

THE EFFECTS OF DELISTING ON MARKET LIQUIDITY: AN ANALYSIS OF THE ASEAN – 5 STOCK MARKETS

¹Mohd Yushairi Mat Yusoff *, Mohamad Syafiqi Hashim, Mahfuzah Salim, Nur Hafizah Ismail

ABSTRACT-This paper examines the delisting effects on market liquidity within the ASEAN – 5 countries. By using traditional panel estimation for the 1990 – 2014 period, the results of the Random Effects Model (*REM*) suggest that delisted companies to have a negative effect on market liquidity. Also, the results signify that economic growth or a country's income is statistically significant in determining the changes in market liquidity across the ASEAN – 5 countries. Therefore, the policy makers are recommended to constantly review the severity of delisting effects on the domestic market liquidity and implement necessary measures that can bolster the investors' confidence towards ascertaining the sustainable levels of market liquidity within the ASEAN – 5 countries over the short and long terms.

Keywords: Delisting; stock market; liquidity; ASEAN-5

1.0 INTRODUCTION

Generally, the listing of stocks is expected to have a constructive effect on the liquidity and marketability of the stock market. An increase in the range of stock that is available for the investors in a stock market may help them to potentially reduce the transaction costs. In contrast, the delisting of stocks implies that a permanent removal of a particular listed firm's or company's stock from a stock market (Muyeche, 2016). While some studies highlight that new listing can potentially increase the value of a firm, the delisting activities will adversely decrease the firm's value (Sanger & Peterson, 1990). As the news of delisted stocks to spread among the investors, it is hypothesized that the number of trading activities for those stocks will be reduced by investors that is termed as liquidity (Amihud & Mendelson, 2008). Additionally, a downward sloping of demand curve is characterized by the liquidity, exchange certification and management signalling that are influenced by the delisting activities as it affects the value of a firm.

There are two types of delisting phenomenon; voluntary and involuntary delisting (Djama, Martinez & Serve, 2012). Voluntary delisting, or the so-called Going Private Transaction (GPT), is initiative taken by a firm that focuses on the ownership rather than seeking for publicly traded equity. Meanwhile, involuntary delisting means that a firm may experience a financial distress, merge or acquired by another firm. In other words, it is a pure technical consequence of merger and acquisition or the changes in the shareholders' base. Also, the activities of involuntary delisting signal unfavourable outcomes to the shareholders. Noticeably, the bid – ask spread will be tripled and volatility can be doubled in the over the counter (OTC) market due to the involuntary delisting. Hence, Park *et al.* (2014) enlightened that the primary effect of delisting on the stock price is the reduction in liquidity level and boost the liquidity risk. For shareholders, the

¹ School of Economic, Finance and Banking, Universiti Utara Malaysia, 06010 Sintok, Kedah, Malaysia
Corresponding Author: *Email: mohdyushairi@uum.edu.my

involuntary delisting typically arises by default, suspension of banking transaction, refusal on audit opinion and complete write down of the equity. When this arises, more negative consequences will emerge associated with the delisting activities since no trading is expected to take place during the announcement day of delisted stocks.

The decision either to stay public or GPT is based on the growth opportunities of a firm (Boot, Gopalan & Thakur, 2008). Pertaining to the firm's value, the belief of a manager may diverge from the shareholders' belief. As a result, this may cause a disagreement on the optimal action to be finalized. Thus, the act of trading or holding a transaction will subsequently alter the liquidity position of a stock market. Besides that, any information on capital market will contribute to triggering a collective action among the shareholders particularly to sell their stocks which subsequently render to the possibility of price depreciation (Mat Yusoff & Hassan, 2018). When considering the delisting effects, Sanger and Peterson (1990) and Macey, O'Hara and Pompilio (2008) suggested the applicability of liquidity hypothesis proves the case as negative effects of delisting such as a reduction in liquidity level and a rise in liquidity risk are expected to take place since there is no trading of delisted stocks. More specifically, the bid – ask spread can be tripled and volatility to be doubled in the OTC market in the post-involuntary delisting period.

