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Destination choice of the dual listing decision: The case ASEAN-5 firms

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Awadh Saeed Bin-Dohry¹*, Hanita Kadir Shahar¹ and Sharmilawati Sabki¹

Abstract: ASEAN authorities took several steps to facilitate firms' dual listing decisions within their region. However, more than three guarters of ASEAN-5 firms chose to list in European markets, which raises the need for further investigation to assess the determinants of destination choice decisions. Therefore, this study aims to evaluate the determinants of firms' destination choice decisions. The logistic model has been employed in this study to evaluate the firms' destination choice and uncover the determinants that drive the dual listing destination choice decision between Europe and the US. The study collected data on firms from the ASEAN-5 countries for the period of 2003-2017. The study's findings showed that the higher the home country's trade openness, the lower the number of firms pursuing a dual listing in European markets. Meanwhile, the greater the openness to FDI, the more likely it is that firms will seek to list in European markets. In addition, European markets are considered the main destination for firms characterized by low ownership concentration and high stock volatility. On the other hand, the US markets are the main choice for firms that originated from countries with low trade openness and high FDI openness, as well as for firms that are described as having high ownership concentration and low stock volatility. The current study has provided information to the authorities, investors, and market makers on the relationship between the abovementioned determinants and destination choice decisions, specifically for firms from the ASEAN-5 countries.

Subjects: International Finance; Financial Accounting; Public Finance; Banking; Banking & Finance Law; Finance in Sport

Keywords: dual listing; destination choice; determinants

1. Introduction

Firms list their securities in foreign markets to raise their equity and attract foreign investors (Caglio et al., 2016). In the past decades, the world has experienced the liberalization of the stock market where barriers in foreign investment and capital flow were removed, and firms were allowed to list their shares overseas (cross listing or cross trading)¹. A Canadian firm was the first cross-listed company on the New York Stock Exchange (NYSE) on 20 December 1928 (Alhaj-Yaseen, 2013; Karolyi, 1998). Meanwhile, Hamilton (1979) was the first scholar who studied the dual listing, which was later developed as a theoretical model to explain the subject matter.





© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent. The dual listing phenomenon was previously explained using numerous theories to provide an appropriate description of the subject, such as market segmentation, legal bonding, geographic proximity and liquidity theories (Ball et al., 2018; Cheronoh, 2015; Ghadhab & M'rad, 2018). However, the current situation of market integration situation is inconsistent with the segmentation hypothesis, which suggested that firms realizing benefit by listing in segmented market may lead to a reduction in these benefits that firms gain from pursuing a dual listing (Cavoli et al., 2011; Domowitz et al., 1998). Thus, there is still a need for more investigation to evaluate the determinants that drive the destination choice of firms pursuing a dual listing, especially for firms from the ASEAN region.

In addition, despite the high consideration that has been given by researchers to the issue of dual listing (see, e.g., Esqueda, 2017, Ghadhab & Hellara, 2016; Ghadhab & M'rad, 2018), very few have evaluated the determinants of dual listing decisions (Dodd et al., 2015; Füss et al., 2016; Ghadhab & Hellara, 2015; Koh et al., 2013; Kung & Cheng, 2012; J.; Wang & Zhou, 2014). Liu and Li (2020) suggested that firms bond themselves to the major markets to realize some gains from the dual listing decision. The choice of these destinations is due to the enhancement in investor protection, firms' performance and profitability, as well as the reduction in agency problems (Alderighi, 2020; Boubakri et al., 2010; Ghosh & He, 2015; Reese & Weisbach, 2002).

Previously, scholars have distinguished between firms with dual listings and those without (e.g., Dodd, 2011; Dodd et al., 2015; Doidge et al., 2009; O'Connor & Connor, 2009). This study differs from them by distinguishing between the determinants of dual listing destination choice, for which, to the best of the author's knowledge, there is a lack of studies examining the determinants of dual listing destination choice decision, especially in the context of firms from the ASEAN region (see, e.g.,, Cavoli et al., 2011). In addition, Liu and Li (2020) recommended conducting more investigations, including the dual listing of destination choice as a crucial factor in future work. This is due to the scarcity of empirical studies investigating the destination choice decisions of firms originating from ASEAN-5 countries. This examination is expected to enable the current study to contribute a better understanding of the determinants that guide a firm's dual listing and destination choice decisions.

The literature review on dual listing destination choice determinants is provided in the next section. Then, a brief review of the methodology and the model adopted to evaluate the determinants of the destination choice is presented. Sample data collection and data description are reported next followed by diagnostic tests used to evaluate the suitability of the data. Then, the logistic regression analysis and discussion were reported. Finally, the conclusions of the findings are summarized.

