Insider ownership, bid–ask spread, and stock splits: Evidence from the Stock Exchange of Thailand

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Abstract

This paper examines the moderating effect of insider ownership on bid–ask spread changes during stock splits in Thailand, an economy with highly concentrated ownership structures. Consistent with the liquidity hypothesis, the overall finding shows that bid–ask spread declines significantly after stock splits. The results also indicate that there is a significant relation between insider ownership and the change in bid–ask spread. Specifically, significant reductions in bid–ask spread occurred mostly among firms with low levels of insider ownership before stock splits. Bid–ask spreads remain virtually unchanged for shares with high ownership concentration. The findings highlight the link between corporate governance structure, market microstructure, and corporate financial decisions in emerging markets.
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1. Introduction

During the past decades, considerable attention has been devoted to examining the relation between insider ownership and various corporate financial decisions. The reason is that insider ownership plays a critical role in the agency conflicts between managers and shareholders arising from the separation of ownership and control (Jensen & Meckling, 1976). Morck, Shleifer, and Vishny (1988) and McConnell and Servaes (1990) investigate the relation between managerial

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ownership and firm valuation among U.S. firms. Jensen, Solberg, and Zorn (1992) examine the relation between insider ownership and financial leverage and dividend policy among U.S. firms. Mikkelson, Partch, and Shah (1997) study the change in levels of insider ownership of companies going public in the U.S. and the impact on firm performance after initial public offerings. In recent studies on East Asian firms, Claessens, Djankov, and Lang (2000) posit that highly concentrated insider ownership can lead to poor investment and financing decisions. In conclusion, insider ownership appears to be an important factor that can significantly affect corporate financial decisions.

Despite the attention to the role of insider ownership in corporate finance, there is little evidence on the effect of insider ownership on the market microstructure aspects of the firm. This study represents the first attempt to integrate corporate governance research with market microstructure research by examining a link between a well-known corporate governance variable, insider ownership, and a market microstructure variable, bid–ask spread. The Stock Exchange of Thailand provides an interesting setting for this investigation because of its unique institutional environment. Claessens et al. (2000) show that the ownership structures of many East Asian companies, including many Thai firms, are highly concentrated. Most of these companies are also family-controlled firms. Claessens et al. (2000) also note that the use of pyramid shareholding structures is commonplace in East Asia. Further, the management group, along with family members, is usually the largest blockholder at the top of the pyramid. Thus, controlling managers at the top of the pyramid are generally able to exercise effective control of all firms in the pyramid. Lins (2003) finds that in emerging markets, the management group is the dominant type of blockholder, controlling 69% of sample firms. As in most East Asian countries, Thai firms have highly concentrated ownership structure with insiders holding a significant proportion of the outstanding shares. Lemmon and Lins (2003), who examine the relation among ownership structure, corporate governance and firm value in East Asian economies, state that, relative to the U.S. and many other well-developed economies, the widespread use of pyramidal ownership structures and cross-holdings in East Asian economies allows insiders to exercise effective control over the company. Moreover, the absence of strong legal protections and other external governance mechanism in many emerging economies further increases the severity of the agency problem between controlling insiders and outside investors. For example, Limpaphayom and Polwitoon (2004) find a significant relation between insider ownership and the use of short-term debt among Thai companies before the Asian financial crisis. Mitton (2002) finds that East Asian firms with less concentration of insider ownership exhibit better performance during the Asian financial crisis.

A recent regulatory change in Thailand also provides a natural experimental setting for testing the relation between changes in bid–ask spread and insider ownership. Specifically, stock splits were prohibited under rules established by the Stock Exchange of Thailand. Before the 1997 Asian financial crisis, the par value of all Thai firms was set at ten baht per share. Recently, however, stock splits have become a common occurrence in the Thai market because, in 2001, the government passed the New Public Company Act B.E. 2544, which states that there is no longer a required minimum par value. Since there is no longer a minimum requirement, the par value can be as low as 0.01 baht per share. The authorities hope that the new regulation will make firms' capital structures more flexible and enhance liquidity, which will in turn attract more investors. Since 2001, more than 90 out of 407 listed firms have completed stock splits as a result of the new regulation. Twenty-five firms split their shares in the first half of 2003 compared to twenty-eight firms during the whole of 2002. Some of the listed firms (e.g., TUF, AMATA, ASIAN, CFRESH, FANCY, LEE, and PICNIC) have even split their shares twice since the regulation was amended.

