"Corruption and stock market development in EAP countries"

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CORRUPTION AND STOCK MARKET DEVELOPMENT IN EAP COUNTRIES

Abstract

Using macroeconomic factors as control variables, this paper examines the impact of corruption on the development of the stock market in East Asia and the Pacific (EAP) from 2008 to 2018. The research model uses GMM techniques to estimate panel data on two sub-sets of data, including five developed markets and seven emerging markets, and a dataset of both market groups. The market capitalization and the stock transaction value relative to GDP represent the development of the stock market, and the corruption control index represents the corruption factor. The empirical results found that corruption has a positive impact on the EAP stock market capitalization with the entire sample data set, which positively affects both size of the market capitalization value and value of stock transactions in underdeveloped markets. However, it is not statistically significant in explaining the development of developed stock markets. Besides, macroeconomic factors such as inflation, interest rates, savings, and credit affect some stock markets at EAP. Compared to previous studies, the article's results found that corruption affects stock market capitalization and has a positive impact on stock liquidity in underdeveloped stock markets. Corruption affects more underdeveloped stock markets than developed stock markets. This may be due to the implicit relationship of economic benefits between large enterprises and officials in underdeveloped markets.

Keywords	corruption, market capitalization, trading value, inflation, interest rates, credit, savings
JEL Classification	G10, G18

INTRODUCTION

Many scholars give definitions of corruption but generally agree that corruption is a negative behavior (Rose-Ackerman & Palifka, 2006; Warf, 2019). However, previous empirical evidence on the impact of corruption on businesses and the development of the stock market is inconsistent. Corruption can negatively impact corporate productivity (De Rosa, Gooroochurn, & Gorg, 2010), which inhibits business growth (Wang & You, 2012). In contrast, corruption has a positive impact on business growth in developing financial markets (Wang & You, 2012) and increases the stock market capitalization (Mouselli, Aljazaerli, & Sirop, 2016). A study of East Asian countries, Wedeman (2003) found the paradox that although these countries have high levels of corruption, their economic growth remains high in the long term. Does this paradox exist in the stock markets in East Asian countries?

Compared to 2008, the world market capitalization and EAP in 2018 reached 2.13 times and 2.55 times. It shows that over the past ten years, growth in the size of market capitalization at EAP has been higher than the world average. During this period, a series of major corruption cases in South Korea, Vietnam, and China was impeached. These efforts have pulled the index of corruption control in underdeveloped stock markets up slightly from before. However, until 2018, the majority of corruption control values in the undeveloped stock markets are still less than zero and have a considerable distance from the developed stock markets.

1. LITERATURE REVIEW

Corruption is a misuse of public office for private gain (Rose-Ackerman & Palifka, 2006), as officials abuse their position – hidden through cunning acts – to enhance their own wealth and power (Warf, 2019, p. 1).

Based on the definitions of corruption only, it can be said that corruption always negatively affects businesses and financial market development. Empirical evidence shows that high corruption has a negative impact on the business results of enterprises. De-Rosa et al. (2010) found that corruption has a negative impact on the productivity of businesses in 21 transition and developing countries in Central and Eastern Europe.

When the sample is divided into countries in the European Union (EU) and non-EU countries, corruption negatively affects non-EU businesses, and corruption related to complex administrative procedures (red tape, time tax) negatively affects EU businesses. Corruption inhibits business growth (Wang & You, 2012) as the financial market grows, causing businesses to have higher borrowing costs, lower stock valuations, and worse corporate governance (Ng, 2006). For listed firms, corruption has negatively impacted the stock returns of businesses in Eastern Europe between 2004 and 2015 (Pellegrini, Sergi, & Sironi, 2017). Mashal (2011) studied countries in West Asia from 1995 to 2008; the results showed that corruption distorts resource allocation and weakens businesses' investment efficiency, thereby negatively affecting economic growth.

Although many studies confirm the negative impact of corruption on firm performance, the empirical results of some other studies show that corruption has a positive impact on the growth of businesses, and the development of financial markets.

