the equitization process of SOEs.

Issuing shares of SOEs to the public (IPO) during the years 2016–2019 is one of the most concerning activities taking place on the stock market of Vietnam. SOEs that conduct IPOs mainly chose auctions on the HNX, so we go deeper into the mentioned issues on this exchange. We are researching on price volatility of SOEs' shares after the IPO,

¹First Author and Corresponding Author. Faculty of Banking and Finance, Foreign Trade University, Hanoi, Vietnam [Postal Address: 91 Chua Lang Street, Dong Da District, Hanoi, 11500, Vietnam] Email: lan.jp@ftu.edu.vn

²Actuarial Department, Prudential Vietnam Assurance, Ho Chi Minh City, Vietnam. Email: duckhoithach@gmail.com

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taking into account market volatility at the Hanoi Stock Exchange from 2013 to the end of 2019 to get an overview of the equitization of SOEs and identify factors influencing stock price fluctuations immediately after IPOs. Then, we will give proposals to perfect the equitization process of SOEs and limit the over- or under-valuation of stocks in the IPOs.

2. Literature Review

2.1. Theories that Explain Strong Price Volatility After IPO

Several studies and explanations of IPO underpricing have been previously published and re-examined on various stock market data. However, no single theory can explain the performance of newly listed companies during the early days of trading (Jenkinson & Ljungqvist, 2001; Ljungqvist, 1997; Ritter & Welch, 2002). However, the following hypo-theses explain the phenomenon of strong price volatility right after the IPO.

2.1.1. Winner's Curse Hypothesis (Rock, 1986)

This theory implies that bidders overbid, exceed the real value of the stock, and those who overpay are often the winners. This stock is overvalued due to the ineffective market, the auctioneer lacks information about the shares being IPO, the transient emotion is pushed up at the auction, and a series of other factors affecting the investors' decision. This means that despite winning, the overpaying price does not match the true value of the shares being auctioned, so the winner will have to bear the consequences. To avoid facing this unfavorable choice, uninformed investors will only participate in the auction if the IPO is undervalued. Therefore, the demand for IPO shares, represented by the overbought ratio, is positively correlated with the level of undervaluation, that is, the greater the undervaluation level, the greater the demand for IPO shares. To successfully issue all the shares, the issuers tend to undervalue the IPO shares, especially when the investors realize that the issuing price is low.

2.1.2. The Herding Hypothesis (Devenow & Welch, 1996)

The IPO market can be influenced by the crowd or crowd sentiment. If the issuance is interested in some of the early investors, it can stimulate the other investors to participate in the auction because they believe that the new stock has potential after IPO. Conversely, even with good information about the IPO shares, if one investor finds that no one wants to buy, he may decide not to buy. To prevent this

from happening, an issuer can underestimate a new share to encourage the first potential investors to join in to get the next investors to want to buy, regardless of whether or not the next investor wants to buy and what information he has.

2.1.3. Hypothesis of The Underwriters' Capability

Underwriters play the role of certification, helping to reduce IPO uncertainty. Carter and Manaster (1990), argue that underwriting brings a good reputation and helps reduce underpricing because firms have lower expected uncertainty. This shows that reputable underwriters will reduce the agency cost of firms while preparing for IPOs. On the other hand, firms with favorable information tend to choose high-quality underwriters to signal the quality of newly listed firms (Titman & Trueman, 1986). In practice, underwriting contributes to minimizing information asymmetry between owners and potential investors. However, the underwriter's reputation may be affected if their underpricing is too much.

2.1.4. Signalling Hypothesis

The signaling hypothesis indicates that good companies use low valuations to imply that their quality can increase future assets on more favorable terms through appropriate equity issues. This hypothesis also builds on the assumption that firms know their companies better than investors do. So once they predict that future cash flows would increase rapidly, they price their IPO shares below their actual value and this is a signal for investors who want to participate in the bidding. On the other hand, only good companies can withstand a large initial loss because they believe in the returns they will earn from their future investments (Allen & Faulhaber, 1989; Grinblatt & Hwang, 1989; Dubois, 1987).