The purpose of this study is to investigate the moderating effect of insider ownership on the effect of stock splits and stock liquidity, as measured by bid–ask spread. First, the study investigates how stock splits affect stock liquidity in the Thai market. Furthermore, it is hypothesized that insider ownership is

related to changes in stock liquidity after stock splits. The empirical results show that stock liquidity improves after stock splits. On average, bid–ask spread and percentage spread decline after stock splits while there is no observable change among firms used as a control (i.e. firms that did not have a stock split). The empirical results also reveal that the reduction in bid–ask spread is related to the proportion of insider ownership. Specifically, stocks with high insider ownership concentration do not exhibit any reduction in bid–ask spread whereas stocks with low insider ownership show a significant decline in bid–ask spread. It is concluded that the liquidity effect of stock splits only occurs among stocks with low insider ownership concentration. The results are robust even after controlling for institutional ownership, firm size, price level, turnover, and split factors.

The rest of the paper is organized as follows. Section 2 presents the literature review and the hypothesis to be tested in this study. Section 3 describes the data sources and the sample. Empirical results are presented in Section 4. Section 5 concludes the paper.

2. Hypothesis

In theory, stock splits should have no impact on firm value because a split is merely an issuance of new shares of stock on a pro rata basis; the values of firm assets, earnings, and the investors' percentages of ownership are virtually unchanged. The only definite result from a stock split is an increase in the number of shares outstanding. Since a stock split increases the number of outstanding shares while the firm's market capitalization remains the same, the per share value of stock decreases. Therefore, a stock split should only increase the number of outstanding shares and reduce the share price. Stock splits seem to be a purely accounting change with no real economic consequences and thus leave investors no better or worse off than they were before the split. Despite this theoretical tenet, stock splits are a relatively common occurrence suggesting that there are some effects resulting from stock splits. The consequences of stocks split in reality are still a puzzle needing more investigation.

Previous research has proposed two major hypotheses to explain the motive behind stock splits: the signaling hypothesis and the liquidity hypothesis. The signaling hypothesis suggests that, given an informational asymmetry between managers and outside investors, insiders might use financial decisions such as stock splits and stock dividend distributions to convey favorable information to outsiders. Following pioneering work by Fama, Fisher, Jensen, and Roll (1969), Grinblatt, Masulis, and Titman (1984), Asquith, Healy, and Palepu (1989), and McNichols and Dravid (1990) find positive excess returns around split announcements. These results provide empirical support consistent with the signaling hypothesis.

According to the liquidity hypothesis, managers decide to split the stock whenever they feel that share price has risen above a certain range. The purpose of the split is to drive the share price back to some sort of targeted desirable trading range. Reducing the share price further attracts more investors, especially small ones, broadening the ownership of the firm's shares and thus improving stock liquidity. Several studies provide empirical support to the liquidity hypothesis (Elfakhani & Lung, 2003; Muscarella & Vetsuypens, 1996; Wulff, 2002). On the other hand, several studies conclude that stock liquidity did not change or even declined after stock splits (Conroy, Harris, & Benet, 1990; Copeland, 1979; Lakonishok & Lev, 1987; Lamoureux & Poon, 1987; Murray, 1985). Using bid–ask spread as a measure of stock liquidity, Dennis and Strickland (2003) relate the ownership structure to the liquidity during stock splits. Although they find that there is liquidity improvement for firms after stock splits, the liquidity gains however are conditional on the level of institutional ownership. Specifically, Dennis and Strickland (2003) find that changes in liquidity are negatively related to the level of institutional ownership.

