

mir Special Issue 2004/2, pp. 157–171



Mamduh Hanafi/S. Ghon Rhee

The Wealth Effect of Foreign Investor Presence: Evidence from the Indonesian Market

Abstract

- The wealth effect of foreign investor presence on domestic investors remains an important policy issue to be considered when any country's capital market is opened to foreign investors.
- We investigated the wealth effect of foreign investor presence on the Indonesian domestic market before and after the announcement of lifting foreign stock ownership restrictions on September 4, 1997 in Indonesia.

Key Results

- The presence of foreign investors was associated with positive wealth effects as indicated by positive cumulative abnormal returns. The impact of this event, however, was modest and short-lived because of the Asian financial crisis when the announcement was made.
- The sources of wealth effects were largely limited to trading efficiency variables (rather than market liquidity) despite the adverse impact of the Asian financial crisis.

Authors

Mamduh Hanafi, Assistant Professor of Finance, The Gadjah Mada University of Indonesia, Bulaksumur, Yogyakarta, Indonesia.
S. Ghon Rhee, K. J. Distinguished Professor of International Finance and Banking, and Executive Director of the Asia-Pacific Financial Markets Research Center, College of Business Administration, The University of Hawaii at Manoa, Honolulu HI, USA.

Introduction

As of September 4, 1997, the Indonesian government eliminated a 49% foreign ownership restriction on Jakarta Stock Exchanges (JSX)-listed companies to discourage capital outflows from its financial system as the Asian financial crisis deepened. Under this new regulation, foreign investors were able to buy up to 100% of outstanding shares of non-financial companies. On January 28, 1998, the Indonesian government announced the removal of foreign ownership restrictions for financial companies as well. As a result, the Indonesian market was completely open to foreign investors.

This event provided a natural setting to study the effect of foreign investor presence (financial market liberalization) on domestic shareholders' wealth. Although this event involved the changing of foreign investment restrictions, we viewed it as the beginning of significant foreign investor presence in the Indonesian market. This event was similar to the change of foreign investment limits in the Singapore market examined by Lam (1997) and the announcement of liberalization studied by Henry (2000a, 2000b) and Kim and Singal (2000). While examining the wealth effects of financial market liberalization, this study should differ from past studies, however, in at least five aspects. First, Stulz and Wasserfallen (1995) studied the Swiss companies that changed foreign ownership restrictions voluntarily, hence the change was endogenous to the companies, while the Indonesian event was exogenous to all JSX-listed companies. Second, if policy makers liberalize the market when the economy is doing well, we may expect the positive wealth effect to be biased upward as we observed from Henry (2000a) and Kim and Singal (2000). Because the lifting of foreign ownership restrictions in September 1997 occurred in the midst of the Asian financial crisis, it should be interesting to observe whether or not the positive effect of foreign investor presence held up. Third, while Henry (2000a) and Kim and Singal (2000) used aggregate market data, we used the individual firm level data to investigate the effect of financial liberalization on the stock price behavior. The use of individual firm level data allowed us to investigate the cross-sectional determinants of abnormal stock returns resulting from foreign investor presence. Fourth, our study highlighted the differing effects of foreign investor presence on domestic stocks depending on their characterization in terms of efficiency and liquidity. This was not done in past studies. Fifth, this study examined the impact of significant foreign investors' presence on the stock price behavior, whereas a series of study by Bailey and Jagtiani (1994), Stulz and Wasserfallen (1995), Domowitz, Glen, and Madhavan (1997), and Lam (1997) focused on foreign investment restrictions or the violation of the law of one price as a result of segmented markets.

Our empirical findings indicated that the presence of foreign investors was associated with shareholder wealth-enhancing positive abnormal returns. The

trading efficiency variables seemed to explain the abnormal returns better than the changes in market liquidity. Financial market liberalization conducted during a financial crisis still exhibited positive benefits, while the magnitude was modest.

We believe that the wealth effect of foreign investor presence on the domestic investors remains an important policy issue to be carefully examined. Very often, policy makers are reluctant in their country's globalization effort, especially when the capital markets have to be completely opened to foreign portfolio investments, because of the fear that foreign investors will take over the majority ownership of local businesses.

We organized this paper as follows. First, we discussed the institutional background of the Indonesian capital market. Then, we discussed our data, the methodology, and the major results. In the next section, we analyzed cross-sectional determinants of wealth effects generated by the significant presence of foreign investors. We offered some conclusions in the final section.