2. Literature review

Dual listing² or international listing is a strategy that firms follow in listing their stocks in two or more different stock exchanges (home and host markets) (Garanina & Aray, 2020; Karolyi, 2012; Xu et al., 2020). Previously, a hundred firms worldwide were encouraged to list abroad during the 1980s and 1990s (Dobbs & Goedhart, 2008). However, a number of restrictions on investment movement were found to affect firms' ability to have a listing abroad, which is expected to be solved by relaxing listing requirements in foreign exchange (Ndirangu & Iraya, 2016; Yao et al., 2018). Capital market liberalization is one of the methods that have been found to facilitate firms' ability to reach a foreign market, which improves portfolio diversification, firms' growth opportunities, and corporate governance (Cherono, 2010; Mu, 2014; Singh, 2009). In addition, listing abroad enabled firms to earn benefits such as reduced trading and capital costs, improved information asymmetry, as well as investor recognition (Ghadhab & M'rad, 2018; Karolyi, 2006; Roosenboom et al., 2009; You et al., 2013).

Listing abroad expands firms' financial sources, increases their investor base, improves firms' visibility, investor protection, and overcomes stock illiquidity problems for firms and their home markets (Dobbs & Goedhart, 2008; Ghadhab & M'rad, 2018; King & Mittoo, 2007). All the above-

mentioned benefits encourage firms listing abroad in major markets such as the US and European markets to increase their value, as supported by the bonding hypothesis (Bahlous, 2013; Ghadhab & M'rad, 2018; Kariuki, 2015; Mu, 2014). However, the benefits of listing abroad do not always exist in the post period. For instance, Bae et al. (2020) found that cross-listed firms might experience a quick decline in their valuation compared to their valuation levels before the dual listing (Sarkissian & Schill, 2009b, 2016).

Numerous determinants motivate firms' dual listing decisions. The market integration and alliances to overcome investment movement barriers are found to provide local and foreign investors with wider financial innovation (Kariuki, 2015; Kipkemoi, 2013; Makau et al., 2015; Wanjiru, 2013). The removal of investment restrictions led to an increase in competition between stock markets, which makes them more attractive for foreign firms and investors (Kariuki, 2015; Korczak & Bohl, 2005; Yao et al., 2018). However, the integration notion is inconsistent with the segmentation theory that says the benefits realized by firms come from entering a segmented market. Adamska-Mieruszewska and Mrzygłód (2020) found that global financial integration significantly reduces the desire of firms to pursue dual listing. This makes the expected benefits disappear as a result of market integration (Dobbs & Goedhart, 2008; Kariuki, 2015). While the steps that have been taken to ensure the integration of ASEAN markets (The ASEAN Secretariat, 2015, 2017; Jantarakolica & Sakayachiwakit, 2015; Singh, 2009), are expected to increase the dual listing between ASEAN countries. They found that ASEAN firms prefer to have additional listings outside their region, raising questions regarding the impact of ASEAN authorities' efforts to determine whether these measures are sufficient to induce firms to have additional listings within their region.

Researchers pay attention to stock liquidity and volatility as they play a crucial role in improving the ability of firms to raise their capital and attract investors as they are considered indicators of firms' sustainability and profitability (Bahlous, 2013; Berkman & Nguyen, 2010; Foerster & Karolyi, 1998; Sarkissian & Schill, 2016). Malaysia, the Philippines and Thailand are found to suffer from low liquidity; thus, to improve their stock liquidity, firms found bonding themselves to a high liquid markets, for instance, European and US markets (Al-Jaifi, 2017; Bayar & Önder, 2005; Karolyi, 2006; Roosenboom et al., 2009). Besides that, Malaysia, the Philippines and Singapore are found to suffer from high volatility (Wang, 2013). However, previously, the results regarding stock volatility were still mixed. Therefore, more studies are needed to examine whether the factors of stock liquidity and volatility are important determinants that encourage firms to choose their destination.

Ownership concentration and reputation are important determinants that are supported by bonding theory, where firms bond themselves to highly standardized and well-organized markets to ensure high corporate governance. This is because investors found did not invest in firms that suffered from ownership concentration, and those firms sought additional listings to widen investors' base and reduce control shareholders (Al-Shamahi et al., 2017). Furthermore, investors are concerned about a firm's reputation, which influences their choice to invest (Burns et al., 2007). Southeast Asian countries such as Hong Kong, Indonesia, Malaysia, Singapore, and Thailand experience high control ownership by a single shareholder (Aguilera & Crespi-Cladera, 2016; Carney & Child, 2013; Jiang et al., 2010; Oehmichen, 2017). Therefore, listing in developed markets, for instance, the European and US markets, improves investors' confidence, attractiveness, and visibility, which leads to changes in firms' ownership structures as well as makes these firms unique from their counterparts (Al-Shamahi et al., 2017; Ayyagari & Doidge, 2010; Bancel et al., 2001; Kamarudin et al., 2020; Karolyi, 2006; Shen et al., 2010; Walker, 2010). As a result, this study aims to determine if ownership concentration and reputation influence the destination decisions of firms seeking dual listing.