It is possible that these mixed results might be caused by the differences in ownership structures of the companies in the sample (Dennis & Strickland, 2003). This makes the Stock Exchange of Thailand a unique setting as, like most East Asian countries, the ownership of Thai companies is frequently highly concentrated and controlled by founding families (Limpaphayom & Polwitoon, 2004). Consequently, it is hypothesized that, in the Thai market, insider ownership moderates the effect of stock splits on stock liquidity. Specifically, firms with low levels of insider ownership prior to the split should experience greater increases in stock liquidity than firms with high levels of insider ownership. This conjecture rests upon the assumption that shares of firms with high insider ownership are not frequently traded; the families who are also the firms' managers hold the shares rather than trade. Claessens et al. (2000) provide support to this notion when examining public firms in East Asia. Although stock split increases the number of shares available for retail investors or outsiders, the high proportion of shares held by insiders should still inhibit the positive effect of stock splits on stock liquidity. Consequently, stock liquidity for high insider ownership firms should remain unchanged after the splits. Another possible argument could be that stock splits reduce the information asymmetry. Specifically, stock splits reduce the bid–ask spread which may contain asymmetric information costs for firms with low insider ownership. For these firms, stock splits are a credible favorable signal and therefore reduce the spread, resulting in liquidity gains. For firms with high insider ownership, however, outsiders may encounter the adverse selection problem due to the large proportion of insider ownership. Consequently, stock splits are not considered a credible or favorable signal and, therefore, do not affect stock trading as well as stock liquidity.

In summary, it is hypothesized that highly concentrated ownership structures as documented in Thailand should have a significant effect on changes in stock liquidity after stock splits. The reason is that shares held by Thai insiders and family owners are usually not actively traded. If the percentage held by insiders is high, consequently, the number of shares left for trading in the market will be low. Therefore, the stock liquidity gains for shares with high insider ownership concentrations should be minimal since the shares are still not attractive to outside investors. For companies with low insider ownership concentrations or a large number of outstanding shares available for trading, stock splits increase the number of shares which then pique outsiders' interest and thus improve liquidity. It is therefore hypothesized that insider ownership concentration has a negative effect on liquidity, as measured by bid–ask spread, after stock splits.

There is also a competing explanation of the moderating effect of insider ownership on stock liquidity after a stock split. Han and Suk (1998) find that investors evaluate stock split decisions within the context of both insider ownership and information asymmetry. Their results show a positive relation between stock split announcement returns and insider ownership. If insider ownership is considered a proxy for information asymmetry, stock splits can potentially act as a mechanism to reduce the asymmetry. The market thus considers stock splits as favorable signals that can reduce the information asymmetry between insiders and outsiders. Therefore, a competing explanation for the moderating effect could be that stock splits are a corporate governance mechanism that reduces the information asymmetry between insiders and outside investors. This explanation indirectly implies a positive effect of insider ownership on stock liquidity after stock splits. Formally, the null hypothesis to be tested is:

H_0. There is no relation between insider ownership and bid–ask spread change.

Two variables, bid–ask spread and percentage spread, are used as the measures of stock liquidity. These variables are also employed by Conroy et al. (1990) and Elfakhani and Lung (2003) as proxies of stock liquidity. Bid–ask spread is calculated as the closing bid price minus

the closing ask price. The data are collected on a daily basis. The estimation period covers 30 days before and after the splits. The bid–ask spread represents liquidity in the way that if a stock is highly liquid, investors will be more willing to sacrifice the spread for high liquidity. In other words, they will be willing to buy at higher prices and sell at lower prices for such a liquid stock and hence the spread decreases. The percentage of spread is defined as the bid–ask spread divided by the closing price of the stock. If stock splits can enhance stock liquidity, the bid–ask spread and the percentage of spread should decrease after a stock split.

In addition, a group of control firms is included in order to minimize the error in interpreting the effect on liquidity that might occur from the differences in stock characteristics and/or changes in market conditions during the stock split period under investigation. The control firms are selected by matching two firm characteristics: industry classification and pre-split firm size, as measured by market capitalization. Furthermore, firms in the sample will also be categorized by foreign institutional ownership. The reason for the inclusion is that foreign institutional ownership in the Thai market is quite substantial.[1] Dennis and Strickland (2003) find that changes in stock liquidity are negatively related to the level of institutional ownership. Moreover, it is also possible that insider and foreign ownership are related. The finding should shed additional light on the moderating effect of insider ownership on stock liquidity after stock splits.