Institutional Background of the Indonesian Capital Market

The history of the Indonesian capital market dates back to its colonial era. The Dutch government established the first stock exchange in Batavia (now known as Jakarta, Indonesia's capital) in 1912. During the First World War, it was closed and then reopened in 1925. The Japanese occupation of Indonesia halted the exchange's operation. Seven years after Indonesian independence, the exchange was re-opened in 1952. The nationalization program in 1956 halted its trading again.

The modern JSX started in 1977 when President Suharto re-opened the exchange. The Badan Pelaksana Pasar Modal (BAPEPAM) or the Capital Market Executive Agency, served as the operator and regulator of the JSX market. During the early years of the JSX, BAPEPAM set a priority of promoting and protecting domestic investors. The policy of promoting domestic investors was designed for wealth distribution. Foreign companies or joint venture companies were among the first companies to go public under this policy. The government established a financial company called Danareksa that has been serving as a closed-end investment company. In this role, Danareksa helped implement the policy of promoting domestic investors' participation in the market. For investor protection, the government strongly discouraged speculation. Price movements were limited to four percent daily. Danareksa actively intervened in the market when the limits reached four percent. At this stage, the market was closed for foreign investors.

Such microstructure policy did not appeal much to potential market players. Macro economic policy did not help either. In the early 1980s, the Indonesian government introduced a series of banking deregulation measures. These reform measures created a stiff competition in the banking industry, leading to a higher interest rate to make investment in the stock market less attractive. From 1977 to 1988, there were only 24 listed companies. Most of these companies went public to satisfy the government's policy of promoting the welfare of domestic investors rather than raising equity capital. However, in the latter part of the 1980s, the Indonesian stock market responded positively to the government's deregulation packages aimed at promoting stock investment. In 1988, the government removed the four percent price limits, relaxed listing requirements and procedures for going public, and, most important of all, allowed foreign investors to buy up to 49% of outstanding shares of listed stocks. The government started to impose taxes on interest income in the same year making stock investment more attractive relative to savings deposit.

In the two years following deregulation, the number of companies that went public increased significantly from 24 to 67. Along with the growth of Indonesian economy, the JSX index started to move up significantly. Figure 1 showed the appreciation of the JSX index from 1985 to 1998. Table 1 presented the number of companies that went public and the amount of funds raised from 1977 to 1998.

With privatization in 1993, the JSX became a self-regulated organization owned by member brokerage firms. BAPEPAM, (now translated as the Capital

Figure 1 The Jakarta Stock Exchange Index (1985–1998)

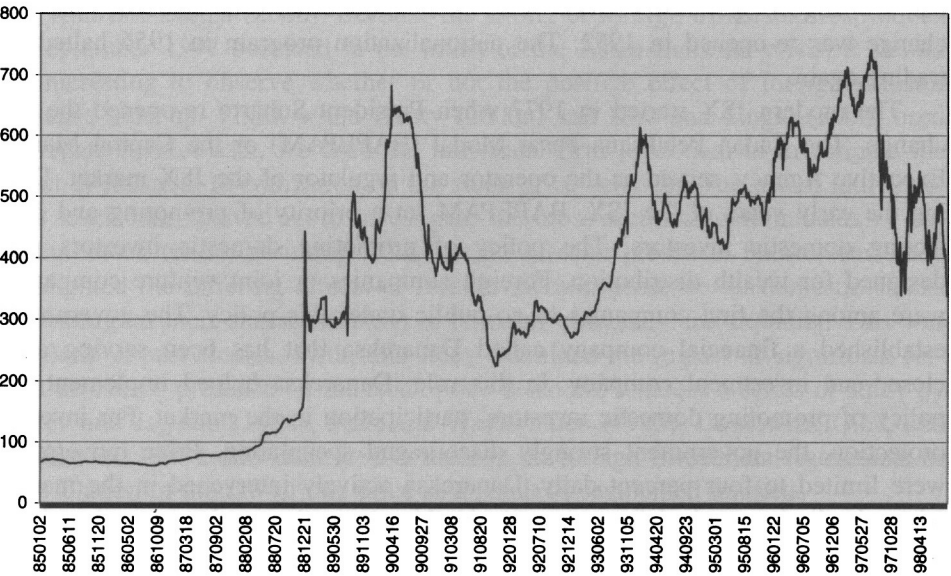


Table 1. Listing Firms and Funds Raised in The Jakarta Stock Exchange (1977–1998)