3. Methodology and data selection

3.1. Binomial logit model

The logistic regression model is a widely used regression model for analysing proportions from binary response data analysis of discrete outcome variables that take two possible values, which

makes it an easy model to fit (Chatterjee & Hadi, 2013; Hosmer et al., 2013). The logistic model is a method for describing the relationship between a set of independent factors and a binary dependent variable (Kleinbaum, 2010). The dependent variable is coded with a value of 0 and 1. This variable is called a binary variable. Independent variables are commonly referred to as covariates, which are explained either by odd ratios (to categorical forecasters) or by the delta p (to continuous forecasters) (Hosmer et al., 2013; Peng et al., 2002).

Two proxies have been used to measure market integration: trade openness and FDI openness. Amihud's illiquidity is used to measure stock liquidity and stock volatility, measured by the standard deviation of daily closing returns. Ownership concentration measured by the sum of the ratio of top three shareholders to total shares outstanding, whereas to capture the improvement in the firm's reputation the ordinary shares owned by foreigners as a percentage of total shares outstanding used. Table 1 presents more details about the measurements used previously.

The significance of each variable is examined by the Wald test, the goodness of fit test, and multicollinearity (Kleinbaum, 2010). The goodness of fit can be examined by using the Hosmer and Lemeshow test to identify model fit (Hosmer et al., 2013). Meanwhile, multicollinearity exists when correlation is found between explanatory variables and is also recognized using the variance inflation factor (VIF), as well as the correction of outlier values observed to solve suspicion in that data (Kamaruddin et al., 2014). The logistic model function is obtained from the linear equation (1), where the Xs and β s represent the independent variables and the constant terms, respectively,

$$Z = \alpha + \beta_1 X \mathbf{1} + \beta_2 X_2 + \ldots + \beta_k X_k, \tag{1}$$

Table 1. Explanatory v	ariable measures		
	The variable	Measure	Variable used by
Dependent variable			
Des_choice	Destination Choice	A dummy dependent variable equals one if firms have a dual listing in Europe and equal to zero otherwise.	(Bianconi & Tan, 2010; Mu, 2014)
Independent variables			
TR	Trade openness.	Home country imports plus exports divided by its GDP.	(Boubakri et al., 2016; Cavoli et al., 2011).
FDI	FDI openness.	Inward FDI scaled by GDP.	(Boubakri et al., 2016; Cavoli et al., 2011).
Stock illiquidity	Amihud's Illiquidity.	The daily ratio of absolute stock return to its dollar volume.	(Al-Jaifi, 2017; Amer Al- Jaifi et al., 2017; Amihud, 2002; Bahlous, 2013; Banti et al., 2017).
Volatility.	Stock Volatility.	The standard deviation of the daily closing returns.	(Al-Jaifi, 2017; Amer Al- Jaifi et al., 2017; Pagano et al., 2002; Prommin et al., 2014).
Ow_Con	Ownership Concentration.	The ratio of total outstanding shares held by the top three shareholders.	(Al-Jaifi, 2017; Amer Al- Jaifi et al., 2017; Udomsirikul et al., 2011).
Reputation.	Reputation.	Ordinary shares owned by foreigners divided by total shares outstanding.	(Boshnak, 2017; Dhouibi & Mamoghli, 2013).

Des_choice = α + β_1 TRi + β_2 FDIi + β_3 ILLIQi + β_4 VOLi + β_5 Ow_Coni + β_6 Repi,

where Z is a function of the Xs, and to switch the linear sum expression for Z to get the expression f(z), the logistic function estimated would be as follows:

$$f(z) \ = \frac{1}{1 + e^{\, - \, z}}$$

 $f(z){=}\frac{1}{1{+}e^{-(\alpha+\Sigma\beta i Xi)}} \cdot$

(2)

(Brooks, 2014; Kleinbaum, 2010).