To examine the moderating effect of insider ownership on the change in bid–ask spread after a stock split, the following regression equation is used, with $\Delta\%$spread as the dependent variable:

$$\Delta\%\text{SPREAD} = \alpha + \beta_1 \text{ INSIDER} + \beta_2 \text{ INST} + \beta_3 \text{ SIZE} + \beta_4 \text{ PRICE} + \beta_5 \text{ TURNOVER} + \beta_6 \text{ SPLIT} + \varepsilon_i \tag{1}$$

where $\Delta\%$SPREAD is the percentage change in the 30-day average of the percentage spread from the pre-split to post-split period. INSIDER is defined as the percentage of the firm's shares held by management, family members, and board members of the company. The proportion of foreign institutional ownership (INST) is included as a control variable. The reason is that institutional shareholders also play a significant role in an emerging market such as the Stock Exchange of Thailand. Firm size (SIZE) is defined as the logarithm of market capitalization prior to a stock split. It is necessary to control for size in the regression since it is possible that the monotonic increase in turnover is the result of a size effect. Moreover, firm size can be a proxy to measure cross-sectional differences in information asymmetry. Many studies (Freeman, 1987; Grossman and Stiglitz, 1976; Vermaelen, 1981; Zeghal, 1984) suggest that information asymmetry plays a more significant role for small firms than for large firms. Grossman and Stiglitz (1976), in particular, note that informed investors are less willing to invest in stocks of small firms. Vermaelen (1981) indicates that small firms receive less coverage from the media and less attention from financial analysts. The variable PRICE is defined as the logarithm of price of the day prior to the split. Price levels can affect the liquidity of stock as stated in the liquidity hypothesis. Since retail investors are usually wealth constrained, they may not want to buy a high-priced stock. Pre-split turnover (TURNOVER) is also included as a control variable, defined as the 30-day average stock turnover prior to the split. The last control variable is SPLIT, a splitting factor, which is the number of new shares issued for each share held before the split, calculated as a fraction.

In summary, the dependent variable ($\Delta\%$SPREAD) is expected to show a negative relation with insider ownership. The reason is that stock liquidity improvement should be confined to

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[1] We thank the IRFA referee for making this suggestion to us.

those firms with low insider ownership concentration since insiders hold a rather low number of shares which in turn increases the positive effect of splits on stock liquidity.

3. Data

The sample includes all firms with a share split that are listed on either the Stock Exchange of Thailand (SET) or the Market for Alternative Investments (MAI) during January 2000–January 2004. The sample consists of 107 stock splits during the specified period. Companies under rehabilitation are excluded from the sample because they are not frequently traded. The final sample consists of 104 stock splits as shown in Table 1. Data are obtained from three major commercial databases (Analyst, SETSMART, and Bloomberg) which also include the bid–ask spread, share prices, pre-split market capitalization, and levels of insider ownership.

Table 1 provides a distribution of the 104 stock splits that occurred during the study period. The table shows that stock splits have become a frequent occurrence in the Stock Exchange of Thailand. In 2000, there are only three stock splits. In the following year, however, the number of firms increases by a factor of five to 15 splits. In 2002 and 2003, the total numbers of splits are 28 and 52 respectively, almost double the level of the previous years. The rising trend continues, as during January 2004, six companies have split compared with only three splits in the first quarters of 2002 and 2003. The frequency of splits in 2002 and 2003 might relate to market conditions as shown in Fig. 1. SET trading volume gradually increased after 2000, when it averaged only 244.96 million shares per day. In 2001 and 2002, the Thai market was in a recovery period with the average daily trading volume also showing the effect of a prolonged recovery, rising to 735.99 and 1,077.43 million shares respectively. While all of 2003 was an excellent year for the Thai stock market, the second half shows a more drastic increase than the first half of the year. The SET Index increased from 351.54 at the beginning of 2003 and finished the year with a 120% increase, closing at 772.15. Average trading volume soared to 2,220.98 million shares.

Table 2 reports the distribution of split factors for the stocks in the sample. The split factor is defined as the number of new shares issued for each share owned before the split. For example, a split with a 10 for 1 factor means that a shareholder owning one share before splitting will have ten shares after splitting. Of the 104 stock splits, 64 were 10 for 1, accounting for 61.54% of total number if splits. Most of the remaining splits were 2 for 1 and 5 for 1, which accounted for about 35.58% of total splits.