Figure 1 depicts varying numbers of companies delisted from the stock markets of five ASEAN countries; the Indonesia Stock Exchange (IDX), Bursa Malaysia, the Singapore Exchange (SGX), the Philippines Stock Exchange (PSE) and the Stock Exchange of Thailand (SET) over the 1990 – 2014 period. Starting from 1990s, numerous companies with modest profiles gradually went public in the ASEAN – 5 stock markets owing to higher rates of return on investment projects.

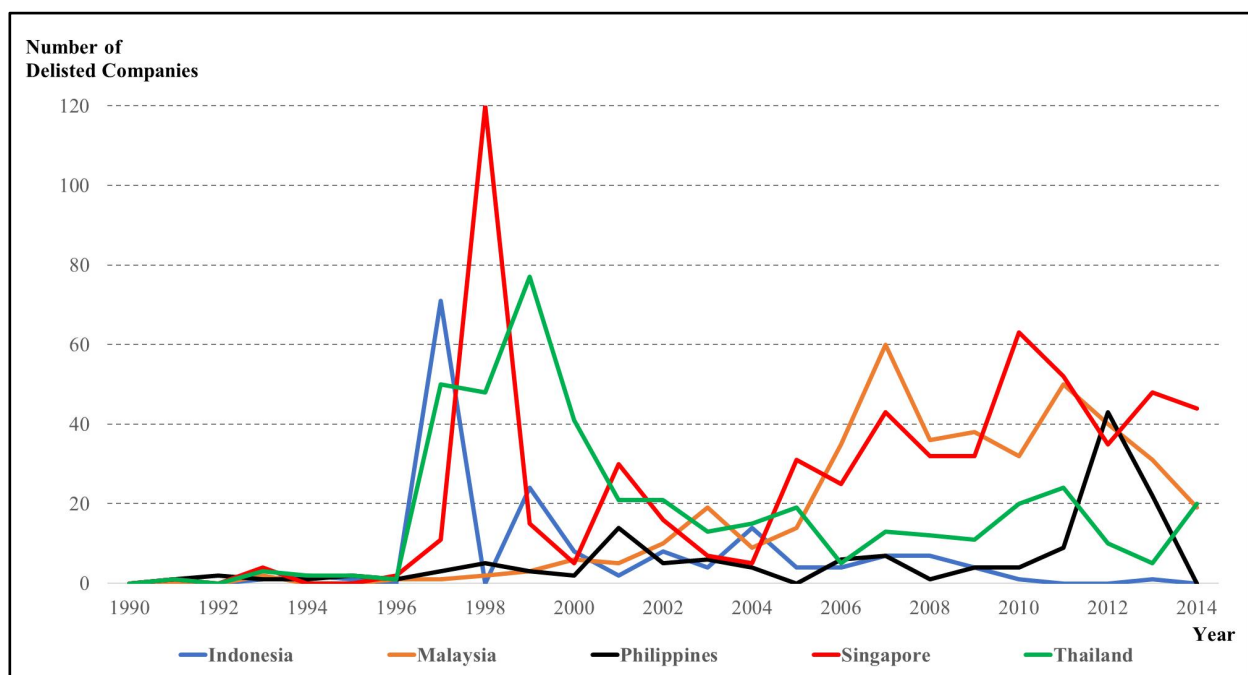


Figure 1: Companies Delisted from the ASEAN – 5 Stock Markets between 1990 and 2014.

Due to a precipitous decline in the performance of stock markets regionally, the wave of going public was significantly replaced by a delisting surge thereafter. For instance, the decline in stock prices especially during the Asian Financial Crisis (AFC) between 1997 and 1998 induced many companies to opt for going private especially in the cases of Singapore, Indonesia and Thailand. In specific, 32 companies were delisted from the IDX in Indonesia, thus representing a-12.6 percent share from 253 companies in total previously listed in 1996 in the IDX (Warganegara & Vionita, 2010). Meanwhile, the number of companies delisted from the SGX in Singapore reached to a maximum level and constituted as the highest ranking compared to other ASEAN counterparts. One possible reason is that the closure and downsizing of companies contributed to lowering demands for industrial, commercial and residential sectors. Also, the SGX has regarded

private-listed companies as their key theme over the past few years since major shareholders, industry peers and institutional investors acquired the possession of other companies due to the low multiples or undervalued stocks. As a result, considerable numbers of high-profile companies have been lost and some foreign (e.g. Chinese-based) companies decided to delist from the SGX. The SGX delisting of these companies such as China New Town Development has contributed to savings in compliance costs and management resources (Lee, 2017). Instead, they favourably opted to list in the Hong Kong Stock Exchange (HKEX) as the HKEX helps to build their brand and product recognitions in proximity to the mainland China markets. Inevitably, these circumstances affected the stock prices and adversely caused negative expectations among the investors within the stock market of Singapore.