The determinants of the dual listing destination choice decision are investigated using a logistic regression model. From all of the above, the developed model in this study is as follows:

$$f(\text{Des_choice}) = \frac{1}{1 + e^{-(\alpha + \beta_1 TRi + \beta_2 FDIi + \beta_3 ILLIQi + \beta_4 VOLi + \beta_5 Ow_c on i + \beta_6 Repi)}}.$$
 (3)

This model is employed to answer the question related to the destination choice decision between European and US markets. The dependent variable (Des_choice) is coded as 1 and 0, which equals 1 if a firm chooses European markets and 0 if a firm chooses US markets. Similar to prior studies, the logistic model is utilized to offer further explanations, whether trade openness, FDI openness, stock illiquidity, stock volatility, ownership concentration and reputation affect the dual listing destination choice decision within European or US markets. The logistic model was found to be an appropriate model that can be used with both continuous and dummy independent variables (Leech et al., 2005). Logit regression is comparable to multiple regression analysis in which one or more independent variables are used to predict a binary dependent variable (Hair et al., 2014).

Previously, studies that investigated the dual listing found used the binomial dependent variable to distinguish between firms with dual listing and those that do not (Ayyagari & Doidge, 2010; Koh et al., 2013; Kung & Cheng, 2012; Liow, 2010). The dependent variable in this paper is the firm's dual listing destination choice decision, which is coded as 1 if a firm chooses a dual listing in Europe and 0 if it chooses the US. Logistic regression requires additional assumptions, such as the need to ensure the true conditional probabilities, which is the function that links the dependent variables to the independent variables. The fit of the model, Hosmer-Lemeshow, and the test for model specification tests are used to examine the overall goodness of fit and specification of the model. The link test is used for that purpose too (Kleinbaum, 2010; Pallant, 2011). The importance of these tests is the expected misleading and contradictory results caused by an inappropriate model (Kofarmata, 2016).

3.2. Data sample collection

The study sample consists of ASEAN-5 firms that have a dual listing in European or US markets during the period 2003 to 2017 with 536 firms. The study excludes those firms that had dual listings before 2003 and those whose year of dual listing is not found on Thomson Reuters Eikon and the website of the Over the Counter (OTC)³ market, Citibank. For companies seeking a dual listing, the European and US markets have been chosen as the two most common destinations (see Table 2). Similar to Alderighi (2020) and You et al. (2013), the current study considers the first foreign listings. The time period was chosen as a result of the steps that have been taken by ASEAN to ensure integration of the region, which makes it

Table 2. The frequency	of the sample depends	s on the destination cho	oice
Des_choice	Freq.	Percent	Cum.
0 = US	111	20.71	20.71
1= Europe	425	79.29	100
Total	536	100	

easier for firms to meet the listing requirements in ASEAN markets (Secretary-General of ASEAN, 2003, 2012).

4. Result discussion

4.1. Data description

The study uses a cross-sectional data which depend on the dual listing year to examine the determinants of dual listing destination choice decisions. Data description of the of data used in this study and diagnostic tests conducted to ensure that the data requirements of the model are met, including multicollinearity, model fit, and model specification tests.

The mean, standard deviation, minimum, and maximum are reported in Table 3. The destination choice, the dependent variable, showed a 79% mean, indicating a preference to choose European market destinations. Regarding the independent variables, two proxies were used to assess market integration. First, the trade openness showed a 208% mean, indicating a high growth in the trade openness of ASEAN-5 countries. The second is FDI openness, with a mean of 9.33% referring to the participation of foreign investors in domestic production. Illiquidity showed a mean of 0.08%, whereas stock volatility showed a mean of 48%, which represents stock return volatility.

The top three ownership mean showed 46%, presenting a high ownership concentration of family, government, or even individuals (see, e.g., Al-Jaifi, 2017; Connelly et al., 2017). Reputation means, as measured by the outstanding share owned by foreign investors 17%, representing an improvement in the firm's visibility to foreign investors.

The mean of the sample sorted by the home of origin is reported in Table 4. The mean of destination choice indicates that European markets are the preferred destination for firms from Indonesia, Singapore, and Thailand. Meanwhile, firms from Malaysia and the Philippines prefer US markets. The mean trade openness is 51.26%, 155.10%, 69.94%, 390.60%, and 134.48%, and the mean FDI openness is 2%, 3.21%, 1.53%, 19.89%, and 2.96% for Indonesia, Malaysia, the

Table 3. Descriptive statistics for sample data						
Variable	Obs	Mean	Std. Dev.	Min	Max	
Des_choice	536	0.7929	0.4056	0	1	
TR	536	2.0827	1.5328	0.3742	4.3733	
FDI	536	0.0933	0.0954	0.0006	0.2802	
Illiquidity	497	0.0008	0.0022	0	0.0093	
Volatility	535	0.4817	0.2955	0.1165	1.8843	
Ow_con	482	0.4611	0.2881	0	0.9992	
Reputation	467	0.1772	0.2342	0	0.9577	

Notes: Des_choice = Destination choice is a dummy dependent variable equal to one if firms have a dual listing in Europe and equal to zero otherwise, TR = trade openness, FDI = foreign direct investment openness, Illiquidity = the liquidity measure as used by *Amihud (2002)*, Volatility = stock volatility, Ow_Con = Ownership concentration measured by the percentage of outstanding shares owned by top three shareholders, Reputation = firms reputation measure as the outstanding shares owned by foreign investors.