2.2. Previous Studies on Factors Causing IPO Share Undervaluation

2.2.1. Internal Holding Capital

Downes and Heinkel (1982) and Allen and Faulhaber (1989) emphasized the relationship between a firm's value and the level of capital held internally. Research by Jensen and Meckling (1976) was on the relationship between agency costs and the structure of capital ownership in a joint-stock company. In addition, firm value and cash inflows are reduced when firms have a decentralized capital structure (Ritter, 1984). On the other hand, many stockholders or executives trust the company's prospects after IPO, so they will hold a high percentage of capital, which creates a sign for potential investors of the company's real value. This will lower the underpricing level or move in the same direction as the underpricing since the firm can set a higher offering

price (Mroczkowski & Tanewski, 2004). Conversely, a high level of internally held capital can also mean a high degree of risk for the proper use of cash flows (Bozzolan & Ipino, 2007). In this case, the potential investors will only buy the stock when it is undervalued.

2.2.2. Reputation of Underwriter

Previous related studies show an inverse correlation between an underwriter's reputation and IPO inefficiency, which leads to large price volatility in its first days of listing (Beatty & Ritter, 1986; Booth & Chua, 1996; Johnson & Miller, 1988; Kim & Ritter, 1999; Chang et al., 2008). However, the underwriter's credibility can come with a much lower valuation. Indeed, underwriters seem interested in influencing potential investors, especially speculative investors, who are always looking for quick and short-term returns (Spiess & Pettway, 1997). In other words, reputable sponsors will include a high financial cost, which leads to underpricing. Since there are no specific criteria for evaluating the reputation of an underwriter, in this study, we do not consider the factor that influences underpricing by sponsor reputation.

2.2.3. Oversubscription Rate

In theory, demand to buy shares in an IPO is represented by an overbought ratio that is positively related to low valuations. said that the low valuation level depends on the phenomenon of asymmetric information among investors (Michaely & Shaw 1994; Chowdhry & Sherman 1996).

Experimentally, some authors have used the excess ratio to explain the magnitude of the abnormal rate of return on the first listing date (Allen & Faulhaber, 1989; Chowdhry & Sherman, 1996; Booth & Chua, 1996, Michaely & Shaw, 1994; Jacquillat & Mac Donald, 1974). Hanley (1993) pointed out that there is a positive correlation between the underwriting ratio and the magnitude of the initial rate of return in a sample of American IPOs. Agarwal et al. (2008) studying IPOs in Hong Kong exchanges found a positive short-run but negative correlation over longer periods of time. The research team explained this result due to the overreaction of investors in the short term.

2.2.4. Listing Latency

According to Chowdhry and Sherman (1996), the length of time between the bid and the listing date affects the low valuation. Mok and Hui (1998) and Su and Fleischer (1999) showed a positive correlation between the initial return on IPO and listing latency for shares on the Shanghai Stock Exchange. Megginson and Tian (2006) showed an increase in the initial rate of return to 0.4% in China due to an unusually long delay of more than 10 months.

However, since investors do not have information about when to list at IPO, listing delays can be affected due to many unforeseen factors, and this is something the developers' onions are not expected. In this case, investors are encouraged not to trade immediately on the market. This view was first stated by Uddin (2008), who argued that the prolongation of the listing delay was out of the will of the publisher, so they would have no basis for a low issuance price.

2.2.5. Starting Price

Fernando et al. (1999) mentioned that the asking price of an IPO indicates the existence of low valuations. Firms do not offer an arbitrary asking price. If the issuer wanted to encourage the participation of individual investors, they would offer a relatively low price to incentivize potential individual investors. This will lead to excessively high demand for the stock and thus increase undervaluation.

The starting price is an indicator of the price bidders will set. In Vietnam, when conducting an IPO, the subscription price is considered valid when it is higher than or equal to the starting price, so the starting price is an important reference point for an IPO bid. The empirical evidence shows that SOEs conduct IPO at a starting price of 10,000 VND, at par with par value, often fail to attract potential investors.

2.3. Factors Influencing the Overvaluation of IPOs

2.3.1. Overbought Registration Rate

Several other studies have shown a positive relationship between excess rate and IPO valuation, in contrast to the views of Chowdhry and Sherman (1996) above. Using a set of companies listed on the stock exchange from 1999 to 2001, Derrien and Womack (2003) pointed out that newly issued securities create a great demand for investors who want to benefit from initial high and decreasing prices in the long term. This creates an overvaluation during the IPO process. Similar conclusions were reached by Cornelli et al. (2006) using data relating to Europe's 'gray market' before its initial public offering. Chi and Padgett (2005) found low or high valuations mainly explained by the imbalance between supply and demand, and a large proportion of the investors participating in the purchase of IPO shares are individual investors. In addition, Gao (2010) also confirmed that 80% of newly issued shares are allocated to individual investors, so the demand of individual investors has an important impact on the IPO price.