4. Results

Table 3 presents the changes in bid–ask spread during stock split period for the 104 splits in the sample together with 104 firms that make up the sample of control firms. To compare the changes, the pre-split and post-split values for both bid–ask spread and percentage spread are shown. The changes of all stocks are then averaged for both the pre-split and post-split periods. The results show that bid–ask spread and percentage spread are different for splits and control stocks. Specifically, the spreads of splitting firms are lower than those of controlled firms. This is consistent with the finding by Khositsakul (2003), who finds that splitting stocks in Thailand normally experience large trading volume increases prior to the split that, in turn, can result in lower bid–ask spreads. For splitting stocks, the average bid–ask spreads decreases from −0.19 to −0.16. The decline of bid–ask spread is statistically significant at conventional levels. Furthermore, the average percentage spread of splitting firms also decreases from −2.19 to −1.56. In fact, the decline for percentage spread is stronger than the result for the bid–ask spread. When

Table 1
Frequency distribution of stock split by year and quarter

	2000	2001	2002	2003	2004[a]
Quarter 1	0	0	3	3	6
Quarter 2	0	1	12	22	N.A.
Quarter 3	2	5	6	6	N.A.
Quarter 4	1	9	6	22	N.A.
Total	3	15	28	52	6

This table presents the distribution of stock splits during 2000–2004 by quarter. The sample consists of stocks listed on the Stock Exchange of Thailand (SET) and the Market for Alternative Investments (MAI). The split data for 2004 includes only splits occurring in January 2004. The numbers in the table are the number of splits in each period.

[a] Includes only splits occurring in January 2004.

calculated for the median values in the sample, the results reveal a similar finding. For the control firms, bid–ask spreads increase from −0.90 to −1.05 and the percentage bid–ask spread increases from −3.16 to −3.18. However, neither change is statistically significant. Thus, the results for control stocks provide a robustness check for the results for splitting stocks.

Table 4 presents the average change in percentage spread by insider ownership concentration. In Panel A, stocks are separated into two groups based on insider ownership concentration: firms that insiders own less than 50%, and firms that insider ownership concentration is greater than 50%. From the results, stocks in the low insider ownership group have an average percentage spread before a split of −2.67%. In contrast, splitting firms in the high insider ownership concentration group have a pre-split average percentage spread of −1.64%. After a split, the average percentage
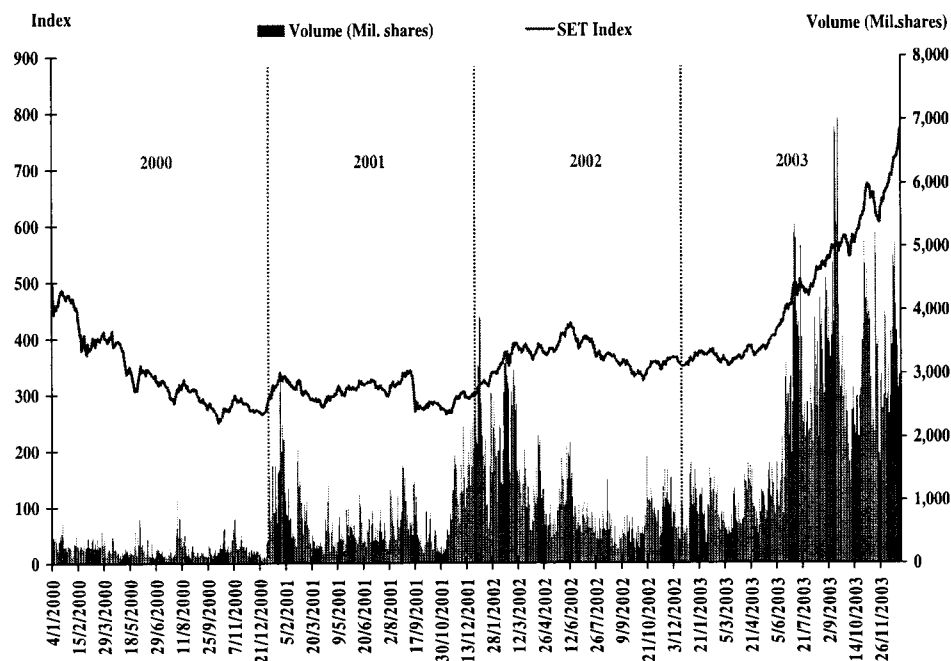

Fig. 1. SET index value and volume of trading during 2000–2003.