Table 4. The m	ean of the sam	ple based on co	untry of origin/h	ome country	
	Indonesia	Malaysia	Philippines	Singapore	Thailand
			mean		
Des_choice	0.9634	0.0000	0.0000	0.8451	0.9158
TR	0.5126	1.5510	0.6594	3.9060	1.3448
FDI	0.0200	0.0321	0.0153	0.1989	0.0296
Illiquidity	0.0009	0.0003	0.0003	0.0013	0.0000
Volatility	0.5446	0.2665	0.3846	0.5316	0.3693
ow_con	0.5527	0.5694	0.4625	0.5376	0.0586
Reputation	0.2175	0.1792	0.1725	0.2044	0.0447

Notes: Des_choice = Destination choice is a dummy dependent variable equal to one if firms have a dual listing in Europe and equal to zero otherwise, TR = trade openness, FDI = foreign direct investment openness, Illiquidity = the liquidity measure as used by *Amihud (2002)*, Volatility = stock volatility, Ow_Con = Ownership concentration measured by the percentage of outstanding shares owned by top three shareholders, Reputation = firms reputation measure as the outstanding shares owned by foreign investors.

Philippines, Singapore, and Thailand, respectively. Singapore recorded the highest mean, while Indonesia and the Philippines reported the lowest means.

Singapore reported the highest stock illiquidity with 0.13%, while the lower was the mean reported by Thailand. The stock volatility means are between 26.65% and 54.46%, Malaysia reported the lowest stock price volatility, and Indonesia and Singapore recorded the highest stock volatility 54.46% and 53.16%, respectively. The high volatility denotes uncertainty about the fundamental stock return volatility. Singapore, as a central capital market, showed the highest stock illiquidity and stock volatility, which may be explained as it is considered the main destination for firms and investors worldwide.

The mean of ownership concentration is measured by the top three ownership by a family, government, or even individuals. Malaysian firms showed the highest ownership concentration among the ASEAN-5 with 56.94%, followed by Indonesia, Singapore, and the Philippines with 55.27%, 53.76%, and 46.25%, respectively. Meanwhile, a mean of 5.86% ownership concentration was reported for firms from Thailand, which is considered the lowest among the ASEAN-5 firms. The mean of firms' reputation showed a 16.58%, which indicates an increase in firms' visibility to foreign investors. Indonesia showed a mean of 21.75% of outstanding shares owned by foreign investors. Singaporean, Malaysian, the Philippines, and Thai firms showed 20.44%, 17.92%, 17.25%, and 4.47% of means, respectively.

Table 5 shows the sample distribution based on the sectors and destination choice. Besides, Table 6 presents the sample distribution based on sectors and the country of origin in order to provide additional details about the sample description.

Tables 5 and 6 report that firms from the industrial sector showed 20% of the sample, indicating a preference to have dual listing, about 56% of them from Singapore. Consumer discretionary firms showed 14.55% in the second order, followed by real estate with 11.2%, more than half of them from Singapore. Next, consumer staples with 11% and financial sectors with 10.8%, whereas Indonesian firms represent around 40% of each. Then the energy sector and basic materials sector reported more than 8% for each one, Singaporean and Indonesian firms representing the high percentage of firms in these sectors.

Table 7 shows that around 79.3% of the sample size pursues an additional listing in European markets, whereas US markets are the destination for 20.4% of the sample. The data presented showed that European markets are the preferred destination for 96.3% of Indonesian firms, 84.5%

Table 5.	Distribution	of firms based on	destination a	nd sector	Ś							
	Basic	Consumer	Consumer			Health		Real		Telecommun-		total by
	Materials	Discretionary	Staples	Energy	Financials	Care	Industrial	Estate	Technology	ications	Utilities	destination
Europe	39	59	47	42	45	11	92	44	12	23	11	425
US	5	19	12	9	13	4	18	16	1	6	8	111
total by sector	777	78	59	48	58	15	110	60	13	32	19	536

Table 6. Di	stribution o	f firms based on h	iome country	and sectd	ors							
	Basic Materials	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrial	Real Estate	Technology	Telecomm- unications	Utilities	total by country
Indonesia	16	22	25	20	24	ß	25	14	2	6	2	164
Malaysia	1	5	m	4	9	1	4	2	1	4	с	34
Philippines	ŝ	5	4	1	4		4	ŝ		2	4	30
Singapore	18	28	21	16	10	9	62	32	5	7	∞	213
Thailand	9	18	9	7	14	c	15	6	5	10	2	95
total by sector	44	78	59	48	58	15	110	60	13	32	19	536