2.3.2. Trading Volume

Trading volume is measured as a percentage of the number of traded shares over the total number of outstanding

shares on the first day of listing. Using transaction volume data, Ofek and Richardson (2003) showed that the issue price is priced higher when it comes to reaching potential investors. Besides, in the European market, Cornelli et al. (2006) found that the total trading volume of the new securities is positively correlated with the demand of individual investors, which leads to the occurrence of the issue price being too high on the trading day and falling in the long run. In other words, investors are willing to pay a price that exceeds the stock's real value when they are over-optimistic. In contrast, stocks with low trading volume on the first day will record a negative rate of return on the first trading day relative to the issue price.

Trading volume depends on the demand of individual investors on the first listing date. This demand level is influenced by the torque effect from the market, which indicates a high profitability rate of the market one month before listing. This will create a positive sentiment for individual investors. In addition, demand is also influenced by promotional activities and public information disclosure during the pre-listing period without any direct impact on the valuation of shares at the time of the IPO.

2.3.3. Size of Issuing Company

Several studies show a positive relationship between firm size and IPO valuation or a negative return on early trading days (Megginson & Weiss, 1991; Carter et al., 1998). Larger companies have a wide variety of product lines and high-quality internal control processes. Also, large companies have easier access to capital. According to Finkle (1998), these are the determinants of the company's survival and profitability. Indeed, firm size is often negatively correlated with risk. These factors reduce the uncertainty surrounding large companies' IPOs to potential investors (Kiyamaz, 2000; Bhabra & Pettway, 2003).

3. Research Methodology

3.1. Sampling

We used a sample of 76 IPOs on the Hanoi Stock Exchange from 2013 to the end of 2019. First, we collected a list of companies conducting IPOs on the website of the Hanoi Stock Exchange. In Vietnam, there were 183 IPOs of SOEs (IPO) from 2013 to the end of 2019. After that, we checked the list of companies gathered on the www.finance.vietstock.vn website and chose the stocks to be traded on UpCom, HNX, and HoSE (because during the research period, some stocks were eligible to be listed on the HoSE). Through comparison, excluding the securities that cannot get the prospectus, the remaining data samples include 76 IPOs. The first trading date is determined from the item listed on the

website of the Hanoi Stock Exchange, and it is compared with the list on the website www.finance.vietstock.vn, after which data on transaction prices are collected on www.fireant.vn website. Table 1 Appendix table presents the security codes of 76 IPO companies. Then the data is processed by the authors in Microsoft Excel using calculation functions to give the data to the variables in the model. The authors used Stata 14 software to run the OLS regression model and necessary tests after having processed data sets from Microsoft Excel.

3.2. Research Approach

To analyze the correlation between the IPO mispricing level and influencing factors, we use a two-step approach. First, we measure the short-term IPO mispricing level, then test the impact of factors on first-day return including internal equity holdings, oversubscription, listing delay, starting price, company size, and issuance size.

The average test method is used to find evidence for the price movement of IPOs after being listed on a stock exchange.

The OLS regression method is used to evaluate the price difference in the multivariable regression model, by minimizing the sum of squares of the vertical distances between the collected data and the regression line. We use the OLS regression model because it is the most used research method on IPO mispricing levels in the world.

In addition, to determine the reliability of the results from the multivariable regression model, we conduct the following tests:

- White's test of variable variance to check whether the residual variance is constant or not. If the result is invariant, then the regression will qualify for uniform covariance.
- Test of autocorrelation in the model: We use the Breusch-Godfrey Serial Correlation LM test statement to check if the model has autocorrelation.
- Test of multicollinearity: With the multicollinearity test, we use the Correlation test statement and VIF test statement to increase the correctness of the model.
- Ramsey Reset test for completeness of the explanatory variable: In case the Ramsey test shows that the model still lacks variables, we will include three control variables, which are respectively dummy variable of institutional investors, the company's industry, and the market condition variable (market rate of return 3 months before the listing date).

3.3. Model

We use a multivariable linear regression model to test the influencing factors on the under-valuation of IPO shares. The dependent variable is the market-adjusted initial rate

of return and the independent variables include the internal holding rate, oversubscription rate, listing delay, starting price, company size, and issuance size.

