ORIGINAL RESEARCH

# An Analysis of Determinants of Foreign Direct Investment in Banking Industry from Taiwan to ASEAN Countries with Gravity Model

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## Abstract

This paper examined the choice of FDI location of Taiwanese banks' FDI with a particular on a sample of the Association of Southeast Asian Nations (ASEAN) member states. The pattern and the determinants of Taiwanese banks' FDI in ASEAN are investigated with gravity model framework and examined by panel data analysis from 2000 to 2019. It was found that Taiwanese banks generally preferred to directly invest in countries that had large market size, high economic freedom, closer geographical proximity, larger value of bilateral trade, and large amount of Taiwanese outward direct investment. Unlike previous studies, the results confirm that interest rate spread had relatively insignificant effects on the location choice of Taiwanese banks in ASEAN. Additionally, control of corruption in host countries seemed to have significantly negative effect on location choice of Taiwanese banks. The insights presented in this paper could offer useful suggestions for both governments and investors.

**Keywords** ASEAN countries · Financial FDI · Gravity model · Internationalization · Location choice · Taiwanese banks

**JEL Classification Codes** G11 · G21

## 1 Introduction

According to the annual report from UNCTAD (2018), foreign direct investment (FDI) flows have increasing extraordinarily from US$330 billion to US$1.43 tril-

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lion in the recent decades. This growth is partially resulted from the considerable growth in international capital flows in the services sector, especially from the banking industry (UNCTAD, 2008). The rapid increase in the importance of multinational banks (MNBs) have spurred researchers to investigate the factors and motivations that affect location choice of overseas expansion in the banking sector and the possible influences on the global banking industry (Focarelli & Pozzolo, 2008; Batten & Szilagyi, 2011). Among service sectors, internationalization of the banks started to grow in importance in the 1970s and is still developing continuously (Lothian, 2002). Many studies in literature show that performance of multinational firms was better than that of domestic firms due to inventory utilization and internationalization of investments (Shah, Said & Anwar, Jamil & Hasnu, SAF, 2018). Internationalization of banks refers to the process of increasing involvement and providing loan, asset, and liability management to foreign counterparts in the global market.

According to the World Economic Outlook Database of the IMF, Taiwan was ranked as the 17th richest country out of 191 countries in 2019. However, it is considered that Taiwan has now on the mature market stage. The pace of growth in economy and demand of domestic market have slowed down gradually. In the past two decades, Taiwanese MNBs grown fast, mainly due to economic integration, deregulation, and liberalization of the domestic and international market. Following the upsurge in outward foreign direct investment (OFDI) by Taiwanese firms from 1990s, Taiwanese banks have expanded abroad in recent decades. By the end of 2020, Taiwanese banks have 521 overseas branches, subsidiaries, and representative offices. Generally, overseas expansion allows Taiwanese banks to address the domestic difficulty which is caused by excessive competition (overbanking) in the domestic market. FDI in banking industry has witnessed impressive boom in most ASEAN nations. MNBs from Europe, North America and Japan have already set up branches in the Southeast Asia region for many years. By contrast, Taiwanese banks were relatively late to enter the markets of Southeast Asia countries.

Financial industry is a special industry sector that is under government monitoring and management. Internationalization of banks is affected by financial environment and regulations of various host countries. Location choices of internationalization and international activities of banks are substantially affected by regulatory restrictions of both host and investing countries. For example, high degree of economic freedom and deregulation in host country may facilitate the internationalization of financial firms (Miller & Parkhe ,1998). After the financial crisis in 2008, Taiwanese government took strong measures to support domestic banks to venture into foreign territories. However, policies and regulations of host countries may change over time. For example, governments may discourage cross-country M&As or single acquisitions of MNBs by regulatory restrictions to create a conducive environment for domestic banks (Ahmad, 2012). Furthermore, governments may prefer to keep domestically owned banks have dominant power in local markets. If this is the case, the entry and expansion of MNBs may be more challenging. In recent years, ASEAN nations such as Thailand and Indonesia, have more conservative attitudes toward FDI inflows in financial industry and entry of MNBs. Consequently, regulatory restrictions of entry modes, licensing, registered capital are more rigorous for foreign banks, including banks from Taiwan.

While the research of internationalization investigates a variety of topics in terms of developed countries, such as United States, Australia, and Japan, (Roberts & Arnander, 2001; Merrett, 2002; Batten & Szilagyi 2011), little light has been shed on these issues with respect to developing countries and emerging markets. Since Taiwan and ASEAN member states (AMS) are considered as important developing emerging markets of the Asia Pacific region, this study may provide practitioners of financial firms and policymakers with beneficial decision evidence about future strategies and policies.