Page 9 of 18

*** cogent** - economics & finance

Table 7. Firm distribution depends on home country and host destination					
Destination					
Country of origin	Europe	US	Total by country		
Indonesia	158	6	164		
Malaysia	0	34	34		
Philippines	0	30	30		
Singapore	180	33	213		
Thailand	87	8	95		
Total by Destination	425	111	536		

of Singaporean firms and 91.6% of Thai firms. Meanwhile, Malaysian and Philippines firms prefer US markets as a destination when seeking a dual listing.

4.2. Diagnostic tests

Three assumptions should be tested before using logistic regression, including the multicollinearity test, which examines the intercorrelation between the explanatory variables (Hair et al., 2014). Next, tests for model fit and model specification are performed to check the goodness-of-fit of the model.

4.3. Multicollinearity Analysis

This study uses two tests to examine multicollinearity. First, the variance inflation factors (VIF) to test for multicollinearity along with the results are reported in Table 8.

Table 8 shows two measures to examine the multicollinearity: the VIF and tolerance. If the value of VIF is greater than 10, or if the tolerance is less than 0.10, this indicates the existence of multicollinearity (Al-Yousfi, 2017; Hair et al., 2014; Pallant, 2011). The result shows the absence of multicollinearity problems in the study. Additionally, the study used the pairwise correlation test to examine the correlation among the explanatory variables. Table 9 reports the result of the correlation test.

The correlation represents the relationship between independent variables, which is expected to affect their relationship with the dependent variable (Pallant, 2011). The existence of multicollinearity is demonstrated if the coefficients are higher than 0.90 (Al-Yousfi, 2017; Pallant, 2011). The

Table 8. VIF for the binomial l	Table 8. VIF for the binomial logit model					
Variable	VIF	1/VIF				
TR	3.72	0.2691				
FDI	3.71	0.2696				
Illiquidity	1.31	0.7657				
Volatility	1.28	0.7805				
Ow_Con	1.23	0.8160				
Reputation	1.17	0.8543				
Mean VIF	2.07					

*Notes: TR = trade openness, FDI = foreign direct investment openness, Illiquidity = the liquidity measure as used by *Amihud (2002)*, Volatility = stock volatility, Ow_Con = Ownership concentration measured by the percentage of outstanding shares owned by top three shareholders, Reputation = firms reputation measure as the outstanding shares owned by foreign investors.

Table 9. Cor	relation coeff	icients among	y variables			
	TR	FDI	ILLIQ.	VOL.	OC	Rep.
TR	1					
FDI	0.8648***	1				
Illiquidity	0.1580***	0.0547	1			
Volatility	0.1093**	0.0497	0.3998***	1		
Ow_Con	0.1239***	0.1393***	0.2290***	0.1375***	1	
Reputation	0.0351	0.0627	0.1214**	0.0474	0.3621***	1

Notes: TR = trade openness, FDI = foreign direct investment openness, Illiquidity = the liquidity measure as used by *Amihud (2002)*, Volatility = stock volatility, Ow_Con = Ownership concentration measured by the percentage of outstanding shares owned by top three shareholders, Reputation = firms reputation measure as the outstanding shares owned by foreign investors. *Significant at p<0.10, **significant at p<0.05, ***significant at p<0.01.

Table 10. Tests for goodness o	f fit (binomial model)	
Tests	Results	P-value
Likelihood Ratio	119.42	0.0000
Wald chi-square test	29.44	0.0001
Hosmer-Lemeshow		0.2706

results show that the highest correlation coefficients were between TR and FDI (0.86), which is close to the benchmark that multicollinearity problem exists if the coefficients of the independent variables are higher than 0.90 (Al-Yousfi, 2017; Pallant, 2011).

4.4. Test for model fit

The overall goodness of fit result is reported in Table 10. The likelihood ratio and Wald test are found to be statistically significant at 1%, indicating the goodness of fit of the whole model. This indicates that at least one of the coefficients in the model has an impact on the dependent variable.

Finally, the Hosmer-Lemeshow test indicates how well the model fits the data. Hosmer and Lemeshow (Hosmer et al., 2013) recommend partitioning observations into 10 equal-sized groups according to their predicted probabilities. Based on this, an insignificant chi-square indicates an adequate fit of the model, while a significant chi-square suggests an inadequate fit of the model. As shown in Table 10, the Hosmer-Lemeshow test is insignificant and rejects the hypothesis (p-value = 0.2706), which indicates that no difference exists between the observed and model predicted values. Thus, the model's estimation has a good fit to the data.