The regression model is presented as follows:

$$D = \beta_0 + \beta_1(\text{Cap}) + \beta_2(\text{Over}) + \beta_3(\text{LDelay}) + \beta_4(\text{LPrice}) + \beta_5(\text{LValue}) + \beta_6(\text{LSize}) + \varepsilon \quad (1)$$

Dependent Variable: D_{mi} is the level of short-term misvaluation with $i = 1, 2, 3$ (the initial market-adjusted rate of return for the first three trading days of 76 IPO shares).

Similar to previous studies (Aggarwal et al., 1993; Chi & Padgett, 2005), we use the same method to measure the price volatility of IPO shares. The rate of return of security i at the end of the first trading day is determined as follows:

$$R_{i1} = \frac{P_{i1}}{S_i} - 1 \quad (2)$$

Where, P_{i1} is the closing price of stock i on the first trading day and S_i is the issuing price (the average winning price at auction) and R_{i1} is the rate of return of the security on the first trading day.

Since the issuing price of the security is fixed at the date of publication, the rate of return between the price at the end of the first trading day and the issuing price will depend on the changing market conditions.

To test the effect of real difference when the share is being priced and listed, the under-valuation level is measured as the market-adjusted abnormal rate of return for each IPO share on the first trading day. It is calculated as follows:

$$D_{m1} = R_{i1} - R_{m1} \quad (3)$$

Where D_{m1} is the difference between the return rate of stock i (R_{i1}) and the return rate of the market index (R_{m1}) on the first trading day.

The rate of return based on the market index at the same time was:

$$R_{m1} = \frac{P_{m1}}{S_{m0}} - 1 \quad (4)$$

Where P_{m1} : the closing market index value on the first trading day

S_{m0} : the closing market index value of the IPO auction day

R_{m1} : the market rate of return on the first trading day.

In this research paper, we use VNIndex as a proxy for market indices.

As presented in formula (3.3) for a market-adjusted abnormal rate of return D_{m1} , it is assumed that the systemic risk of IPO share is equal to 1. Some studies (Ibbotson, 1975) demonstrated that the average beta of newly listed firms is higher than the systemic risk of market portfolios. So this method of measuring the rate of return provides a higher estimate of the IPO's initial performance in relation to the market.

Independent Variables: Based on the theoretical overview of factors affecting the level of undervaluation of IPO shares mentioned before, we define the independent variables that will be included in the model. Symbols and calculation of explanatory variables are presented in Table 1 below:

4. Results

4.1. Descriptive Statistics

First, we consider the difference in IPO price on HNX with a sample of 76 IPOs from 2013 to 2019. The average initial rate of return (taking into account the profitability of the general market) is -11.95% ; -9.58% and -7.29% respectively for the first, the second, and the third trading day, with a standard deviation of respectively 46.65% ; 49.19%

Table 1: Independent Variables

Independent Variables	Short-Form	Meaning
The percentage of capital held by internal stockholders	Cap	The percentage of IPO auctioned shares to outstanding shares.
Oversubscription ratio	Over	Number of shares that are registered to buy on the number of shares issued.
Listing delay	Ldelay	Base 10 logarithm of the number of days between the IPO date and the first trading date.
Starting price	LPrice	Base 10 logarithm of starting price that is set by the issuer.
Issuing size	Lvalue	Base 10 logarithm of the total volume of bought securities in the IPO.
Company size	Lsize	Base 10 logarithm of total assets by the end of the year right before IPO.

and 52.01%. The rather high value of the standard deviation shows that the spread in the first three trading days is quite large. This result is somewhat different from the previous research of two authors Ly and Kha (2013), in which the level of negative undervaluation, also known as the positive rate of return on the first trading day, is 49.09% according to MAAR. This shows that in the IPOs of SOEs, investors are divided into two schools: (1) very interested in the IPO and have a positive rate of return, and (2) not interested in the IPOs and having a negative rate of return, making the overall rate of return lower than that of previous studies.

Number of shares with positive returns after the first trading day: 37.

Number of shares with negative returns after the first trading day: 39.

Table 2 shows an average positive return of 36.63% on the first trading day but also records an average negative return of -37.21%. The highest yield on record was 123% on the first trading day of an IPO share in 2015, and the yields continued to soar over the next two days to 158% and 184%. The highest negative rate of return is recorded at -144% in 2015 on the first trading date and remains the same for 2 days after that, mainly because this stock has no transactions in the first 3 trading days and many days after that. During the IPO, the share price was pushed up very high beyond its real value with an overbought rate of 603% plus a huge listing delay of 1070 days. Then, when the share was traded on the exchange, the share price was sharply down and it was traded at nearly half the issuing price.