Year	Issuer		Value (Rp Million)	
	Per-Year	Cumulative	Per-Year	Cumulative
1977	1	1	1,787.50	1,787.50
1978	0	1	–	1,787.50
1979	3	4	25,113.00	26,900.50
1980	2	6	8,527.50	35,428.00
1981	3	9	37,928.40	73,356.40
1982	5	14	20,262.60	93,619.00
1983	9	23	35,053.10	128,672.10
1984	1	24	320.50	128,992.60
1985	0	24	–	128,992.60
1986	0	24	407.10	129,399.70
1987	0	24	–	129,399.70
1988	1	25	44,309.10	173,708.00
1989	42	67	2,041,737.50	2,215,446.30
1990	65	132	5,221,651.60	7,437,097.90
1991	13	145	626,169.60	8,063,267.50
1992	17	162	743,665.00	8,806,932.50
1993	19	181	1,362,431.30	10,169,363.80
1994	50	231	4,804,494.00	14,973,857.80
1995	17	248	5,682,059.40	20,655,917.20
1996	19	267	2,662,207.30	23,318,124.50
1997	34	301	3,950,515.50	27,268,640.00
1998	3	304	68,125.00	27,336,765.00

This table provides the historical record of companies that went public to be listed on the Jakarta Stock Exchange (JSX) in 1977–1998 and the amount of funds raised from going public.

Source: Bapepam Indonesia

Market Supervisory Agency), shifted its role from managing and executing the exchange to supervising it. In 1995, the JSX introduced an automated trading system, called JATS (Jakarta Automated Trading System), to replace the manual trading system. The Indonesian market suffered a setback when the financial crisis hit Indonesia in October 1997.

The Indonesian market provided a ‘partial’ cycle of foreign ownership regulation. Until December 1987, it was practically closed to foreign investment. The government started to open its market gradually. During the next 10 years, the Indonesian government introduced four key measures to open up the Indonesian stock market: (i) the Minister of Finance decree of September 16, 1989 allowed foreign investors to buy up to 49% of outstanding shares of all listed non-financial companies, (ii) the Minister of Finance decree of October 30, 1992 allowed foreign investors to buy up to 49% of outstanding shares of listed financial companies, (iii) the Minister of Finance decree of September 1997 allowed foreign investors to buy up to 100% of listed non-financial companies, and (iv) the Minister of Finance decree of January 28, 1998 allowed foreign investors to buy up to 100% of listed financial companies. In this sequence of market liberalization,

the September 1997 announcement represented the most important event that allows us to investigate the effect of significant foreign investor presence on the domestic stock price behavior.

Data, Methodology, and Major Findings

The Data

The daily price and volume data used in this study covered the period from May 1995 to August 1998. We focused on the regular board that was the most liquid market in Indonesia, accounting for about 83% [89%] of JSX's trading value [volume] during our study period.

Stock Price Reactions to Two Major Events

We used a modified market model to measure the price impact of foreign investor presence surrounding the event day of September 4, 1997 when foreign ownership restrictions were lifted. This modified market model was an improved variation of the standard event-study analysis for our tests because it accommodated the possibility of an exogenous shift in market model parameters, while providing us the same pattern and timing of abnormal returns as those that would have been obtained from a conventional event-study approach that did not allow an exogenous shift in the parameters (Binder 1985). Recent applications of similar types of modified market models can be found in Amihud, Mendelson, and Lauterbach (1997) and Berkman and Eleswarapu (1998).

$$R_{i,t} = \alpha_i + \beta_{1i}R_{m,t} + \beta_{2i}R_{m,t+1} + \beta_{3i}R_{w,t} + \beta_{4i}D(1)_t + \beta_{5i}D(2)_t + e_{i,t} \quad (1)$$

where,

$R_{i,t}$ = daily return on stock i on day t ;

$R_{m,t}$ = daily return on the value-weighted JSX market index on day t ;

$R_{w,t}$ = daily return on the US market portfolio (S&P 500 Index) return on day t ;

$D(1)$ = indicator variable assigned with certain values (depending on the time-horizon prior to the event day) and zero otherwise;

$D(2)$ = indicator variable assigned with certain values (depending on the time-horizon subsequent to the event day) and zero otherwise;
and

$e_{i,t}$ = random error terms.

Regressions were run for the period from $t = -150$ to $t = +150$. To address the problem of infrequent trading, we added lead and lag market return variables following Dimson (1979). Our preliminary investigation indicated that one period lead for market return provided the most consistent results as reported by Berkman and Eleswarapu (1998); hence, we used only one lead market return variable in both model specifications. Daily returns on the US market index were introduced to capture the worldwide impact on the Indonesian stock price behavior even though the S&P 500 Index was admittedly a crude proxy for the world market portfolio. Note that β_4 and β_5 measured pre- and post-event day cumulative abnormal returns over the event time-horizon. Five sets of event time-horizon were investigated to confirm the robustness of the results: (i) $t = -1$ to $t = +1$; (ii) $t = -3$ to $t = +3$; (iii) $t = -5$ to $t = +5$; (iv) $t = -10$ to $t = +10$; and (v) $t = -20$ to $t = +20$. Assigned values to indicator variables, $D(1)$ and $D(2)$, differed depending on the time-horizon selected. For example, we assigned a value of $1/4$ to $D(1)$ for event days from $t = -3$ to $t = 0$ and zero otherwise; and assigned a value of $1/3$ to $D(2)$ for event days from $t = +1$ to $t = +3$ and zero otherwise.