4.5. Test for model specification

Apart from the goodness of fit tests, model specification checks are also important as misleading inferences may result from an inappropriate model specification. Therefore, to avoid bias and incompatible results, Table 11 presents the result of the link test, which is the general model

Table 11. Model specification test (linktest)	
Test	P-value
Linktest	
_hat	0.0000
_hatsq	0.2320

specification for non-linear regression models. The test assumes that if a regression is correctly defined, every new independent variable should be insignificant unless it happens by coincidence.

The link test shows two variables as indicated in Table 11, _hat, which represents the predicted value from the model, which needs to be significant. Alternatively, _hatsq showed the predictor to rebuild the model, which should be insignificant to bypass the linktest. Table 11 shows an insignificant result of _hatsq (P-value = 0.2320) which indicates that the model is correctly specified.

4.6. Logistic regression analysis

A model for destination choice was developed to examine the potential determinant variables that identify the firm's destination choice decision and choose between two destinations in the US or European markets. This study adopts cross-sectional analysis of the binomial model to evaluate the determinants of the destination choice decision. Table 12 reports two models. The first model controls for time fixed effects by using year dummy, and the second model is estimated with time and industry fixed effects. The reported coefficient indicates the influence of the explanatory variables of trade openness, FDI openness, stock illiquidity, stock volatility, ownership concentration, and reputation on the decision to have the dual listing in European markets (coded 1) versus US markets (coded 0).

Table 12 shows the coefficient and the P-value for both logistic regression models. The listing choice is the dependent variable, which is a categorical variable with two options: listing in European markets is coded as 1 and 0 if a firm is listing in US markets. The explanatory variables' positive coefficients indicate that firms prefer to list in European markets; the negative coefficients indicate that firms prefer to list in US markets. The result showed that the significant and negative coefficient of trade openness in both models indicates that the higher the home country's trade openness, the lower the firms pursue dual listing in European markets and vice versa. From another perspective, the high level of trade openness in the home country encourages firms to choose the US markets as a destination for their dual listing decisions. The choice of US markets as a destination for firms from countries with high trade openness is similar to that found by Cetorelli and Peristiani (2015), who find that for non-US firms, the US markets are more preferable destinations.

In accordance with the expected prediction, the coefficients of FDI are also significant and positive for different specifications. This indicates that the higher the home country's FDI, the higher the firm's preference to choose European markets as a destination. This shows that firms from countries characterized as more attractive for FDI prefer to choose European destinations. In contrast, firms originating from countries with low FDI prefer to seek a dual listing in US markets. The determinants that affect the destination choice were studied by Chung et al. (2015) who found the same result, whereas firms avoid listing in the US to prevent the cost of fulfilling the high corporate governance standards in the US, especially after complying with the Sarbanes-Oxley 2002 (Piotroski & Srinivasan, 2008).

Stock volatility was found to be positive and statistically significant, which means that firms that suffer from high stock volatility are more likely to have additional listings in European markets. Inconsistent with Amiram et al. (2015); Bahlous (2013) and Jain and Strobl (2016) who reported that firms with a high stock volatility motivated to list abroad in the US market as a result of the high standard and corporate governance that expected to reduce the stock volatility. However, the results are comparable to those reported by Bayar and Önder (2005) who indicate that French firms with high stock volatility tend to have a dual listing in order to decrease stock volatility.

The result for ownership concentration showed a negative and statistically significant, which reveals the firm's preference to have a dual listing on US exchanges. This is because of firms' preference to provide protection for minority rights in order to improve investors' confidence and

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Des_choice	Mod	el 1			Model 2	
	Coef.	P> z	Coef.	Std. Err.	odds	z <d< th=""></d<>
TR	-0.7496	0.0010	-0.7384	0.2411	0.4779	0.0020
FDI	15.9859	0.0000	16.0209	4.0723	9073554	0.0000
Illiquidity	-30.1266	0.7030	-37.4924		0.0000	0.6430
Volatility	3.1509	0.0000	3.0147	0.8595	20.3834	0.0000
Ow_con	-1.1447	0.0330	-1.1293	0.5660	0.3233	0.0460
Reputation	-0.2596	0.6760	-0.3438	0.6441	0.7091	0.5930
Year dummy	Included	Included				
Industry dummy	NO	Included				
cons	-3.2381	0.0060	-2.4448	1.3684	0.0867	0.0740
Pseudo R ²	0.2448		0.2627			
Note: Des_choice = Destinativ investment openness, Illiquidi owned by top three shareholo	on choice is a dummy depender ty = the liquidity measure as use lers, Reputation = firms reputatio	nt variable equal to one if firr så by Amihud (2002), Volatility in measure as the outstanding	ns have a dual listing in Eurc = stock volatility, Ow_Con = C shares owned by foreign inve	pe and equal to)wnership conce :stors. *Significar	2 zero otherwise, TR = trade intration measured by the period at a p<0.10, **significant at p	openness, FDI = foreign direct centage of outstanding shares ><0.05, ***significant at p<0.01.