Table 2
Frequency distribution of split factors

Split factor	Number of splits	Proportion (%)
10 for 1	64	61.54
8.5 for 1	1	0.96
7 for 1	1	0.96
5 for 1	18	17.31
2.5 for 1	1	0.96
2 for 1	19	18.27
Total	104	100.00

This table reports the distribution of the number of splits by split factors. The sample consists of stocks listed on the Stock Exchange of Thailand (SET) and the Market for Alternative Investments (MAI) during 2001–2004. The split factor is defined as the number of new shares issued for each share held before the split. For example, the split with 10 for 1 factor means that a shareholder who holds 1 share before split will have 10 shares after split.

spread of firms in the low insider ownership concentration group drops from -2.67% to -1.50%, a statistically significant change. The average percentage spread of firms in the high insider ownership concentration group before and after split remains virtually unchanged (-1.64% and -1.63%). The results indicate that only shares of firms with low levels of insider ownership experience increases in stock liquidity after a split. In the end, the results reveal that firms that experience increases in liquidity after a split are firms with low levels of insider ownership.

In Panel B, stocks are also separated into two groups based on foreign institutional ownership concentration. Data on foreign institutional ownership are collected from the database compiled by the Stock Exchange of Thailand. Firms are classified based on the median foreign institutional ownership at the time of the split. Group 1 is the cluster of firms with foreign institutional ownership between 0% and 9.95%; Group 2 contains firms with ownership above 9.95%. The results are similar to the results observed for insider ownership, indicating that only firms with low levels of foreign institutional ownership have significant stock liquidity gains after a split. Overall, these results support the tenet that stock splits sufficiently increase the number of shares available for outsiders

Table 3
Descriptive statistics for bid–ask spread and percentage spread during stock splits

	Mean		Median		Z-score
	Before	After	Before	After	
Panel A: Splitting stock					
Bid–ask spread (Baht)	−0.19 (0.33)	−0.16 (0.24)	−0.08	−0.08	1.78*
Percentage spread (%)	−2.19 (3.40)	−1.56 (1.77)	−1.03	−0.91	2.73**
Panel B: Control stock					
Bid–ask spread (Baht)	−0.90 (2.41)	−1.05 (2.77)	−0.15	−0.12	−1.42
Percentage spread (%)	−3.16 (6.02)	−3.18 (5.87)	−1.01	−1.13	−0.09

This table presents descriptive statistics of the bid–ask spread and percentage spread for splitting stocks and control stocks. The sample consists of stocks listed on the Stock Exchange of Thailand (SET) and the Market for Alternative Investments (MAI) that conducted stock splits during 2001–2004. Bid–ask spread is defined as daily closing bid minus daily closing ask. Percentage spread is bid–ask spread divided by closing price, representing liquidity cost per baht invested. The estimation period is 30 days before and after the stock split. The matched control firms are selected based on industry classification and firm asset size. Standard deviations are reported in parentheses. * and ** denote statistical significance at 5% and 1% levels, respectively.

Table 4
Descriptive statistics of change in percentage spread by levels of ownership

Variables	Mean		Median		t-statistics for Mean test	Degrees of freedom	t-critical	
	Before	After	Before	After			0.05	0.01
Panel A: Insider ownership								
Group 1 (0–50%)	−2.67 (4.01)	−1.50 (1.47)	−1.12	−0.90	2.98**	55	1.673	2.396
Group 2 (>50%)	−1.64 (2.44)	−1.63 (2.08)	−0.90	−0.91	0.07	47	1.678	2.408
Panel B: Foreign institutional ownership								
Group 1 (0–9.95%)	−2.63 (4.11)	−1.83 (2.19)	−1.03	−0.96	2.21*	51	1.675	2.402
Group 2 (>9.95%)	−1.75 (3.39)	−1.29 (2.17)	−1.03	−0.86	0.56	51	1.675	2.402