Table 2 summarized five sets of regression results. The most remarkable yet expected finding was that the impact of the Asian financial crisis was so intense that it seemed to overwhelm the wealth effects of market liberalization. The only exceptions were the shortest time-horizons from $t = -1$ to $t = +1$ and from $t = -3$ to $t = +3$. During the post-event period, one [three]-day abnormal returns were 0.043% and 0.049%, respectively, and significant in the two regressions with short time-horizons, while regressions for longer time-horizons exhibited negative abnormal returns after the announcement of market liberalization, indicating the dominance of the crisis-related market sentiment over the price behavior. It was possible that an information leakage could be associated with the government announcement. This was especially the case for the announcement of regulation because of the prolonged process of enactment (Binder 1985). In addition, since the government tended to introduce other reform measures simultaneously, Henry (2000a) pointed out the need to control for other liberalizations around the event date. In the case of information leakage, if we could identify the start of the leakage, then we might be able to isolate such effect. In view of possible confounding effects, we introduced 21-day (from $t = -10$ to $t = +10$) and 41-day (from $t = -20$ to $t = +20$) windows to measure abnormal returns. Interestingly but not surprisingly due to the Asian financial crisis, negative welfare effects were exhibited for these event windows of longer period. Contrasting the results of welfare effects observed for the event windows of short and long periods suggest that both the announcement of market liberalization and the Asian crisis simultaneously affected the results. Since we could not confirm whether the negative reaction of stock prices observed for longer event windows was attributed to the new

Table 2. Cumulative Abnormal Returns Around Event Day

	(1)	(2)	(3)	(4)	(5)
Intercept	-0.003 (-4.73)***	-0.003 (-4.36)***	-0.002 (-3.83)***	-0.020 (-3.34)***	-0.002 (-2.38)**
$R_{m,t}$	0.008 (33.79)***	0.008 (33.53)***	0.008 (36.19)***	0.008 (36.24)***	0.008 (35.91)***
$R_{m,t+1}$	0.0010 (4.23)***	0.001 (5.05)***	0.001 (4.86)***	0.001 (4.50)***	0.001 (4.30)***
$R_{w,t}$	-0.0010 (-1.77)*	-0.001 (-1.87)*	-0.001 (-1.82)*	-0.001 (-1.69)*	-0.001 (-1.50)
D(1)	0.015 (1.02)	-0.054 (-2.22)**	-0.091 (-3.27)***	-0.100 (-2.76)***	-0.227 (-4.50)***
D(2)	0.043 (4.01)***	0.049 (2.70)***	-0.002 (-0.08)	-0.061 (-1.85)*	-0.096 (-1.97)**
Number of Observations	12,586	12,586	12,586	12,586	12,586
Adjusted R-Square	0.10	0.10	0.10	0.10	0.10

This table presents five sets of regression results using the model: $R_{i,t} = \alpha_i + \beta_{1i}R_{m,t} + \beta_{2i}R_{m,t+1} + \beta_{3i}R_{w,t} + \beta_{4i}D(1)_t + \beta_{5i}D(2)_t + e_{i,t}$ where, $R_{i,t}$ = daily return on stock i on day t ; $R_{m,t}$ = daily return on the value-weighted JSX market index on day t ; $R_{w,t}$ = daily return on the US market portfolio (S&P 500 Index) return on day t ; D(1) = indicator variable assigned with certain values (depending on the time-horizon prior to the event day) and zero otherwise; D(2) = indicator variable assigned with certain values (depending on the time-horizon subsequent to the event day) and zero otherwise; and $e_{i,t}$ = random error terms. Regressions are run for the period from $t = -150$ to $t = +150$. Five sets of event time-horizon are investigated to confirm the robustness of the results: (1) $t = -1$ to $t = +1$; (2) $t = -3$ to $t = +3$; (3) $t = -5$ to $t = +5$; (4) $t = -10$ to $t = +10$; and (5) $t = -20$ to $t = +20$. Assigned values to indicator variables, D(1) and D(2), differ depending on the time-horizon selected. For example, we assign a value of 1/4 to D(1) for event days from $t = -3$ to $t = 0$ and zero otherwise; and assign a value of 1/3 to D(2) for event days from $t = +1$ to $t = +3$ and zero otherwise. t -values are in parenthesis. ***, **, * mean statistical significance at 1%, 5%, 10% level respectively.

deregulation over foreign stock ownership or it was just manifestation of the adverse impact of the crisis itself, it became important to examine the sources of cumulative abnormal returns. The results were presented in the next section.