According to the statistics in Table 3, the number of IPO deals finished on the stock exchange took place the most in 2015 and 2016 with 22 and 20 successful IPOs, respectively. The highest average negative return was in 2016 with a rate of -27.35%, and the year 2018 recorded the largest average positive return of 10.59% on the first trading day. It can be seen that the years 2014–2016 were when the IPO rate of SOEs took place the fastest and the most strongly but witnessed a large level of negative profitability from share price volatility after being listed. In the two years, 2017 and

Table 2: Statistics of the Price Spread and Return in the First Three Trading Days

	D1	D2	D3
Average	-11.95%	-9.58%	-7.29%
Average positive return	36.63%	42.31%	45.65%
Average negative return	-37.21%	-36.56%	-38.17%
Maximum value	123%	158%	184%
Minimum value	-144%	-144%	-144%
Standard deviation	46.65%	49.19%	52.01%

2018, the number of successful SOE IPOs and transactions on the stock exchange was the least, namely 6 and 8 deals, respectively. The IPOs that took place were few mainly due to the failure to attract potential investors and the big IPOs had already taken place in the previous years given the Communist Party's resolution on the equitization of SOEs.

The correlation coefficient matrix between the variables presented in Tables 4 and 5 shows that there is almost no correlation between the different explanatory variables. Based on the results of the VIF test (Table 6), we see the average value of $VIF < 2$ shows that the model has no signs of multicollinearity.

4.2. Hypothesis Testing Results

Oversubscription level is negatively correlated with positive price volatility, at 5% statistical significance (Table 7), given three measures of initial return on trading first, second, and third post-listing days. The negative correlation shows that the higher the expectation of the IPO by the investors, the overexpression in the auction process will result in the stock being overvalued on the auction date and a negative rate of return is recorded on the first day of trading on the stock market when the share price is corrected by the market to its true value. In addition, the road-show

Table 3: Summary of Price Volatility 3 Trading Days After IPOs by Years

Year	Number of IPOs	D1	D2	D3
2013	5	3.34%	-2.06%	-11.08%
2014	15	4.85%	8.51%	13.7%
2015	22	-20.15%	-16.5%	-14.05%
2016	20	-27.35%	-24.3%	-19.7%
2017	6	-15.3%	-15.96%	-18.18%
2018	8	10.59%	12.49%	13.61%

Table 4: Descriptive Statistics of Independent Variables

Variables	Mean	Min	Max	Standard Deviation
Cap	1.515394	0.00606	90.17287	10.32383
Over	1.597123	0.0005585	13.68747	2.316422
Ldelay	2.578.255	1.531479	3.252853	0.4453151
Lprice	4.053996	4	4.69897	0.1173256
Lvalue	10.59451	7.955.928	12.84488	1.065.196
Lsize	12.04593	1.010.686	14.27723	0.9958315

Table 5: Correlation Matrix

	Cap	Over	Ldelay	Lprice	Lvalue	Lsize
Cap	1.0000					
Over	-0.0831	1.0000				
Ldelay	-0.1214	-0.0074	1.0000			
Lprice	-0.0547	0.0330	-0.2860	1.0000		
Lvalue	-0.00087	0.2708	-0.3188	0.4031	1.0000	
Lsize	0.1493	-0.1347	-0.1784	0.2678	0.6062	1.0000

Table 6: VIF Testing Table

Variables	VIF	1/VIF
Lvalue	2.33	0.429167
Lsize	1.93	0.518939
Over	1.29	0.773984
Lprice	1.25	0.797955
LDelay	1.19	0.843098
Cap	1.06	0.941494
Mean	1.51	

process to promote stocks to potential investors plays a very important role. A successful roadshow will increase the subscription rate above that level, limiting the undervaluation of SOE IPO shares.

The issue of under-valuation during IPO has been studied a lot in the world stock market and recently in the Vietnam market as in the article by Ly and Kha (2013). Studies show that stocks during an IPO are often undervalued and that investors can make a profit by trading these stocks during the first trading days of buying them during the auction. From our model results, increasing the over-subscriptions rate can limit this problem.