Using market capitalization to represent the development of the stock market in six Gulf Cooperation Council countries from 2003 to 2011, Mouselli et al. (2016) confirm that corruption has a positive impact on the development of the stock market. This is consistent with the view that corruption raises the wheel of the economy by speeding up trans-

actions that allow private companies to overcome government inefficiencies. During the research from 1996 to 2012 for 14 countries on different continents, Lau et al. (2013) found that corruption reduces stock market volatility in emerging countries. Because it reduces the uncertainty associated with government policies and makes them more predictable, thereby reducing stock price volatility. While researching corruption and corporate growth in China, Wang and You (2012) found that corruption affects firm growth depending on the level of financial development. In the early stages, when the financial market is underdeveloped, corruption can promote company growth, but when the financial market is more developed, corruption inhibits company growth. Therefore, Wang and You (2012) emphasize the alternative relationship between corruption and financial development to enterprise growth. Using the GLS method when studying eight developed and developing countries in Asia from 1996 to 2004, Gani and Ngassam (2008) show that the low level of corruption positively affects the size of stock capitalization. In addition to studies showing the impact of corruption on stock market development, Gani and Ngassam (2008) and Yartey (2010) show that corruption does not impact the development of the stock market. Studying eight Asian countries between 1996 and 2004, Gani and Ngassam (2008) suggested that corruption did not affect the value of stock transactions in these countries. Using the data set from 1990 to 2004, Yartey (2010) shows that corruption does not affect the capitalization of securities in 42 emerging economies.

Results from empirical studies show that corruption may or may not affect the development of the stock market. Therefore, this article investigates the impact of corruption on the development of the EAP stock market between 2008 and 2018.

The EAP stock market has grown significantly since the second half of the 2000s. EAP's market capitalization has increased by 2.55 times in the last decade from USD 8,514 billion in 2008 to about USD 21,719 billion in 2018. Meanwhile, the world's market capitalization in this period was only 2.13 times when increasing from USD 40,683 billion to USD 68,654 billion. This shows that the size of market capitalization in EAP stock markets increases faster than the world average.
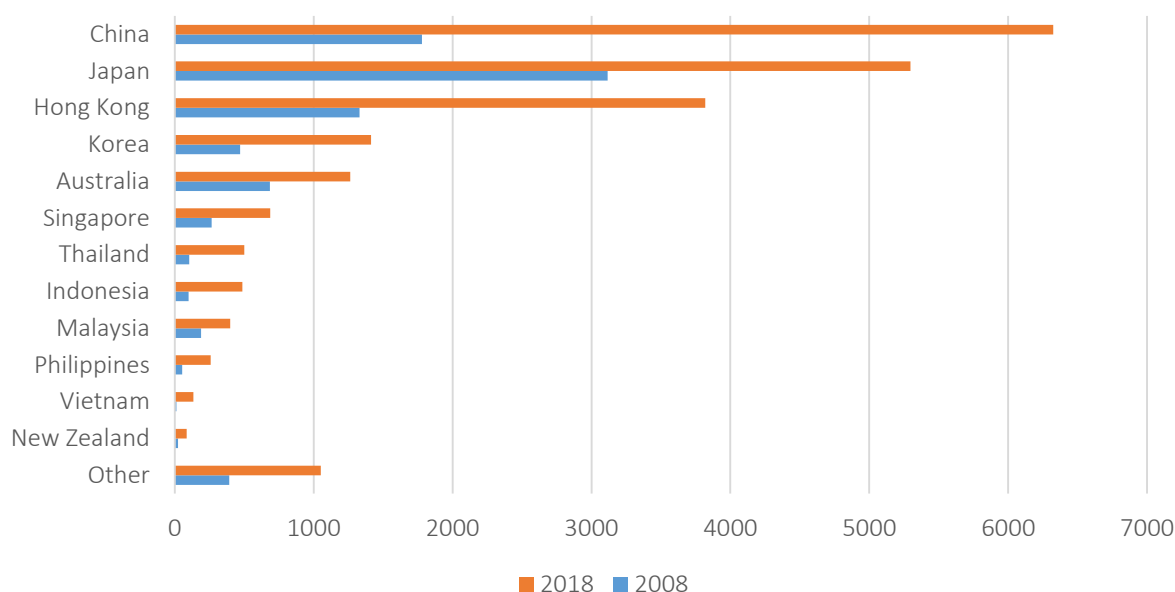
Note: Other includes EAP equity markets that have not been classified by FTSE Russell (2018).