To sum up, the findings based on five regressions suggest that the foreign investor presence was associated with positive abnormal returns, while this positive wealth effects existed only for a short window of 1 to 3 days. This event highlighted the importance of the economic environment of market liberalization. This observation had one important policy implication. Countries experiencing financial crises should explore other reform measures rather than focusing on market liberalization per se. For example, Johnson et al. (2000) reported a strong association between corporate governance in emerging markets and the severity of the Asian financial crisis. Hence, the improvement in corporate governance might help combat the severity of the financial crisis more effectively than the lifting of foreign ownership restrictions.

The Determinants of Abnormal Returns in the Event Period

Since our focus was on the potential benefits and costs associated with foreign investor presence, we identified several variables that proxied for the benefits and costs of foreign investors. Specifically, we focused on efficiency and liquidity measures as a potential explanation for the abnormal returns.

Liquidity

We introduced three variables to measure liquidity in the pre- and post-event periods, respectively: (i) market-adjusted trading volume; (ii) market-adjusted trading value; and (iii) market depth. The pre-event period was from $t = -150$ to $t = -31$ and the post-event period was from $t = +31$ to $t = +150$ for each stock.

Market-Adjusted Trading Volume [Value]

To control for the market-wide impact, we calculated market-adjusted trading volume (value), which was trading volume (value) recorded for each stock deflated by market trading volume (value). This adjustment was particularly important for the event under study, since this event occurred during the crisis period. Market-adjusted volume was denoted by TRDVOL.

Market Depth

Market depth was calculated, following Amihud et al. (1997) and Chang et al. (1997):

$$\text{MKTDEP}_{i,t} = \frac{\sum \text{Volume}_{i,t}}{\sum |R_{i,t}|} \quad (2)$$

where

$\text{MKTDEP}_{i,t}$ = market depth of stock i on day t ;
 Volume = daily trading volume; and
 $|R|$ = absolute value of daily return.

Market depth measured additional volume per one unit of price change. The greater the market depth, the higher the liquidity. This measure was consistent with Kyle (1985) who had defined market depth as the trading volume per unit of price change.

Efficiency Variables

To measure trading efficiency, we calculated the variance of daily returns (VARRET) and the variance of residual returns (RESVAR) estimated from the single-factor market model. We also used variances of residuals from the modified market model introduced earlier but the results remain unchanged. These variances were used as proxies for the level of trading noisiness in the pre- and post-event periods.

Foreign Ownership Restriction Variables

Of various variables suggested by the extant literature, we introduced two variables, following Bailey and Jagtiani (1994), to explain the behavior of the premium of the prices on the foreign board over the prices on the regular board. We included them in this study as control variables.

Size

This variable was used to proxy for information availability (Merton 1987). Every year we calculated size as the closing price at the end of the year times the number of shares outstanding at the end of the year. Then we averaged the numbers to obtain the size variable. It is well documented that foreign investors preferred large and well-known companies (Kang and Stulz 1997). An asset with a larger base of informed investors sold at higher price than that with a smaller base (Merton 1987). We would expect to have a positive association between size and abnormal returns for both events.

Trading Volume on Foreign Board

Bailey and Jagtiani (1994) suggested that trading volume on the foreign board could capture the degree of foreign investors' familiarity with domestic stocks. Prior to September 4, 1997 when the foreign ownership restriction of 49% was imposed, foreign investors had to buy shares from other foreign investors once the limits became binding. A foreign board was then created to facilitate trading of foreign owned shares among foreign investors. We predicted a positive association between this variable and the abnormal returns during the event period.

Relative Supply

Another interesting variable introduced by Bailey and Jagtiani (1994) was the relative supply measure, which was defined as:

$$RS \text{ (Relative Supply)}_i = \frac{Vol_{i, \text{Foreign}}}{Vol_{\text{Foreign}}} - \frac{Vol_i}{TotVol} \quad (3)$$

where subscript i referred to individual stock, Vol_{Foreign} referred to trading volume on foreign board and $TotVol$ denotes total volume of all stocks. This variable measured the degree of tightness of foreign demand relative to the supply of stocks. A low value implies a high degree of tightness in the demand for the stock relative to its supply. Investors are willing to pay a premium for a stock with this characteristic. We predicted a negative relation between relative supply and the abnormal returns, i.e., the tighter the demand for a stock, the larger the premium investors were willing to pay.