This paper is organized as follows. Section 2 reviews related literature on the delisting effects on market liquidity. Section 3 describes the used methodology and Section 4 discusses associated results. Finally, the last section wrap-ups with the policy implication and conclusion.

2.0 LITERATURE REVIEW

Globally, there is a considerable number of studies about the delisting effects on market liquidity. For instance, Block (2004) discovered that the main reason among smaller firms for going private is due to the cost of remaining in the public. This is in line with Martinez and Serve (2011), who employed the logistic regression and univariate analysis in their works, argued that the likelihood of a firm to go private when the listing benefits decrease as stemmed from weak liquidity and/or weak analyst coverage. Also, delisting is likely to weaken market liquidity as mature firms, which have unbiased capital structures towards debt albeit having a weak performance, may choose to delist their stocks since they are financially incapable to pay for the listing status (Martinez & Serve, 2011). Similarly, Pour and Lasfer (2013), who studied on the London Alternative Investment Market, concluded that the voluntary delisting is motivated by a firm's inability to raise the equity capital, low growth opportunities, low profitability and the generation of negative returns for going public. Instead, they argued that the possibility of voluntary delisting if delisted firms strategically decide to re-list in a superior market since they manage to fulfil the listing requirements of such market. Hence, this is parallel with Fungáčová (2006), who established possible reasons in terms of pre-privatisation, privatisation and post-privatisation to explain the massive delisting in the Czech Republic, claimed that the delisting issues are generally pronounced within the developed and developing or emerging economies.

Goetzmann and Garry (1986) examined the characteristics of seven stock prices that were delisted from the S&P 500 Index. Among others, they revealed that abnormal returns yielded by some firms were relatively high on the day of delisted stocks whereas other firms exhibited a steady downward trend in the post-delisted stocks period that subsequently lowered to a permanent value. Thus, they claimed that the decline in value is influenced by the decreasing quality of a stock and availability of related information that may render to the investors' misjudgement. Also, delisting will decrease the firm's value through sweeping away the listing benefits particularly on the marketability and liquidity aspects (Goetzmann & Garry, 1986). In a related vein, Sanger and Peterson (1990), who investigated a sample of 520 firms delisted either from the New York Stock Exchange (NYSE) or American Stock Exchange (ASE) over the 1962 – 1985 period, supported the liquidity hypothesis by disclosing that the tendencies of firms with greater liquidity reductions to have greater deteriorations in firms' value especially on the announcement day of delisting within the NYSE or ASE market.

To date, there are limited studies that focus on asymmetric information i.e. a firm's ability to attract an adequate level of investors' interest and recognition (analysts' coverage). For example, Park, Park and Lee (2013) used a sample of delisted companies in the Korean market whereby a massive loss of 70 to 80 percent have been reported confirming that the evidence of involuntary delisting. They concluded that individual investors are informationally disadvantaged in the emerging markets due to the low market transparency. For the large shareholders, they will get incentives to transfer the resources from a firm either in a direct manner or indirectly to private benefits, thus undermining those of small investors (Fama & Jensen, 1983; Stulz, 1988; Johnson *et al*, 2000). In this regard, the large shareholders may likely to get the incentives due to the firm's financial distress that is spiraled down to the point of involuntary delisting. This is happened among the large investors who are in the attempt to avoid incurring losses in the foreseeable future. Besides that, studies

such as Grinblatt and Keloharju (2000), Barber and Odean (2008) and Bae, Min and Jung (2011) documented the worst performances of individual investors relative to institutional investors based on the irrational investment decision-makings during the delisting process. Meanwhile, other studies such as Ali, Klasa and Li (2008) and Campbell, Ramadorai and Schwartz (2009) provided the instances of asymmetric information for the heterogeneous group of investors that are associated with the trading behaviors upon the disclosure of information by related firms. Also, they found that the institutional investors are poised to reap respective profits prior to the trading information particularly tied to the delisting decision and earning management.