The firm size variable is positively correlated with the market-adjusted initial rate of return, statistically significant at 5% (in all three measurements of D). This correlation is in contrast to previous studies. This shows that large firms are still likely to be undervalued in IPO compared to the actual transaction value of corporate shares. This can be explained that the larger capitalization a company has, the more potentially developed the company is, but the roadshow process is not good, leading to the fact that not many individual investors can approach this auction. After the companies are listed, a large number of individual traders pay attention to the company shares, making stock prices soar in the first few days.

The delay in listing IPO shares is not correlated with the level of undervaluation, this factor has a negative sign

and is not statistically significant. This is consistent with the viewpoint of Uddin (2008). In fact, most IPOs in general and IPOs in Vietnam in particular often do not foresee the listing time. IPOs are often done to raise capital to finance company development plans, so there is no clear listing plan on the auction date. The average listing delay of IPOs in Vietnam is up to 599 days. While in international markets, listing latency is only a few months, such as an average of 11 weeks after IPO in India (Shah, 1995), an average of 63 days after IPO in Australia, and the lowest latency in this country is 30 days (How & Yeo, 2001). Vietnamese market shows that investors seem to be indifferent to this factor due to the lagging latency, and the issuer has an unclear plan of listing. This, in turn, creates a high liquidity risk for investors, and companies will also find it more difficult to raise capital in the subsequent issuance of shares.

The remaining variables do not seem to explain the level of price volatility after IPO. The level of internal holding capital (Cap) is not related to price volatility, given the high *p*-value (0.747), (0.7), (0.704) corresponding to D1, D2, D3; The sign of this regression coefficient is contrary to expectations when it is negatively correlated with undervaluation. According to previous studies, a company with a high internal holding equity ratio means that many owners or executives believe in the company's future growth prospects after IPO. When they hold a high percentage of equity, this holding creates a signal to potential investors of real value for the company, thereby increasing the level of positive returns after the IPO. However, in this study, the main research subjects are SOEs where capital holding is also reflected in state policies and political factors, so the level of internal holding capital is not as much correlated as that of non-state-owned businesses. Moreover, there is a fact that having a lot of information about state-owned companies to reduce the information asymmetry is difficult.

Also, the variable Lprice in terms of share price does not show a correlation with a positive rate of return. The main reason is that most companies issue the shares at around a par value of 10,000 VND, very few companies issue shares at a higher price than the par value.

Table 7: Regression Results

	D1		D2		D3	
	β_i	p-value	β_i	p-value	β_i	p-value
Cap	-0.001593	0.747	-0.002027	0.700	-0.002137	0.704
Over	-0.055858	0.024**	-0.058451	0.026**	-0.057084	0.042**
LDelay	-0.065476	0.588	-0.077168	0.549	-0.053378	0.698
Lprice	0.1864525	0.693	0.1349773	0.788	0.0685688	0.898
Lvalue	-0.013671	0.847	-0.009922	0.895	0.0293128	0.716
Lsize	0.1624515	0.021**	0.1617001	0.030**	0.154605	0.052**
R Square	0.2319		0.2161		0.1973	
Prob (F-statistic)	0.0047***		0.0083***		0.0161**	

*, **, ***Correspond to the significance level of 10%, 5%, and 1%.

Table 8: Summary of Regression Results

	Expected Sign	Real Signs with Significance	D1	D2	D3
Cap	+		-0.001593	-0.002027	-0.002137
			0.747	0.700	0.704
Over	+/-	-	-0.055858	-0.058451	-0.057084
			0.024**	0.026**	0.042**
LDelay	+		-0.065476	-0.077168	-0.053378
			0.588	0.549	0.698
Lprice	+		0.1864525	0.1349773	0.0685688
			0.693	0.788	0.898
Lvalue	-		-0.013671	-0.009922	0.0293128
			0.847	0.895	0.716
Lsize	-	+	0.1624515	0.1617001	0.154605
			0.021**	0.030**	0.052**
R Square			0.2161		
Prob (F-statistic)			0.0083***		

5. Discussion and Implications

5.1. Discussion

This study looked at the difference in price for a sample of 76 IPOs on the Hanoi Stock Exchange in the period 2013 – 2019 and the difference in prices recorded on the first 3 trading days. The average rate of return is about -11.95% on the first trading day and -9.58% and -7.29% for the next two trading days. However, there is a difference between IPOs that took place in 2014 and 2015 with a huge positive return and those in 2016 and 2017 which witnessed a truly opposite sign.