Descriptive Statistics of Liquidity and Efficiency Variables

Table 3 summarized descriptive statistics in the pre- and post-event periods. The decline in liquidity measures and the increase in trading noise from the pre- to post-event period were reported. For example, market-adjusted trading volume [value] declined from 7.63 [7.14] in the pre-event period to 5.92 [5.96] in the post-event period. This was not unexpected considering the financial crisis adversely affecting the market performance. Market depth also declined from 54,784 in the pre-event period to 39,964 in the post-event period, recording over a 25% rate of decline. A dramatic deterioration was indicated in the market efficiency variable as evidenced by the increase trading noise caused by the market turmoil during the Asian financial crisis.

Cross-sectional Regression: The Sources of Wealth Effects

To investigate the joint effect of efficiency and liquidity variables on the abnormal returns, we performed a cross-sectional regression. The dependent variable was measured by β_3 of the market model: $R_{i,t} = \alpha_i + \beta_{1i}R_{m,t} + \beta_{2i}R_{m,t+1} + \beta_{3i}D_t + e_{i,t}$ where the indicator variable D was assigned a value of 1/4 for day $t = -1, 0, +1$, and $+2$, and zero otherwise. For liquidity variables (TRDVOL and MKTDEP) and daily returns (RET), their changes were defined as the differences between the pre- and the post-event period observations. For efficiency variables (RESVAR and VARRET), the changes were defined as the differences between the post- and the pre-event period observations. Under this specification, we expected to have negative coefficients for both efficiency and liquidity variables. Table 4 presents the results of the regression analysis.

Table 3. Descriptive Statistics of Liquidity and Efficiency Variables Around Event Day

	Mean	Minimum	Maximum	Standard Deviation	Num of Obs	t-value
Trading Volume (shares)						
Post	2,124,652	8	24,625,592	4,170,175	173	(6.702)***
Pre	1,462,964	13	12,040,720	2,705,255	171	(7.072)***
Difference	693,462	-19,484	11,184,271	4,590,266	167	(1.952)**
Trading Value (Rp)						
Post	2,254,533	6,512	64,553,420	6,507,212	173	(4.557)***
Pre	2,529,035	15,673	33,427,925	4,379,545	171	(7.551)***
Difference	-258,061	-32,764,527	49,498,224	6,953,435	167	(-0.479)
Market-Adjusted Trading Volume						
Post	5.92	0.01	84.35	13.54	162	(5.569)***
Pre	7.63	0.10	82.44	12.84	171	(7.769)***
Difference	-2.18	-80.57	69.99	16.68	156	(-1.636)*
Market-Adjusted Trading Value						
Post	5.96	0.01	145.69	17.91	162	(4.234)***
Pre	7.14	0.06	85.56	11.49	171	(8.127)***
Difference	-1.59	-82.51	140.25	18.52	156	(-1.071)
Market Depth (1,000)						
Post	39,964	125	634,162	85,749	173	(6.130)***
Pre	54,784	262	518,409	82,785	170	(8.628)***
Difference	-14,603	-488,718	513,274	93,164	166	(-2.019)**
Daily Residual Returns						
Post	-1.47E-15	-1.3359E-13	1.40E-13	3.64E-14	171	(-0.528)
Pre	-7.141E-16	-1.1828E-13	6.02E-14	2.41E-14	177	(-0.394)
Difference	-5.164E-16	-1.3578E-13	2.10E-13	4.46E-14	171	(-0.151)
Absolute Value of Daily Residual Returns						
Post	2.52E-14	0.00E+00	1.40E-13	2.63E-14	171	(12.535)***
Pre	1.73E-14	0.00E+00	1.18E-13	1.68E-14	177	(13.685)***
Difference	8.05E-15	-5.55E-14	1.33E-13	2.92E-14	171	(3.603)***
Variance of Daily Residual Returns						
Post	0.0084	0.0003	0.0387	0.0060	171	(18.295)***
Pre	0.0027	0.0002	0.0190	0.0024	177	(15.237)***
Difference	0.0058	-0.0114	0.0341	0.0059	171	(12.832)***
Variance of Daily Returns						
Post	0.0097	0.0003	0.0423	0.0065	173	(19.707)***
Pre	0.0031	0.0002	0.0191	0.0024	177	(17.007)***
Difference	0.0067	-0.0114	0.0369	0.0064	173	(13.629)***
Mean of Daily Returns						
Post	-0.0043	-0.0338	0.0220	0.0068	173	(-8.279)***
Pre	-0.0032	-0.0161	0.0201	0.0047	177	(-9.194)***
Difference	-0.0009	-0.0257	0.0309	0.0078	173	(-1.432)