Apart from that, there exist other determinants such as total savings, total credit to private sector, economic growth and interest rate that may have significant effects on the liquidity of a stock market in a country. For example, a savings mobilization can finance and generate higher returns from the corporate projects, thereby boosting the financial performance of listed companies in the stock market and subsequently attracting more investors to buy stocks of related companies. Another example is on interest rate in which a reduction in interest rate would result in the improvement of a country's stock market liquidity due to increased willingness of investors to borrow funds from the financial institutions for investment purposes (Stracca, 2005).

Still, the phenomenon of going private is seen as less explored to some extent. Thus, this paper aims to examine the effects of delisting on market liquidity in developing economies such as the ASEAN-5 countries. Therefore, this paper strategically contributes to bridging the literature gap particularly on the progressive developments of the ASEAN – 5 stock markets and related aspects.

3.0 METHODOLOGY

3.1 Model Specification

LIQ	=	Volume of traded stocks in a market (in million units)
DEL	=	Delisted companies from a market (in number of companies)
SAV	=	Total savings (in million USD)
CRT	=	Credit to private sector by bank (in million USD)
GDP	=	A country's economic growth or income (in million USD)
INT	=	Interest rate of a country (in the percentage value)
β_j	=	The value of coefficient value each variable, ($i = 1, 2, \dots, 5$)
ε	=	A random disturbance or an error term.

3.2 Justification of Variables

3.2.1 Market Liquidity

Market liquidity (*LIQ*) is termed as a measure on the easiness of trading the assets without substantially affects their associated prices (Hegde & Paliwal, 2011; Sezgin & Atakan, 2015). Also, it represents the ability to mobilize the financial funds from one to other investments at low cost and less impact on the stock prices. Studies such as Holmstrom and Tirole (1993), Fernando (2003), and Yang and Hamori (2014) suggested that it determines the incentives to the investors in acquiring relevant information on the firms and corporate governance, thus enabling them to formulate their trading strategies. For this study, it is measured by the volume of traded stocks in million units. The similar measurement was also applied by past studies such as Demirgui-kunt and Levine (1996), Naceur, Ben Ghazouani and Omran (2005), Hegde and Paliwal (2011), Chipaumire and Ngirande (2014) and Sezgin and Atakan (2015). Hence, it is regarded as the dependent variable of a regression model.

3.2.2 Delisted Companies

The variable of delisted companies (*DEL*) is characterized by the removal of listed companies and/or stocks, i.e. either on a voluntary basis or involuntarily, from a country's stock market due to the failure of those companies to meet the currently implemented requirements. Hence, it is measured in the number of frequency (e.g. involved companies). Based on the literature observations, the delisting of listed companies on a gradual basis can weaken the market liquidity besides posing other negative consequences on related companies and the stock market itself within a country (Sanger & Peterson, 1990; Martinez & Serve, 2011); Pour & Lasfer, 2013). For this study, *DEL* is hypothesized to have a negative relationship with *LIQ* in the regression model.

3.2.3 Total Savings

Total savings (*SAV*) is defined as the portion of unspent income that is deposited into the financial institution. In this study, it is calculated as the gross national income minus total consumption plus net transfer in the United States' Dollar (USD) monetary term. A stock market is well-suited to be the mechanism to transform the savings into the investment in the real sectors (Dalsenius, 2007; El-Wassal, 2013). Theoretically, a stock market can accelerate the economic development or economic growth of a country through a savings mobilization. If more savings are channeled to finance the corporate projects, higher return can be yielded as the funds are utilized in financing the higher return projects. Thus, it can boost the financial performance of the firms especially for those companies that are listed in the stock market. Consequently, it may attract more investors to buy the stocks of associated companies. Also, it is suggested that *SAV* signifies the total capital flows into the stock market in which the larger *SAV* induces the higher capital flow into the stock market (Garcia & Liu, 1999; Naceur *et al.*, 2005). Thus, *SAV* is hypothesized to have a positive relationship with *LIQ* in the regression model.