Figure 1. Stock market capitalization at the end of 2008 and 2018 (USD billion)

Figure 1 shows the rank of domestic market capitalization in USD billion by the end of 2008 and 2018 by EAP countries. Japan's stock market capitalization at the end of 2008 was the largest in the EAP area, with USD 3,116 billion. However, since the end of 2009, China had overtaken Japan's leading position at EAP when the total market capitalization of the Shanghai Stock Exchange and Shenzhen Stock Exchange was greater than the market capitalization of the Tokyo Stock Exchange. The market capitalization of China and Japan by the end of 2018 reached USD 6,325 billion and USD 5,297 billion, respectively.

Comparing the ranking position between Figure 1 and Table 1 shows that the capitalization of a stock and the size of a country's economy are not closely related. China is the largest economy at EAP, but its market capitalization relative to China's GDP is smaller than that of Malaysia. By the end of 2018, Malaysia's market capitalization per GDP was similar to Japan, but Malaysia's economy size was much smaller than Japan. However, Australia and Korea have a similar economic scale and market capitalization at the end of 2018. Therefore, to measure the importance of capital markets in the economy, the article uses the capitalization value of stocks relative to GDP (hereafter referred to as the size or value of capitalization of stocks) to compare the size of stock market capitalization between markets. Similarly, stock transaction value relative to GDP is used to measure stock market liquidity.

By the end of 2018, there were 12 EAP capital markets classified by FTSE-Russell (2018), including five developed markets (Australia, Hong Kong, Japan, New Zealand, Singapore), six emerging markets (China, Indonesia, Korea, Malaysia, Philippines, Thailand), and one frontier market (Vietnam). Capital markets that are lower than the frontier market standards, such as Cambodia, Laos, etc. are not classified by FTSE Russell. Because Vietnam has some emerging market standard criteria and for the convenience of analysis, the article divides 12 EAP capital markets into five developed markets (Australia, Hong Kong, Japan, New Zealand, Singapore) and seven underdeveloped markets (China, Indonesia, Korea, Malaysia, Philippines, Thailand, Vietnam).

Table 1 shows that the market capitalization value of the developed capital markets tends to increase, except for New Zealand, but the stock trading value of these markets tends to decrease during the period 2008–2018. The stock market capitalization of Hong Kong is six times the GDP of 2008 and more than ten times the GDP of 2018, which is the largest at the EAP, showing the important role of

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Table 1. Corruption control and stock market development at EAP (2008–2018)

ID	Country	Market capitalization (% of GDP)			Value traded (% of GDP)			Corruption control		
		2008	2018	Aver	2008	2018	Aver	2008	2018	Aver
Developed markets	Australia	64.88	88.07	97.50	79.67	53.98	67.50	2.04	1.81	1.92
	Hong Kong	605.97	1,053.05	1,040.10	715.17	625.00	568.91	1.90	1.68	1.74
	Japan	61.85	106.55	84.30	123.24	126.81	99.34	1.34	1.42	1.53
	New Zealand	18.16	42.03	34.40	2.47	5.95	3.96	2.31	2.17	2.29
	Singapore	136.86	188.73	221.80	130.69	60.28	88.96	2.25	2.17	2.14
	Average	177.54	295.69	295.62	210.25	174.40	165.73	1.97	1.85	1.92
Underdeveloped markets	China	38.72	46.48	56.40	85.00	96.05	134.06	−0.52	−0.27	−0.39
	Indonesia	19.36	46.71	42.50	14.87	10.04	11.37	−0.59	−0.25	−0.55
	Korea	46.98	87.30	89.10	118.46	151.64	133.37	0.47	0.60	0.51
	Malaysia	81.99	111.00	132.50	35.67	37.74	40.03	−0.05	0.31	0.15
	Philippines	29.87	78.01	75.30	7.10	8.83	11.72	−0.76	−0.54	−0.57
	Thailand	35.39	99.16	86.50	36.40	76.54	65.61	−0.41	−0.40	−0.38
	Vietnam	12.47	54.10	31.70	10.24	21.53	15.98	−0.71	−0.49	−0.53
	Average	37.83	74.68	73.43	43.96	57.48	58.88	−0.37	−0.15	−0.25
	Average EAP	60.96	84.66	87.36	108.42	105.08	116.51	0.61*	0.68*	0.66*