Table 3 presents descriptive statistics of the liquidity and efficiency variables for the sample stocks before and after Event Two. Market-adjusted trading volume (value) is trading volume (value) recorded for each stock deflated by market trading volume (value). Market depth is defined as $MktDep_{i,t} = \sum Volume_{i,t} / \sum |R_{i,t}|$ where $Volume$ = daily trading volume; and $|R|$ = absolute value of daily return. Daily returns are obtained from the PACAP-Indonesia databases. Residual returns are measured from the one-factor market model. The pre-event period is from $t = -150$ to $t = -31$ and the post-event period is from $t = +31$ to $t = +150$. ***, **, and * mean significant at 1%, 5%, and 10%.

Table 4. The Cross-Sectional Determinants of Abnormal Returns Around The Announcement of Liberalization

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.06 (4.812)***	0.08 (-4.246)***	0.05 (2.982)***	0.07 (4.240)***	0.07 (4.192)***	0.08 (2.001)*	0.09 (1.084)	0.11 (2.232)
Δ TRDVOL	5.19E-04 (0.426)	-	-	-2.78E-04 (-0.228)	-2.78E-04 (-0.227)	1.04E-03 (0.301)	-	-1.50E-03 (-0.444)
Δ MKTDEP	9.01E-11 (0.452)	-	-	-7.15E-11 (-0.369)	7.18E-11 (0.368)	-1.90E-10 (-0.252)	-	-3.33E-10 (-0.388)
Δ RESVAR	-	4.87E-03 (4.221)***	-1.26E-04 (-4.221)***	-1.78E-04 (-0.808)	-1.75E-04 (-0.748)	-	-2.26E-04 (-0.449)	-4.42E-04 (-0.888)
Δ VARRET	-	-44.64 (-4.221)**	-	-	-	-	-	-
PRX- Δ VARRET	-	-	-44.642 (-4.221)***	-41.069 (-3.115)***	-41.06 (-3.104)***	-	-52.81 (-1.529)	-50.02 (-1.609)
Δ RET	-	-	-	-	-0.07 (-0.037)	-	-	-
SIZE	-	-	-	-	-	3.45E-09 (0.469)	4.23E-09 (0.534)	1.61E-09 (0.221)
VOLFBOARD	-	-	-	-	-	-0.689 (-0.879)	-8.13E-01 (-0.941)	-9.84E-01 (-1.261)
RSUPPLY	-	-	-	-	-	0.35 (0.276)	0.81 (0.924)	1.11 (0.816)
Number of Obs	154	170	170	154	154	34	35	34
Adjusted R-Sqr	-0.06	0.08	0.09	0.05	0.04	-0.15	-0.03	-0.06

The table presents regression coefficients of the cross-sectional determinants of the abnormal return during the announcement of financial liberalization on September 4, 1997. Abnormal return is estimated from coefficient regression of β_3 of the following model: $R_{i,t} = \alpha_i + \beta_{1i}R_{m,t} + \beta_{2i}R_{m,t+1} + \beta_{3i}D_t + e_{i,t}$. The indicator variable D is assigned a value of 1/4 for day $t = -1, 0, +1$, and $+2$, and zero otherwise. The model is estimated from day -150 to day $+150$. For liquidity variables (TRDVOL and MKTDEP) and actual return (RET), their changes are the differences between the observations in the pre- and post-event periods. For efficiency variables (RESVAR and VARRET), the changes are the differences between the observations in the post- and pre-event periods. Size is the closing price at the end of year times outstanding shares at the end of year. A proxy for the changes in the variance of daily return (PRX- Δ VARRET;) is obtained from the orthogonalization given high correlations between two efficiency variables (ARESVAR and Δ VARRET). Details of variable definitions are explained in the text. t-values are in parenthesis. ***, **, and * mean significant at 1%, 5%, and 10% level.

In regression (1) of Table 4, we used the changes in liquidity to explain the abnormal returns. Estimated coefficients for liquidity were insignificant. In regression (2), we used the changes in efficiency. The efficiency variables had significant coefficients, but with inconsistent signs between ΔRESVAR_i and ΔVARRET_i . Given a high correlation between the two variables, we orthogonalized them by performing regression of ΔVARRET_i on ΔRESVAR_i to obtain a proxy for the changes in the variance of daily returns ($\text{PRX-}\Delta\text{VARRET}_i$).