The research results in Table 8 show that the level of price volatility after IPO is not only affected by one factor but by many different factors with the impact of each factor being completely different. We consider the relationship between the magnitude of the price difference and a set of exogenous variables that are assumed to affect pricing. Estimates based on the OLS multivariate regression model show that the rate of oversubscription rate and company size has a significant effect on the positive return of IPOs in the sample on the first and two days of trading days after that.

The first trading days and the size of the company will positively affect the level of price volatility. In addition, the

remaining factors do not significantly affect the level of price volatility of the enterprise.

Therefore, businesses need to focus on accurate corporate valuation to determine the starting price of IPO shares more effectively. In addition, it is necessary to develop a transparent and accurate information strategy to make investors confident and increase the attractiveness of the IPO. The study also shows that the average listing delay of enterprises in Vietnam between 2003 and 2019 was 554 days - a very long time period. To reduce the delay time on the listing, businesses need to raise awareness about this, associate IPO with listing and develop a specific plan, clearly define the time of listing to reduce undervaluation, and bring success to the IPOs.

5.2. Practical Implications

This research paper shows that there is still a phenomenon of under and overvaluation of SOEs during equitization. This may cause a great loss to the government budget. Thereby, we recommend the following solutions to limit the excessive price difference after the IPO and complete the IPO process of SOEs:

Firstly, the regulatory agencies should strengthen their support for businesses to conduct IPOs in the form of book-building. The underwriters will help businesses fix a uniform issue price for that issuance, ensuring the success of the issue, and bringing the best financial benefit to the business. Therefore, the essence of the book-building method is to help the issuers determine the most effective price for a successful issuance.

Secondly, the Vietnamese government and the Ministry of Finance should continue to work together to perfect the policy framework on SOE restructuring before equitization. In particular, they need to focus on the valuation of the SOEs before equitization, and the computation of the state-owned capital in the equitized enterprise, especially to determine the value of risky items such as land use rights and other intangible assets and businesses that have a lot of real estates, especially those in locations with a great commercial advantage.

Thirdly, stronger regulations are required to improve the capacity and responsibility of business valuation consulting organizations. IPO companies should be required to hire businesses with high independence and capacity to conduct price valuation, thereby helping to avoid valuation mistakes that cause big losses to the State.

Fourthly, after the successful implementation of the IPO auction, it is required that enterprises quickly carry out the listing of new securities and put them into transactions on the market. There should be strong deterrent sanctions for enterprises that deliberately delay the process of listing securities on the exchange. After the specified time limit, it

is necessary to request the delayed listing business to have an appropriate explanation for their listing delay and come up with solutions to speed up the new listing process.

6. Limitations and Future Research

Although this paper has been better featured compared to previous studies when assessing the level of positive returns adjusted to the market's rate of return, it has some limitations. Therefore, there are opportunities for future research.

Firstly, evaluating the market's overall rate of return will more accurately evaluate the efficiency of IPOs. When the general market changes strongly in a positive or negative direction, it will affect the transaction price level on the stock market after the IPO. Failure to evaluate the overall market rate of return may reduce the practical applicability of the study.

Moreover, doing further research on the reasons affecting the valuation in individual markets of Vietnam will help to improve our research results by completing the current model. Besides, it is possible to develop this research by expanding the number of factors that affect the low valuation level in Vietnam's IPO with longer periods to consider undervaluation in the IPO in the long term, such as by week, month, or year.

In addition, for SOE IPOs, the industry factor also plays an extremely important role in assessing the post-IPO return of each stock. Daily et al. (2005) used the business sector to distinguish whether a company has a high or low technology level. However, in the Vietnamese market, it is not possible to test this factor because no company is classified in this way.

Another review by Alli et al. (1994) with a sample of 185 financial institutions and 1361 non-financial institutions during the period from January 1983 to December 1987, showed that the financial companies have lower first-day returns than non-financial companies. According to statistics in the period 2013–2019, IPOs of SOEs mainly come from Construction (under the Ministry of Construction), Transportation (under the Ministry of Transport and the Ministry of Defence), and companies in the Water Supply and Sewerage industry that are managed by provinces and cities. It can be seen that very few of those SOEs in the financial sector carried out IPOs. Therefore, there needs to be further research to consider all industries or all companies under the management of Ministries, State Departments, Provinces, and Cities to provide a comprehensive view of SOEs equitization.

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