Note: * Average value of 12 countries.

the stock market in this country's economy. The New Zealand capital market in 2008 had a market capitalization over GDP of 18.16% and a stock trading value of GDP of 2.47%, which is much lower than the other four developed markets. However, in the period 2008-2018, New Zealand's stock market's growth was the strongest compared to the remaining developed markets. The size of New Zealand's stock market capitalization in 2018 was 3.56 times in 2008, when it reached USD 86 billion or 42.04% of GDP. The transaction value increased from 2.47% of GDP (2008) to 5.95% of GDP (2018).

The market capitalization of Indonesia during this period tended to increase, but the trading value of this country's stock decreased slightly. Meanwhile, the market capitalization and trading value of the remaining EAP markets have tended to increase in the period 2008–2018. The stock market capitalization ratio of seven underdeveloped markets has increased from 37.83% of GDP in 2008 to 83.43% of GDP in 2018, the stock trading value of these markets increased from 43.96% of annual GDP. 2008 to nearly 59% of GDP in 2018. This implies that the growth in capitalization size and liquidity of equity markets in most of these countries is growing faster than the GDP growth rate. This result confirms the increasing role of the stock market in underdeveloped EAP markets.

1.1. Control of corruption at EAP

In recent years, developed markets such as Australia, Hong Kong, Japan, New Zealand, and Singapore have high levels of corruption control (low level of corruption) compared to other markets (Table 1). Although there are countries with a positive reputation for the transparent government such as Australia and New Zealand, they still recognize the corruption scandals and the damage it has caused. Canberra, a researcher at the Australian Institute, estimates that corruption costs AUD 72.3 billion (USD 57 billion) annually, equivalent to 4% of GDP (Aulby & Campbell, 2018). In the late 2000s, New Zealand parliamentarians were found guilty of fraud regarding their income through non-taxing perks (Warf, 2019, p 2.00). In 2008, Labor Party officials in the Wollongong council in New South Wales-Australia were allegedly involved in bribes from real estate developers (Warf, 2019, p. 199). However, in general, the level of corruption in Australia and New Zealand is relatively small compared to most countries in the world.

In East Asia, except for Japan, Korea, Singapore, and Malaysia, the remaining countries are ranked as the second most corrupt in the world (Warf, 2019, p. 13) – better than Africa and the Middle East. To limit corruption, the authorities in these

countries have gradually reformed the judiciary, and a series of major corruption cases were recently announced and brought to trial. In Korea, in 2016, the heads of the Lotte Group were family members who evaded USD 76 million in taxes and embezzled USD 46 million in corporate funds. In Vietnam, in 2014, Tran Van Truyen, head of the Government Inspectorate, was reprimanded by the Communist Party for hiding properties and holding significant quantities of shares. In 2018, Dinh La Thang – Vietnam's first Politburo member – and 20 other defendants were arrested for embezzling hundreds of millions of dollars at state-owned oil and gas giant. Before 2012, only 3% of all Chinese officials punished by the Party for corruption were criminally prosecuted (Pei, 2008). When President Xi Jinping launched the biggest anti-corruption campaign in China, about 1.3 million officials have been tried in relation to bribery since 2013. When President Xi Jinping launched the biggest anti-corruption campaign in China, about 1.3 million officials have been tried in relation to bribery since 2013. Two Chinese Politburo members Zhou Yongkang and Sun Zhengcai, are accused of accepting bribes and serving life sentences.