In regression (3), significant coefficients with expected signs (negative coefficients) were observed for efficiency variables. The market seemed to negatively price noise increase in the post-event period. Regression (4) of table 4 included both the liquidity and the efficiency variables. We found that $\text{PRX-}\Delta\text{VARRET}_i$ had a significant negative coefficient. Regression (5) included return differences (ΔRET_i) along with the changes in the liquidity and the efficiency. We found a significant negative coefficient for $\text{PRX-}\Delta\text{VARRET}_i$. Regression (6), (7), and (8) included variables found to be the determinants of the premium of prices on the foreign board over prices on the regular board. The power of $\text{PRX-}\Delta\text{VARRET}_i$ disappeared. The smaller sample size might explain the weak results found in regression (6), (7), and (8). Size had an expected sign, while trading volume on the foreign board and the degree of demand tightness showed unexpected signs. None of these coefficients was significant at the conventional level. We have also used positive abnormal returns for the time-horizon from $t = -1$ to $t = +1$ as the dependent variable in this cross-sectional regressions. The results are similar to those summarized in Table 4.

Conclusion

This study investigated the effect of market liberalization on domestic asset prices and the sources of asset price revaluation resulting from liberalization. We found that the announcement of liberalization was associated with modest positive abnormal returns only for the 3-day window, whereas longer-term windows failed to provide any significant abnormal returns. Further examination of the sources of abnormal returns indicated that the efficiency variables explained the abnormal returns better than did the liquidity variables. Specifically, the market seemed to negatively price noise increase in the post-event period. Liberalization in the crisis period could not minimize the noise associated with the crisis period as shown by increases of noise level in the post-event period. The setting of liberalization (boom, normal, and crisis periods), therefore, had varying effects on the domestic stock price behavior.

References

- Amihud, Y./Mendelson, H./Lauterbach, B., Market Microstructure and Securities Values: Evidence from the Tel Aviv Stock Exchange, *Journal of Financial Economics*, 45, 1997, pp. 365–390.
- Bailey, W./Jagtiani, J., Foreign Ownership Restrictions and Stock Price in the Thai Capital Market, *Journal of Financial Economics*, 42, 1994, pp. 57–87.
- Berkman, H./Eleswarapu, V. R., Short-Term Traders and Liquidity: A Test Using Bombay Stock Exchange Data, *Journal of Financial Economics*, 47, 1998, pp. 339–355.
- Binder, J. J., Measuring the Effects of Regulation with Stock Price Data, *The Rand Journal of Economics*, 16, 2, 1985, pp. 167–174.
- Chang, R. C./Huang, N. K./Shu, S. Z./Rhee, S. G., The Effects of Trading Methods on Volatility and Liquidity: Evidence from the Taiwan Stock Exchange, *Journal of Business Finance & Accounting*, 26, 1999, pp. 137–170.
- Dimson, E., Risk Measurement When Shares Are Subject to Infrequent Trading, *Journal of Financial Economics*, 7, 1979, pp. 197–226.
- Domowitz, I./Glen, J./Madhavan, A., Market Segmentation and Stock Prices: Evidence from An Emerging Market, *Journal of Finance*, 52, 1997, pp. 1059–1085.
- Henry, P. B., Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices, *Journal of Finance*, 55, 2000a, pp. 529–564.
- Henry, P. B., Do Stock Market Liberalizations Cause Investment Booms? *Journal of Financial Economics*, 58, 2000b, pp. 301–334.
- Johnson, S./Boone, P./Breach, A./Friedman, E., Corporate Governance in the Asian Financial Crisis, *Journal of Financial Economics*, 58, 2000, pp. 141–186.
- Kang, J./Stulz, R. M., Why Is There a Home Bias? An Analysis of Foreign Portfolio Equity Ownership in Japan, *Journal of Financial Economics*, 46, 1997, pp. 3–28.
- Kim, E. H./Singal, V., Stock Market Openings: Experience of Emerging Economies, *Journal of Business*, 73, 2000, pp. 25–66.
- Kyle, A. S., Continuous auctions and insider trading, *Econometrica*, 53, 1985, pp. 1315–1335.
- Lam, S., Control Versus Firm Value: The Impact of Restrictions on Foreign Share Ownership, *Financial Management*, 26, 1997, pp. 48–61.
- Merton, R. C., A Simple Model of Capital Market Equilibrium with Incomplete Information, *Journal of Finance*, 42, 1987, pp. 483–510.
- Stulz, R. M./Wasserfallen, W., Foreign Equity Investment Restrictions, Capital Flight, and Shareholder Wealth Maximization: Theory and Evidence, *Review of Financial Studies*, 8, 1995, pp. 1019–1057.