eign direct	ing shares	at p<0.01.
s, FDI = for	of outstand	**significant
sauuado api	percentage	at p<0.05, *
ise, TR = tro	sured by the	**significant
cero otherwi	ration meas	at p<0.10, *
d equal to z	ship concent	*Significant
pe an	wners	stors.
ing in Eurol	$W_Con = 0$	foreign inve
tual list	atility, C	ned by i
ave a c	tock vol	ares ow
f firms h	tility = s	ding sh
o one i	2), Vola	outstar
equal t	nud (200	e as the
variable	by Amih	measur
pendent	as used	outation
nmy dep	neasure	firms rep
s a dun	luidity m	ation = 1
choice i	= the lic	s, Reput
tination	liquidity	reholder
= Des	ll ssar	ee sha
choice	openr	op thru
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trust by bonding themselves to highly standardized exchanges such as the US. This result is supported by the bonding hypothesis that firms are motivated to bond themselves to foreign markets to reduce their control shareholders by having a dual listing in markets that are characterized by higher standards, regulations, and a high level of minority rights protection (Abdallah & Ioannidis, 2010; Ghadhab & M'rad, 2018).

The study includes the year and sectors to control for time-fixed effects and industry-fixed effects and also to detect the variation over time and industry sectors (Gul et al., 2008, 2010; Marhfor et al., 2011; Prommin et al., 2014). The result is insignificant in terms of illiquidity, which can be interpreted as a result of the fact that both European and US markets are characterized by high liquidity. This makes them the main destination for firms globally (Bianconi & Tan, 2010). The reputation showed an insignificant result too, which is explained as both the European and US markets considered high popularity and prestigious positions (Mu, 2014). This indicates that these variables have no effect on the choice between the European or the US markets.

5. Conclusion

In conclusion, despite the steps that have been taken by the ASEAN-5 to ensure and facilitate the listing of firms within the ASEAN region's markets, it is found that firms mostly seek a dual listing in the more developed markets (US and Europe). European markets are considered the main destination for more than three quarters of firms originated from ASEAN-5 countries, especially those firms that originated from Indonesia, Singapore and Thailand. However, firms from Malaysia and Philippines choose US markets. The findings showed that firms originated from countries with high trade openness and those firms characterized by high ownership concentration select US markets when pursuing dual listings. Firms originating from countries with low trade openness and low ownership concentration, on the other hand, are more likely to seek a dual listing in European markets. Meanwhile, firms from high FDI countries, as well as those with high stock volatility, preferred dual listing in European markets. From another perspective, this result indicates that firms from countries with low FDI and those with low stock volatility are found to prefer to list in US markets. The current study has improved the understanding of the theories' applicability in the context of the dual listing destination choice decision of ASEAN-5 firms. The findings of this study support the global business strategy theory, which supports the notion that the integration between markets will assess firms to go globally for growth purposes. Furthermore, it supported the bonding theory, as the study provides empirical evidence that firms from ASEAN-5 are more likely to bind themselves to major markets (European and US markets). The few firms that have a dual listing with Asian markets make it inefficient to assess Asian markets as a destination for firms originated from ASEAN-5. Further research can be applied to evaluate the determinants drive the dual listing decision from the host market point of view.

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Notes

- 1. The difference between cross-listing and cross-trading is as follows: while both provide firms with foreign listing in addition to home market listing, making a firm's stock available to foreign investors. However, cross-listing is begun by the firm's choice to list its shares on a foreign regulated market and requires firms to meet the host foreign stock exchange's listing and disclosure requirements. On the other hand, a firm is cross-traded when it is admitted to trade on a foreign stock exchange by market makers without meeting the stock exchange's disclosure and listing standards. Frequently, the firm might be unaware that its shares are traded in foreign markets (Ghadhab, 2016).
- 2. Dual listing is also referred to as overseas listing (Kung & Cheng, 2012; Sarkissian & Schill, 2009a).

 OTC is the National Quotation Bureau (NQB), an interdealer quotation system that publishes a daily listing of traded OTC known as Pink Sheet on the OTC Bulletin Board (OTCBB), which requires firms to comply with the reporting obligations under the 1934 Securities Exchange Act (Abdallah et al., 2011; Bushee & Leuz, 2005).

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