Besides, executing Hu Changqing, former deputy head of Jiangxi, for accepting bribes of over USD 950,000, sacked the deputy mayor of Beijing and supervised the construction of buildings for the Olympic games, the chief executive of China Petroleum, the official in charge of China's national railway system Quoc; sentenced to 18 years in prison by the head of the Shanghai Communist Party for lending to real estate speculators from the pension fund (Warf, 2019, pp. 166-167). Table 1 shows that efforts to control corruption in developing East Asian countries have improved over the years but at a slow pace. By the end of 2018, the corruption control index of countries, including China, Indonesia, Philippines, Thailand, and Vietnam, was still smaller than zero. In other words, these countries are still among the countries with the highest levels of corruption in the world.

Compared to 2008, the index of corruption control in developed countries of EAP, except for Japan, is decreasing slightly. However, these countries are still highly appreciated by countries around

the world for their capacity to control corruption. Corruption control index of developing countries EAP is slowly improving, but their level of corruption is still high. Therefore, the gap in corruption control between them and the developed countries of EAP is still quite high.

2. METHODS

2.1. Research model

To study the impact of corruption on stock market development at EAP, the paper presents the regression equation as follows:

$$SM_{it} = f\left(SM_{it-1}, Control_{it}, CCorruption_{it}\right), \quad (1)$$

where SM_{it} and SM_{it-1} are dependent variable and lagged dependent variable is used as independent variables in the research model. The SM variable reflects the stock market's development, as measured by the stock market capitalization value relative to GDP (SM-MCAP) and the stock transaction value relative to GDP (SM-TRADE) of each stock market. $CCorruption_{it}$ is the measure of controlling corruption, a variable representing the level of corruption of each capital market. $Control_{it}$ – control variables in the model include savings, credit, inflation, interest. The variables savings and credit are calculated as a percentage of GDP.

Equation (1) is used for the two dependent variables: size and liquidity of the stock market. Each dependent variable is regressed according to two sub-sets of data: the developed market group and the undeveloped market group and the dataset together of both market groups. Therefore, three pairs of regression results are used in this paper.

2.2. Research data

To analyze the impact of corruption on the development of the EAP stock market, this paper uses data from 12 countries, including Australia, China, Hong Kong, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, and Vietnam collected from 2008 to 2018. The 11-year time series data of countries is sufficient to analyze the impact of corruption on the development of the EAP stock market.

Corruption (*CCorruption*): This paper uses corruption control, a composite index from The Worldwide Governance Indicators (WGI), as a measure of corruption. It captures perceptions of the extent to which public power is exercised for private benefit, including small and large forms of corruption (Kaufmann, Kraay, & Mastruzzi, 2011). The value of this variable ranges from –2.5 to 2.5 and represents the lowest to the highest corruption control. The advantage of using WGI's corruption control data in models is that all countries are assessed on the same basis to allow comparisons, and it is widely used in research papers on corruption (Gani & Ngassam, 2008; Cieślik & Goczek, 2018).

The values of all variables, except for corruption, are converted to log form before being included in the research models. The dependent variable data and the control variables data in the model are collected from World Bank[1] as follows.

- Dependent variable (SM): stock market development. The development of the stock market is reflected in the size and liquidity of the stock market. The size of the stock market (SM-MCAP) is the percentage of stock market capitalization relative to GDP. The listed market capitalization value measures it at the last trading day of the year divided by GDP. Stock market liquidity (SM-TRADE) is the percentage of stock trading value relative to GDP. It is measured by the value of listed share transactions at the last trading day of the year divided by GDP.

- Savings: Garcia and Liu (1999) showed that the high savings rate has a positive impact on the stock market. In other words, the larger the savings rate, the higher the possibility that cash flows into the stock market will positively affect the stock market. Therefore, to measure this variable, the paper uses total domestic savings in GDP.

- Credit, interest rate, and inflation: measure the size of credit by the value of a country's domestic credit for the private sector relative to GDP. The greater the size of credit in the

economy enables to reduce interest rates and increase access to loans. However, empirical results show that credit can have a negative impact (Gani and Ngassam, 2008), positive impact (Yartey, 2010), or no impact (Mousselli et al., 2016) on the development of the stock market. Inflation is measured by the consumer price index with the base year is 2010 = 100. Yartey (2010) found that inflation has a positive impact on the stock market. But when inflation rises, the influence will limit consumption, thereby negatively affecting businesses and the stock market. Measure interest rates by bank rates to meet the needs of short-term loans to the private sector. Increased loan interest rates reduce costs and reduce the profits of businesses, thereby negatively impacting the stock market.