Hence, this study attempts to partially fill the gap in the literature on implementing a new methodology with a gravity model and focuses on the location choices of internationalization that involve physical presence overseas. A physical presence of MNBs includes branching and acquisition of subsidiaries which are regard as primary basis of traditional banking activities (Focarelli & Pozzolo, 2000). In this research, the main aims are to examine the development and determinants of FDI location choice of the Taiwanese banking industry in ASEAN nations and identify the impact of determinants. Several theories and literatures suggest that transnational banks follow their corporate and non-corporate customers to go abroad (Esperanca & Gulamhussen, 2001). Emphasis of this study is put on the phenomena of "customer following" and "market seeking". Also, to study the determinants of FDI location choice of the Taiwanese banking industry will give a broader overview of FDI from high-income countries to developing countries.

## 2 Literature review

Since the 1960s, the number of cross-border economic activities has surged dramatically, and multinational enterprises have expanded their business quickly. Following this global trend, international banks or multinational banks also have thrived for a long period of time, showing the rising importance and rapid growth of the overseas business (Slager, 2006). Casson (1990) defined an international bank as a bank that owns or controls entities in two or more countries. Scholtens (1991) classified an international bank as a bank that participates in cross-border currency activities or other financial transfer.

The pace of internationalization of local financial business could be facilitated by globalization, deregulation, and developing information trading technology (Batten & Szilagyi, 2011). One of the important topics in the literature is the incentive and the determinants for cross-border bank expansion. A variety of factors have been identified to explain why banks go internationalization and enter the specific foreign markets. (Yamori, 1998; Berger, 2007; Buch & Lipponer, 2007). While the "client following" theory proposes that cross-border expansion in manufacturing contribute to the internationalization of banking industry, the "market seeking" theory states that banks go abroad to pursue additional profit from offering financial services and products in the host countries (Focarelli & Pozzolo, 2008; Chen, Liang, & Huang, 2014).

Academic literature have broadly studied and reviewed the major determinants of FDI from both theoretical and practical aspects. In the words of Eicher et al. (2012), the FDI determinants can be categorized in factors relevant to the attractiveness of

the economic performance, and the quality of host countries' economic policies. Location is determined by certain factors that make a specific location or country more or less attractive for foreign direct capital inflows (Kurtović et al., 2020). The variables with little support for inclusion probabilities are multilateral trade openness, host country business costs, host country infrastructure, and institutions. In contrast, the variables with constantly high inclusion are conventional gravity variables, cultural distance factors, parent-country per capita GDP, relative labor endowments, and regional trade agreements (Blonigen & Piger ,2014).

In terms of the nature of products providing, official regulations, and information intensity, banks are distinct from manufacturing. Consequently, the location variables that the banking industry focused on are partly different from those of the manufacturing industry as well (Miller & Parkhe, 1998). As the manufacturing industry paid more attention to market scale, abundant lower-cost resources, and comparative advantages of the host countries, the banking industry concentrated on following the customers, which were usually the manufacturers from home countries (Ahmad, 2012). Though, the internationalization of manufacturers and internationalization of banks have the same operating philosophy: pursuing profits, markets, customers, etc. The banks with cross-border shareholdings prefer to invest in host countries where expected profits are larger, owing to higher expected economic growth, market size and the prospect of reducing local banks' inefficiency (Focarelli & Pozzolo, 2000; Ahmad, 2012). Goldberg & Johnson (1990) showed that per capita income of host country was positively related to the number of overseas offices or branches of American banks in that nation. Yamori (1998) proposed that Japanese multinational banks prefer to locate in host countries with higher per capita income. In other words, the host countries' characteristics and economic integration related to profitability and risk are important incentives of a bank's decision to enter a foreign market.

Though, distinct from the studies arguing that commitment economic growth in stable periods and declines in the crisis period, Lee, Song, & Kwak (2014) supported the perspective that experiencing earlier crises boosts commitment needed for overseas expansion of banks and strengthens of the business network. By applying the gravity model to analyze the FDI of multinational banks, Choi, Tschoegl & Yu (1986) proposed the positive relationship between attractiveness of the financial center and the economic scale of the host country which the financial center locates in. As a strategy for international competition, domestic banks of home countries were inclined towards establishing overseas branches in the host countries whose local banks have been established in the home countries.