3.2.4 Total Credit to Private Sector

Total credit to private sectors by banks (*CRT*) is used to represent the availability of financial resources provided by the financial institutions and banks to the private sectors in financing their projects or investments and subsequently requiring for constant repayments at certain durations. In this study, *CRT* is measured by total loans, purchases or non-equity securities and trade credits to the private sector in the USD monetary term. Stracca (2005) and Balogun *et al.* (2016) suggested that *CRT* denotes as the amount of cash and other financial instruments granted by the bank to the private sectors which then utilized as a source of fund for the investment purposes. As *CRT* increases, the availability of funds for various projects or investments will likely to increase. Similarly, *CRT* is hypothesized to have a positive relationship with *LIQ* in the regression model.

3.2.5 Economic Growth

Economic growth, or interchangeably known as Gross Domestic Product (*GDP*) measures the economic performance of a country in a given period of time e.g. on yearly basis. In this study, economic performance is annually measured by nominal values of *GDP* in the million USD term. The nominal *GDP* indicator is used to measure the quantities and prices in order to track the total value produced by an economy over a certain period. Further, Naceur *et al.* (2005) suggested that *GDP* is the measure of the country's income. Also, Nair (2008) highlighted that an increase in the real income represented by *GDP* would create a new demand for financial market particularly stock market in a country. Specifically, the size of a stock market and price index will be significantly affected through the demand – push factors that take place in a country. For this study, *GDP* is hypothesized to have a positive relationship with *LIQ* in the regression model.

3.2.6 Interest Rate

Interest rate (*INT*) refers to the measurement of a country's monetary policy that is related to the cost of borrowing. While it indicates the real yield among the lenders or investors, it signifies the real cost of funds for the borrowers. In this study, the lending rate by financial institutions in a country is used as a measurement of interest rate in the percentage value. As interest rate becomes higher, the demand for credit will likely to reduce. Conversely stated, there will be a reduction in the amount of money being invested into the stock market since less money is available for investments (Vagias & Van Dijk, 2010; Furuoka *et al.*, 2012). Additionally, Stracca (2005) asserted that a decrease in interest rate would inevitably lead to the improvement of a country's stock market liquidity due to increased willingness and investors' ability to borrow funds from the financial institutions and utilized them for investment purposes. Therefore, *INT* is hypothesized to have a negative relationship with *LIQ* in the regression model.

3.3 Data

This study utilizes the secondary data via conducting the library research activities. Data such as delisted companies, total savings, total credit to private sector, economic growth and interest rate were obtained from the APEC database whereas the market liquidity data was collected from the Thomson Reuter data stream. Based on the data sources, the variables of interest used in this study are contingent upon the availability and accessibility of data that cover for the 1990 – 2014 period.

3.4 Method of Analysis

In this paper, the traditional panel analyses; Fixed Effects Model (FEM) and Random Effects Model (REM) are accordingly employed. The *FEM*, which is also called as the least-square dummy variable (LSDV), captures all effects that are specified to an individual or entity and the effects do not vary over time (Asteriou & Hall, 2007; Baltagi, 2008). On the other, the *REM* treats the constants for each group as random parameters rather than fixed ones and allows for additional explanatory variables that have equal values for all observations within the group (Asteriou & Hall, 2007; Baltagi, 2008).

To select the most appropriate model, the Hausman test is used in the analysis. While the null hypothesis (H_0) states that the *REM* is more efficient and consistent than the *FEM*, the alternative hypothesis (H_1) implies that the *FEM* are more preferable. Thus, in the mathematical context, the statistic of estimator of Hausman Test is expressed in Equation (1):

$$H = (\hat{\eta}^{FE} - \hat{\eta}^{RE})' [\text{var}(\hat{\eta}^{FE}) - \text{var}(\hat{\eta}^{RE})]^{-1} (\hat{\eta}^{FE} - \hat{\eta}^{RE}) \sim \chi^2(k) \quad (1)$$

where, $\hat{\eta}$ is the estimated *RE* and *FE* parameters, respectively. If corresponding values of the statistic is large, then the difference in values between the estimated parameters becomes significant. Thus, there is a tendency to reject H_0 and concludes that *FEM* will be more efficient and consistent than *REM* to be the estimated model.