2.3. Method of estimation

Data from 2008 to 2018 of 12 countries were used to study the impact of corruption on EAP stock market development. This dataset is split into two sub-datasets:

1) the first sub-dataset: a dataset of five developed markets (Australia, Hong Kong, Japan, New Zealand, Singapore) used to quantify the impact of corruption and the factors affecting the development of developed stock markets at EAP;

2) the second sub-dataset: a dataset of seven underdeveloped markets (China, Indonesia, Korea, Malaysia, Philippines, Thailand, Thailand, Vietnam) used to quantify the impact of corruption and the factors affecting the development of undeveloped stock markets at EAP.

Containing the data from 12 countries, the general dataset does not indicate differences in the level of stock market development among countries, but only quantifies the impact of corruption and the factors affecting the development of the EAP stock market.

One compares regression results between datasets to determine how corruption and control vari-

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1   https://data.worldbank.org/indicator

ables impact the development of the EAP stock market. From these results, the same and different effects of corruption have been discovered on the development of the stock market between the developed and the underdeveloped markets at EAP.

The 11-year time series of all variables form a balanced panel, so table data techniques are used to estimate regression models. Besides, the relationship between variables in the research models can cause endogenous problems. Therefore, the generalized method of moments (GMM) of Hansen (1982) under the moment condition proposed by Ahn and Schmidt (1995) is used in this paper to estimate for panel data using GMM techniques to overcome endogenous and heteroscedasticity problems in regression models with panel data. Finally, post-estimation tests performed by the paper include Arellano and Bond's (1991) test of series-series correlations and Sargan's (1958) test of the suitability of the estimation method used.

3. RESULTS

The paper combines transaction results analysis and discusses the results in this section. Table 2 presents the results of estimating panel data of the study model with datasets.

The results of tests from the research model to the datasets show that the Sargan's test of condition moment and the techniques used in the GMM estimation are valid; the Arellano and Bond's test of the second-order shows no autocorrelation. The results from these tests show that the research model using the GMM technique is suitable for datasets.

According to regression results for the data set of 12 EAP markets, including both developed and undeveloped markets, the dependent variables are the market capitalization values shown in column (3a) and the value of stock transactions presented in column (3b). It shows that most of the variables in the research models impact the development of the EAP stock market.

Savings and credit: In six regression results columns, the regression coefficients for the credit variable are positive, but only the regression results in column (3a) are statistically significant at 10%, the regression coefficient of the saving variable is only statistically significant in column (1b). This result shows that savings negatively impact trading value in the developed stock market of EAP with a 1% significance level, but credit positively affects market capitalization in EAP stock markets.

Inflation: When distinguishing (columns 1a, 2a) or indistinguishable (column 3a) in terms of stock market development among markets, inflation all negatively affects the market capitalization of EAP markets. This result is different from Yartey (2010) in 42 emerging economies from 1990 to 2004. Besides, the article discovered that inflation

Table 2. Corruption affecting the development of the EAP stock market

Dependent variable	SM-MCAP			SM-TRADE		
	Developed	Underdeveloped	All	Developed	Underdeveloped	All
Variable	(1a)	(2a)	(3a)	(1b)	(2b)	(3b)
Lagged dependent	1.02***	0.78***	0.97***	0.97***	0.87***	1.01***
Saving	0.03	0.17	−0.52	−0.12***	0.48	−0.27
Credit	0.39	0.53	0.50*	0.03	1.00	1.00
Inflation	−0.71*	−0.78***	−1.07***	0.43*	−0.21	0.14
Interest	−1.34***	−0.90***	−1.32***	0.07	−1.36***	−1.27***
CCorruption	0.20	−0.60**	−0.70***	0.75	−0.48*	0.14
_cons	3.13	4.05*	6.98**	−1.47	−0.26	0.14
N	50	70	120	50	70	120
Arellano and Bond's test						
AR1	−1.77*	−2.06*	−2.86***	−1.73*	−1.78*	−2.61***
AR2	−0.35	0.3143	0.25	1.56	0.87	1.64
Sargan's test	50.00	53.60	39.68	50.00	48.88	50.00

Notes: *, **, *** are statistically significant at 10%, 5%, and 1%, respectively.

has a positive impact on the value of stock transactions in developed markets. This result is logical because developed markets often control inflation better than undeveloped markets. Statistical analysis of the period 2008–2018 shows that the average inflation rate in underdeveloped markets is almost two times higher than in developed markets.