Bilateral geographical distance and market sizes have been employed as the proxies of determinants in empirical gravity model analysis which focused on the activities of FDI (Blonigen & Piger, 2014). Bilateral distance is considered to represent transportation costs or supervision costs (Ghosh & Wolf, 1999). Geographical proximity is also a critical factor in explaining the foreign expansion of banks in certain countries (Berger, 2007). In some cases, banks prefer to expand their international business and establish branches in countries which are former colonies or have the common culture and language (Roberts & Arnander, 2001; Merrett, 2002).

The study by Galindo et al. (2003) focused on the impact of different regulatory systems on FDI of MNBs and articulated that the negative relationship between the

controlled assets of foreign banks and the distance between the two countries. Generally, the overall market selection for banks' overseas expansion was mostly based on geographic focus, cultural or economic proximity, and deregulation (Parada, Alemany, & Planellas, 2007). Mutinelli & Piscitello (2001) found that the overseas expansion of the Italian banking industry in the 1990s was affected by the export volume of the manufacturing industry in Italy. Buch & Lipponer (2007) studied the OFDI of the German banking industry and obtained results that in line with the previous related literature. Most of the literature employed total bilateral trade value or bilateral FDI value as a proxy to measure the strategy of following the customers.

The complex country specific effects of corruption on FDI inflows are thus far discussed and be divided into to two principal views: One of them argues that corruption can help to improve the quality of investment and status quo under certain conditions and therefore contributes positive impact on FDI inflows, while the other view argues that corruption has a negative effect on the variable of interest and the government efficiency and then harms the whole economy (Leff, 1964; Méon & Sekkat, 2005; Zander, 2021). Due to the complicated impact of corruption, the effects of corruption on internationalization of banks and FDI inflows in banking industry should be a focus for research.

**Table 1** Ranking of Taiwanese Domestic Banks

| Ranking | Institutions | Equities (NT$ Million) | Number of Branches in Taiwan | Number of Overseas Branches |
|---|---|---|---|---|
| 1 | Bank Of Taiwan | 388,290.00 | 163 | 21 |
| 2 | CTBC Bank Co., Ltd. | 314,660.00 | 151 | 118 |
| 3 | Mega International Commercial Bank | 297,533.00 | 107 | 38 |
| 4 | Cathay United Bank | 248,453.00 | 164 | 69 |
| 5 | Taiwan Cooperative Bank | 244,820.00 | 269 | 24 |
| 6 | Taipei Fubon Commercial Bank Co., Ltd. | 225,659.00 | 134 | 33 |
| 7 | First Commercial Bank | 222,718.00 | 187 | 40 |
| 8 | Hua Nan Commercial Bank, Ltd. | 205,134.00 | 185 | 16 |
| 9 | E.Sun Commercial Bank, Ltd. | 182,328.00 | 138 | 28 |
| 10 | Land Bank of Taiwan | 177,680.00 | 149 | 8 |

**Source**: Author, using Banking Bureau, R.O.C. (Taiwan) online data

Slager ([2006]) integrated the incentives for bank internationalization proposed in the past and clarified the incentives into 11 incentives (net interest margin, new market, cluster, customers, etc.). Banks follow customers from home countries to foreign markets to avoid losing client relationships. Banks can also investigate growth opportunities for domestic customers and assist customers to invest overseas. Moreover, internationalization provide opportunities for banks to diversify OFDI in different countries or regions to reduce market uncertainty and improve the risk management. Closer geographical distance between home and host countries, the common language, the administrative system, and the similar culture should be the supportive boost for banks to penetrate the foreign markets. (Slager, [2006]).