The table presents descriptive statistics of change in percentage spread by insider ownership and foreign institutional ownership. In Panel A, the sample is separated into two groups based on insider ownership. Level of insider ownership is the percentage of a firm's shares held by management, family members and members of the board of directors. Group 1 consists of firms with 0–50% levels of insider ownership while Group 2 consists of firms with levels of insider ownership higher than the median (50%). In Panel B, the sample is separated into two groups based on foreign institutional ownership. Group 1 consists of firms with foreign institutional ownership lower than the median (9.95%). Percentage spread is the bid–ask spread divided by the closing price. The estimation period covers 30 days before and after split. t-statistics are calculated based on the test of mean difference. * and ** denote statistical significance at the 5% and the 1% levels, respectively.

only for firms with less concentrated ownership structures resulting in larger trading volumes and lower bid–ask spreads. This finding is also consistent with that of Dennis and Strickland (2003).

Table 5 reports descriptive statistics of the variables included in the regression analyses. Table 6 presents the results from the regression analyses, in which the change in percentage spreads (%SPREAD) is the dependent variable. Insider ownership concentration (INSIDER) is an independent variable along with other control variables. In Model 1, the change in percentage spread is regressed on insider ownership concentration. The model is statistically significant with an adjusted coefficient of determination of 0.053. The positive regression coefficient indicates a

Table 5
Descriptive statistics for variables in regression analyses

Variable	Mean	SD	Median
Δ%spread (%SPREAD)	−8.12	67.17	−15.51
Insider ownership (INSIDER)	41.61	24.87	47.77
Institutional ownership (INST)	15.35	16.28	10.10
Firm size in million baht (SIZE)	8927.65	22,448.69	2771.33
Price in baht (PRICE)	7.87	13.79	4.35
Turnover (TURNOVER)	0.96	1.89	0.21
Split factor (SPLIT)	0.08	0.03	0.10

This table presents descriptive statistics for the variables used in the regression models. The sample consists of companies listed on the Stock Exchange of Thailand that performed a stock split during 2000–2004. Financial data are obtained from the database compiled by the Stock Exchange of Thailand. Change in percentage spread is the percentage change in the 30-day average of the percentage spread from the pre- to post-split period. Insider ownership (INSIDER) is defined as the percentage of a firm's shares held by the firm's insiders prior to the split. Insiders are defined as managers, family members and members of the board of directors. Foreign institutional ownership (INST) is the proportion of outstanding shares held by foreign institutional investors. Firm size (SIZE) is the logarithm of pre-split market capitalization. Price (PRICE) is the logarithm of the price the day prior to the split. Turnover (TURNOVER) is defined as the average of 30 days of turnover before the split. Split factor (SPLIT) is the fraction of new share value to the original share value.

Table 6
Regression results

Variables	Change in percentage spread				
	(1)	(2)	(3)	(4)	(5)
Intercept	−34.99** (10.75)	5.19 (48.39)	2.53 (29.44)	−2.07 (44.63)	−8.85 (46.34)
INSIDER	0.65** (0.26)		0.68** (0.32)		0.71** (0.22)
INST				−0.22 (0.32)	−0.36 (0.38)
SIZE		0.0006* (0.0003)	0.001 (0.001)	2.61 (6.87)	0.89 (6.94)
PRICE		−3.99 (13.99)	−2.33 (9.82)	−4.88 (11.59)	−5.91 (11.49)
TURNOVER		−2.77 (3.09)	−6.35 (6.01)	−1.49 (2.63)	−2.69 (2.81)
SPLIT		399.51 (990.35)	−454.62* (236.66)	−148.94 (221.76)	−181.30 (235.95)
R-square	0.053	0.035	0.103	0.009	0.065
F-statistic	5.33**	1.64	2.15*	0.16	0.95