Interest rate: Except column (1b), the regression coefficient of interest rate variable is statistically significant in 5/6 regression models. This means that, in the statistical aspect, interest does not affect the value of stock transactions in the data set of the developed stock markets under EAP. In contrast, the regression results in the remaining five columns proved that interest was one of the important factors affecting the development of the EAP stock market because it affects both stock market capitalization and trading value in EAP countries.

Corruption: Using the sub-data of developed EAP stock markets, the regression results in columns (1a, 1b) show that corruption does not impact these markets' development. In contrast, the sign of the regression coefficients of corruption is negative and significant in the column (2a, 2b). This result shows that corruption has a negative impact on both market capitalization and trading value in undeveloped EAP stock markets. As a result of the regression with general data covering 12 markets, corruption only has a negative impact on the capitalization of these markets, but it does not affect the transaction value of these 12 markets.

The first order dependent variable is statistically significant in all six research models. This result proves that these markets' situation influences the development of the EAP stock market both in the current year and the previous year.

4. DISCUSSION

The regression results from Table 2 on the datasets show that corruption, macroeconomic factors (savings, credit, inflation, interest rates) and first-order dependent variables impact the development of EAP stock markets.

Credit is a factor affecting the stock market value with a 10% significance level (column 3a), but

the regression coefficients of this variable are not statistically significant in columns (1a) and (2a). It shows that the regression model with large data samples has advantages over small samples in detecting factors affecting the size of stock market capitalization. The size of credit has a positive impact on market capitalization. Accordingly, when credit in the economy is plentiful, enterprises' ability to meet loans increases, contributing to improving the efficiency of enterprises, thereby promoting the development of the stock market. This result supports the research of Yartey (2010) but is contrary to Gani and Ngassam (2008) results.

Inflation: As the inflation control capacity of developed markets is better, when inflation increases, the negative impact on the market capitalization of both market groups, but inflation only positively affects the liquidity of developed markets. Accordingly, it can be inferred that as rising inflation lowers stock prices in the EAP capital market but increases the volume of stock traded in developed markets. Because of the thought that when rising inflation raises costs and leads to a decrease in corporate profits, investors in the stock market will discount the stock price when inflation rises. As a result, rising inflation reduces stock prices in both market groups. However, when the stock price decreased, the demand for the stock market increased in developed markets, and this increase was stronger than the decrease in the stock price. As a result, rising inflation increases the volume of shares traded in developed markets.

Interest rates have a negative impact on the development of the stock market in EAP countries. Increasing interest rates lead to an increase in the average cost of capital of the business and erode their profits. Investors are less involved in the stock market when the total cost-per-share tends to increase, and corporate profits are likely to decrease because of the increase in interest rates. From 2008 to 2018, the average interest rate for developed markets was 4.84%, much lower than the average interest rate in undeveloped markets of 7.04%. Accordingly, when interest rates increase negatively impact market capitalization and stock trading value in EAP markets, this factor is not significant in explaining the value of stock transactions in developed markets (column 1b). This

result shows that developed markets control loan interest better, so its scope of impact on stock market development is narrower than that of undeveloped markets.

Savings negatively impact stock transactions in developed markets, but it makes no sense to explain the value of stock capitalization in these markets. This result supports the view that investors in developed markets tend to invest in the value of investing philosophy rather than short-term surfing investments. Therefore, although the size of savings in GDP increases, the stock market's profitability is not attractive enough for investors. They will reduce transactions leading to a decrease in liquidity across the market.