Under the *FEM* procedure, it tolerates different constant for each cross – section over time. Thus, the procedure may consider the geographical, managerial philosophy and style, types of market and natural endowment that distinctly vary by country. For this paper, the equation of interest under the *FEM* estimation is given in Equation (2):

$$LIQ_{it} = \alpha_i + \beta_1 DEL_{it} + \beta_2 SAV_{it} + \beta_3 CRT_{it} + \beta_4 GDP_{it} + \beta_5 INT_{it} + \varepsilon_{it} \quad (2)$$

where α_i are individual intercepts that have the time-invariant characteristics. The intercepts are treated as the fixed effects and capture the heterogeneity across the countries. $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are coefficients of the variables. ε_i are the error terms that have zero mean and constant variance and the error terms, ε_i are uncorrelated over time and countries.

Also, the model contains i that is the country's cross-country dimension and t refers to the country's time series dimension.

On the contrary, the *REM* procedure treats the intercept for each country as a random parameter. Hence, the variability of the intercept is shown as per Equation (3):

$$\alpha_i = \alpha + \nu_i \quad (3)$$

where the following assumptions in Equation (4) – Equation (6) accordingly take place:

$$\bullet \quad E(\nu_i) = 0 \quad ; \nu_i \text{ has a zero mean} \quad (4)$$

$$\bullet \quad \text{var}(\nu_i) = \sigma_v^2 \quad ; \nu_i \text{ has constant variance} \quad (5)$$

$$\bullet \quad \text{cov}(\nu_i, \nu_j) = 0, i \neq j \quad ; \nu_i \text{ is uncorrelated across a country} \quad (6)$$

Also, ν_i is known as an unobservable variable that is preserved as random effects.

Thus, the other equation of interest under the *REM* estimation is provided in Equation (7):

$$LIQ_{it} = \alpha_i + \beta_1 DEL_{it} + \beta_2 SAV_{it} + \beta_3 CRT_{it} + \beta_4 GDP_{it} + \beta_5 INT_{it} + \nu_i + \varepsilon_{it} \quad (7)$$

where α_i is the intercept that is uncorrelated and constant over time. $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are coefficients of the variables. The term ν_i is the cross – section error. ε_{it} is the combined component of time series and cross – section that is called as an idiosyncratic term. The combination of ν_i and ε_{it} explains the composite error term or error component model that is denoted as μ_{it} . Hence, each μ_{it} is uncorrelated over countries and time. Also, it is uncorrelated with explanatory variables in the model. However, μ_{it} and μ_{is} ($t \neq s$) are correlated for a country at two different times.

4.0 DISCUSSION OF RESULTS

4.1 DESCRIPTIVE STATISTICS

The summary of descriptive statistics for used variables is exhibited in Table 1. Based on the table, the means of all variables are in positive values for a total of 125 observations.

Table 1: Descriptive Statistics on Used Variables

Variable	Country	Mean	Maximum	Minimum	Standard Deviation
<i>LIQ</i>	Indonesia	1,376.53	3,785.23	130.54	978.71
	Malaysia	206.86	467.63	74.73	100.60
	Philippines	1,925.51	8,459.28	287.31	1,699.55

	Singapore	325.01	921.30	117.18	198.88
	Thailand	1,210.14	3,610.24	128.31	963.56
<i>DEL</i>	Indonesia	6.52	71.00	0.00	14.51
	Malaysia	16.52	60.00	0.00	18.26
	Philippines	5.84	43.00	0.00	9.15
	Singapore	24.84	120.00	0.00	27.55
	Thailand	17.36	77.00	0.00	18.81
<i>SAV</i>	Indonesia	0.71	2.31	0.04	0.78
	Malaysia	0.21	0.45	0.05	0.11
	Philippines	0.39	0.99	0.04	0.32
	Singapore	0.49	1.10	0.11	0.33
	Thailand	0.30	0.52	0.11	0.12
<i>CRT</i>	Indonesia	34.85	60.82	18.16	14.37
	Malaysia	114.90	154.89	69.41	19.97
	Philippines	33.08	56.46	17.76	8.62
	Singapore	97.63	132.10	79.14	14.37
	Thailand	107.77	166.50	83.37	22.86
<i>GDP</i>	Indonesia	3,632.21	9,178.70	954.46	2,863.61
	Malaysia	1,487.42	3,380.69	440.24	934.88
	Philippines	1,206.91	2,848.34	443.12	734.75
	Singapore	1,384.11	3,063.44	361.52	841.52
	Thailand	2,079.85	4,198.89	853.43	1,062.30
<i>INT</i>	Indonesia	5.24	17.59	-24.60	8.30
	Malaysia	3.56	10.63	-5.29	3.87
	Philippines	4.96	10.70	-4.58	3.03
	Singapore	4.48	10.09	-0.50	2.59
	Thailand	5.42	11.86	0.67	2.72