This table reports the result of the regression analysis of change in percentage spread with insider ownership, foreign institutional ownership, firm size, price level, turnover, and split factor as independent variables. Change in percentage spread (%SPREAD) is the percentage change in the 30-day average of the percentage spread from the pre- to post-split period. Insider ownership (INSIDER) is defined as the percentage of a firm's shares held by the firm's insiders prior to the split. Insiders are defined as managers, family members and the members of the board of directors. Institutional (INST) is the proportion of foreign institutional ownership. Firm size (SIZE) is the logarithm of pre-split market capitalization. Price (PRICE) is the logarithm of the price the day prior to the split. Turnover (TURNOVER) is defined as the average of 30 days of turnover before the split. Split factor (SPLIT) is the fraction of new share value to the original share values. Standard errors are reported in parentheses. Statistical significance at the 5% and 1% levels are indicated by * and **, respectively.

negative relation between insider ownership and the change in percentage spread. In other words, firms with low levels of inside ownership experience high levels of change in percentage spread after the splits. The results for insider ownership concentration remain intact even after other control variables are included in the model. Model 2 includes four control variables: a measure of firm size, the stock price the day before the split, share turnover, and the split factor. Interestingly, the positive and significant coefficient of firm size (SIZE) shows a negative relation between firm size and changes in percentage spread. This implies that cross-sectional differences in information asymmetry do exist. When insider ownership is put back into the model with control variables as in Models 3 and 5, only the negative relation between insider ownership and change in percentage spread is still significant. This could be interpreted that insider ownership level is instead related to the information asymmetry among firms when controlling for other relevant factors. The inclusion of foreign institutional ownership has no significant effect on the regression results as shown in Models 4 and 5. Therefore, the main contribution of this study is the evidence that there exists a moderating effect of insider ownership on percentage change in bid–ask spread during stock splits. A possible explanation of the significance of the coefficient of insider ownership levels with percentage spread is that, when the company splits its stock, the number of shares held by outsiders increases proportionately with the split factor; the "float" increases. As a result, the investors are willing to pay for an increase in the float by decreasing the spread. In other words, stock split improves the liquidity as the spread narrows after the split. The narrowing of the spread, however, hinges upon the level of insider ownership. The higher the levels of insider ownership, the lower the changes in the spread after the splits. Stock splitting firms with low insider ownership will increase the number of shares available for outsiders more than firms with high insider ownership. With more trading by outsiders due to more shares available, firms with low levels of insider ownership prior to the split experience liquidity gain greater than firms with high level of insider ownership.

5. Conclusion

This study attempts to link a corporate governance variable, insider ownership, and a market microstructure variable, bid–ask spread, by examining 104 stock splits that occurred in the Stock Exchange of Thailand during January 2000–January 2004. The main objective is to investigate the moderating effect of insider ownership on changes in bid–ask spreads during the split period. The bid–ask spread and percentage spread are used as proxies of stock liquidity to test the liquidity hypothesis. The liquidity hypothesis posits that stock liquidity should improve after a split. The reduced share price resulting from the stock split attracts more investors, especially small ones, into the ownership of the firm, thus improving liquidity. The findings provide empirical support for the liquidity hypothesis as there is a significant decrease in the percentage bid–ask spread after the splits.

More importantly, it is hypothesized that ownership structure should have an impact on corporate financial decisions and market microstructure. In Thailand, public companies generally have concentrated ownership structures with family members owning a significant proportion of outstanding shares. The concentrated ownership can have a significant effect on stock liquidity, especially the bid–ask spread. Consequently, the paper also examines the effect of insider ownership concentration on the changes in bid–ask spread during the splits. Empirical evidence shows a negative and statistically significant relation between insider ownership level and the change in the percentage bid–ask spread. Specifically, the results show that only firms with low levels of insider ownership experience significant increases in liquidity, as measured by the change in percentage spread. On the other hand, firms with high levels of insider ownership experience no significant change in liquidity.

The implication for all related parties in the stock market, especially listed companies, regulators, and financial advisors, is that stock splits may not be a completely effective tool in solving the liquidity problem for all stocks. In fact, there may be other moderating factors that influence the effect of stock splits on stock liquidity. This study documents a significant moderating effect of insider ownership concentration in an emerging market with a highly concentrated ownership structure. Further investigation should reveal other factors that may be operating in different markets with different institutional settings. Discovering moderating variables may shed additional light on the debate as to the effect of stock splits on various aspects of stock and firm behavior.

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