Although the corruption variable has a regression coefficient greater than zero, it is not statistically significant in explaining stock market development in developed EAP markets (columns 1a, 1b). However, when combining both market groups, the regression coefficient of this variable is statistically significant at 1% (column 3a). This can lead to unreasonable inferences when assessing the impact of corruption in already developed markets. Statistical analysis in the period 2008-2018 showed that the control-corruption index of the seven underdeveloped markets and the Japanese market tended to increase, while this index of the remaining four developed markets had a slightly downward trend. Consequently, the regression coefficient of the corruption control variable in

column (3a) is negative and statistically significant when it is affected by more underdeveloped markets.

The regression results from columns (2a) and (2b) detect corruption affecting the development of undeveloped stock markets. Controlling corruption increases the negative impact on both the size and the liquidity in the stock market. As analyzed in sub-section 3.2, over the past decade, developing countries in Asia have been making efforts to control corruption reflected in a series of large corruption cases being brought to trial. In these cases, many officials taking bribes from large domestic corporations have demonstrated that corruption has gone beyond the state to penetrate business relationships. The countries' efforts to control corruption have improved the anti-corruption index in the seven capital markets at EAP, and it has also reduced the benefits of corporations gained from the implicit relationship between officials compared to before. As a result, corruption has positively impacted the development of the stock market in underdeveloped countries from 2008 to 2018. This result indirectly supports the view that corruption allows private companies to overcome the government's inefficiencies and thus promote financial markets during this period of underdevelopment (Wang & You, 2012). This paper deals with the EAP stock market, while Wang and You (2012) only study the Chinese financial markets, so the empirical results from this paper are more extensive than Wang and You (2012).

CONCLUSION

This paper examines the impact of corruption on stock market development at EAP between 2008 and 2018 and other macroeconomic factors. To achieve this goal, the study uses the GMM technique when estimating a dynamic panel data model. The regression model uses two dependent variables, market capitalization and stock transaction value relative to GDP, to represent stock market development. Corruption control indexes collected from The Worldwide Governance Indicators are the independent variable – representing corruption factor, and macroeconomic variables are control variables. To compare the impact of corruption on the development of the stock market in markets by the development level, the research model is regressive on the general dataset and two sub-datasets separated from the total dataset. The empirical results found that corruption has a positive impact on both capitalization size and stock liquidity on undeveloped stock markets at EAP. Corruption also affects the size of stock capitalization on the data set of 12 EAP stock markets, but it does not affect the development of the stock market developed at EAP when regressions in the sub-sample. This result is evidence supporting the view that underdeveloped stock markets are more affected by corruption than developed markets. These impacts may be related to the implicit relationship of economic benefits between large enterprises and officials in underdeveloped markets.

Besides, macroeconomic factors such as inflation, interest rates, savings, and credit affect some stock markets at EAP. Both inflation and interest rates negatively impacted the market capitalization of EAP stock markets across all data sets. Both of these factors have a negative impact on the stock liquidity in the total data set, but the results for each sub-dataset are different. Interest rates have a negative impact on underdeveloped stock markets. Inflation has a positive impact on developed stock markets. Credit has a positive impact on the market capitalization value of 12 stock market data sets, but its regression coefficients are not statistically significant in the regression results for sub-datasets. Savings have a negative impact on the trading value of developed stock markets at EAP. This result shows that investors in developed markets tend to invest in the value of investing philosophy. Because when the stock market is unattractive, it is impossible to attract more cash flow into the market even when the savings rate increases, even if the savings have a negative impact on the value of stock transactions. On the contrary, when inflation increases, the market price of many stocks falls lower than its intrinsic value, leading to a higher increase in the volume of stocks traded than the decrease in the stock price. It is shown by the increase in inflation, which has a positive impact on trading value but a negative impact on market capitalization. Because equity investors believe that developed markets often control inflation well, rising short-term inflation is an opportunity for investors to buy stocks at market prices lower than their intrinsic values, the value of transactions of the whole market increased.

AUTHOR CONTRIBUTIONS

Conceptualization: Lai Cao Mai Phuong.
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Writing – original draft: Lai Cao Mai Phuong.
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