While *LIQ* and *GDP* values for many of ASEAN-5 countries register with their means of over thousands, the mean values of *SAV* are considerably lower, i.e. between zero and one, than those of *CRT*, *DEL* and *INT* values. For the interval between maximum and minimum values, *LIQ* and *GDP* for many of ASEAN-5 countries post the values of over thousands. In contrast, the interval values of *SAV*, *CRT*, *DEL* and *INT* variables are spanned from 0.4 to 120.0. From the table, variables such as *GDP* of Indonesia, *LIQ* of the Philippines and *GDP* of Thailand depict very high standard deviations, thus implying that their mean dispersions are farther than other variables.

4.2 PANEL ESTIMATION RESULTS

Table 2 reports the results of Hausman. The results serve as a benchmark to determine the most appropriate model either to be performed under the *REM* or *FEM* procedure.

Table 2: Results of Hausman Test

Variable	Fixed	Random	Var(Diff.)	P-value
<i>DEL</i>	-0.07	-0.07	0.00	0.75
<i>SAV</i>	0.05	0.05	0.00	0.83
<i>CRT</i>	0.25	0.33	0.00	0.15
<i>GDP</i>	9.15	8.94	0.22	0.66
<i>INT</i>	-0.16	-0.25	0.00	0.10
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	P-value	
Cross-section random	0.00	6.00	1.00	

In general, the *FEM* will outperform but it is unnecessarily efficient as the *REM* can give a greater p -value. However, the *FEM* is seen as inefficient if there is no correlation between the regressors and effects. On the contrary, the *REM* is found inefficient if the correlation exists between the regressors and effects. From the table, there is a failure to reject the null hypothesis stating that the *REM* is more efficient and consistent than the *FEM* due to a very large p -value of cross-section random. Therefore, it can be concluded that the *REM* is more appropriate than the *FEM* to be the panel estimation model on the subsequent step.

With reference to the results of Hausman test in Table 2, the estimation model under the *REM* procedure is subsequently performed and associated results are shown as per Table 3. From the table, both coefficients of the variables; *DEL* and *GDP* are found to be negatively and positively related with *LIQ* as well as they are statistically significant at the five percent significance level, respectively. Hence, these variables; *DEL* and *GDP* significantly influence any change in the liquidity of the ASEAN-5 stock markets over the 1990 – 2014 period. On one hand, the results indicate that a unit increase in the number of companies delisted from respective stock markets would adversely lead to 0.07 million decrease in the liquidity of those markets across the ASEAN-5 countries. On the other, an increment of USD1.0 million in the economic growth of a country or a country's income would inevitably render to a-8.94 million unit rise in the traded stock volumes within the region, thus boosting the market liquidity within the ASEAN-5 countries.

Table 3: Results of Random Effects Model Estimation

Variable	Coefficient	Std. Error	t-Stat	Prob.
<i>C</i>	70.52	36.14	1.95	0.05*
<i>DEL</i>	-0.07	0.03	-2.26	0.03*
<i>SAV</i>	0.05	0.21	0.21	0.83
<i>CRT</i>	0.33	0.22	1.49	0.14
<i>GDP</i>	8.94	3.26	2.75	0.01*
<i>INT</i>	-0.25	0.86	-0.29	0.77
Random Effects (Cross)				
Malaysia	71.51			
Indonesia	-71.00			
Thailand	-29.73			
Philippines	-37.59			
Singapore	66.80			
Effects Specification				
			S.D.	Rho
Cross-section random			67.42	0.73
Idiosyncratic random			40.63	0.27
Diagnostic Checking				
<i>R</i> -squared	0.72		Prob(<i>F</i> – statistic)	0.02
Adjusted <i>R</i> – squared	0.68			

Note: * indicates a variable is statistically significant at the five percent significance level.

Overall, the findings are seen to support the liquidity hypothesis that the delisting activities will have an adverse effect on a firm's value that may result in a reduced demand for traded stock volumes, thus affecting the market liquidity. As proposed by Sanger and Peterson (1990) and Macey *et al.* (2008), the hypothesis states that the delisting activities are originated from an involuntary procedure, which not only represents the management itself but also the quality aspect of management, may potentially affect the future prospect of those stocks among the investors.

Among others, the findings of this study are seen to be harmonious with Meera, Tripathy and Redfearn (2000) who stated that the delisting would decrease the marketability of related firms, thereby establishing a bad impression among the investors towards the firms' value. Moreover, volume traded of the stock which heavily traded on a foreign stock market tend to significantly increase in the local market particularly after being delisted from the foreign market.

However, Meera *et al.* (2000) opined that a different perspective pertaining to the stock market of Malaysia particularly on the overall market liquidity as it did not show a significant decrease in trading volume. Thus, they concluded that the country's decision to be delisted from the *SGX* in Singapore when the domestic stock market was expected to experience an upward trend has successfully split them apart and develop on an independent basis.

Apart from that, other variables that are statistically significant at the five percent significance level may include the common intercept of 70.52, the cross – section or individual specific error term of 67.42 and the idiosyncratic term of 40.63. Not forgetting, the final part is to conduct the diagnostic checking exercises in verifying the overall goodness fit of an estimation model. From the table, 72 percent of the variation in the market liquidity within the ASEAN – 5 countries can be explained by explanatory variables; number of delisted companies, total savings, total credit to private sector, economic growth and interest rate under the *REM* procedure. In this regard, the adjusted- R^2 of 68 percent serves to rationalize the R^2 of 72 percent in the estimation model as the value keeps increasing when additional explanatory variables are incorporated in the analysis. Additionally, the p -value of F -statistic, which equals to 0.02 or 2 percent, signifies a strong evidence on the joint significance of variables in the model at the five percent significance level. Thus, there is a rejection on the null hypothesis of all coefficients, excluding the intercept, stating that they equal to zero at the similar significance level.

5.0 POLICY IMPLICATION AND CONCLUSION

Based on the findings of this study, this paper proposes a policy implication that applies to both cases of a company and a domestic stock market within the ASEAN-5 countries. With regard to the company, managers should strive for associated stocks to be listed in other available markets or secure cross – listing transactions besides avoiding possible attempts to delist those stocks from any market under feasible scenarios. Undoubtedly, this will contribute to increasing the value of a company that may subsequently generate opportunities for the company such as offering wider choices of capital and improving its financial visibility or marketability.

Pertaining to the stock market, the delisting activities can have multiple effects on the stakeholders. Because of the delisting, particular firms are likely to be associated with the low quality of management reputations. Even worse, higher levels of delisting activities may affect the decision-making processes by investors due to the market unpredictability. Rather the one-size-fits-all policy to take effect without supervision, the policy makers are therefore recommended to constantly review the severity of delisting effects on the domestic market liquidity. Proper measures are deemed necessary to be implemented in-place that can bolster the investors' confidence in ascertaining the sustainable levels of market liquidity within the ASEAN-5 countries over the short and long terms.

To reiterate, this paper aims to examine the delisting effects on market liquidity across the ASEAN – 5 countries. By utilizing the secondary data for the 1990 -2014 period, the results of Hausman test indicate that the *REM* estimation is more appropriate than the *FEM* estimation based on its efficient and consistent characteristics. From the findings, it is revealed that delisted companies and economic growth are key determinants that significantly influence any change in the market liquidity within the ASEAN-5 countries over the period. For any future research, this study proposes the application of time series analysis and the inclusion of all ASEAN countries that may enable for a comparative assessment of involved countries at the regional level.

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