## 3 Major Taiwanese banks and the internationalization in ASEAN

### 3.1 Major Taiwanese banks

In the third edition of the 'World's Best Banks' list which proposed by Forbes magazine and Statista, ten Taiwanese banks can be found in the list, which are mostly private banks, only two state-owned banks were selected. Table 1 shows the ranking of top 10 domestic banks in Taiwan (end of Mar. 2021), which was measured by equities, and most of them are not state-owned banks. The interest rate spread for banking sector had been decreasing in recent years, from 1.36% in 2010 to 1.23% in the third quarter of 2021. However, the most important source of profit for the banking industry is the revenue from the interest rate spread of deposits and loans. Because of the low interest rate environment, low return on assets (ROA), and return of equity
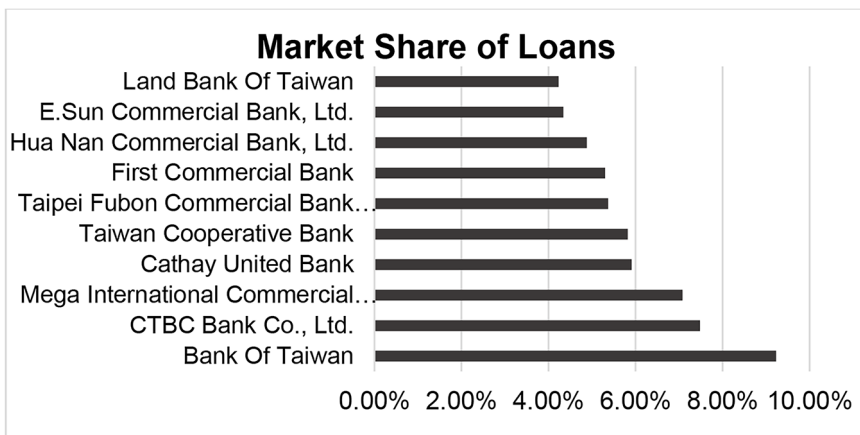


**Fig. 1** Top 10 Taiwanese Banks in Market Share of Loans ( end of Mar. 2021). (**Source**: Author, using Banking Bureau, R.O.C. (Taiwan) online data)

(ROE) in domestic market, international expansion is viewed as a beneficial means for Taiwanese banks to enhance profitability.

In the past two decades, the Taiwanese financial industry has witnessed several structural changes. To pursue economies of scale and enhance profitability, financial holding corporations combine banks, insurance companies, and other financial institutions by mergers and acquisitions (M&A). Following with the growth in the number of branches, domestic competition among banks has become progressively severe. Market share of loans and deposits gives a general idea of the current competitive position that a bank achieves in the domestic market by calculating the percent of total loans or deposits services offered by a particular bank, so that banks with high market shares are considered to be more competitive than smaller competitors. Among the top ten banks in Taiwan (Fig. 1), only Bank of Taiwan had a loans market share about 9%. Additionally, the total market share of the top three banks was even less than 25% of the whole market, indicating the low concentration of the domestic market. However, banks with large scale and high market share of loans, or deposits show higher average operating efficiency than banks with low market share (Li et al., 2019). Due to the similar financial services provided by banks, Taiwanese banks face harsh competition which cause decreasing profitability in the local market.

### 3.2 The Internationalization of Taiwan Banks in ASEAN

Overseas expansion in ASEAN may help Taiwanese banks to address the domestic difficulties of narrowing interest rate spread and deteriorating asset quality since the 1990s (Liang et al., 2018). Following the upsurge in OFDI by Taiwanese firms, Taiwanese banks have quickened their pace of internationalization. As of 2020, Taiwanese banks had 521 overseas affiliates, and 426 of them locate in Asian region. Of the 426 overseas branches and offices in Asia, the largest number are in the mainland
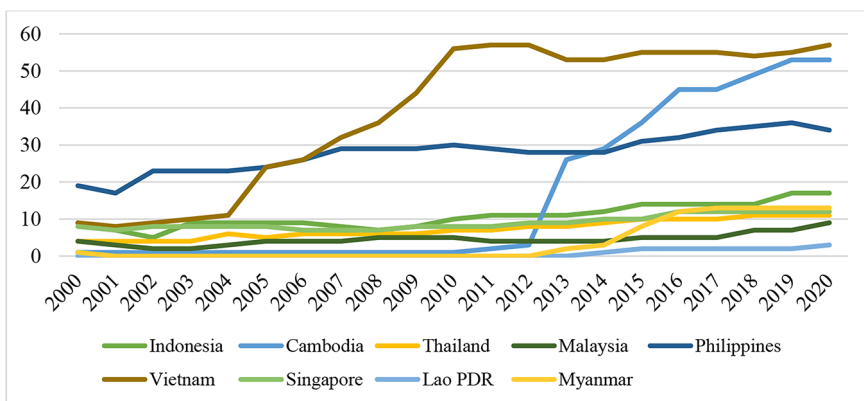


**Fig. 2** Distribution of Overseas Branches of Taiwanese Banks in ASEAN (from 2000 to 2020). (**Source**: Authors, using Banking Bureau, R.O.C. (Taiwan) online data)

China (90), followed by Hong Kong (70), and a total of 209 in the nine ASEAN countries.

Figure 2. presents that the number of Taiwanese overseas branches in ASEAN increased considerably in the past two decades. Until 2020, Vietnam has the most branches of Taiwanese banks, while Lao PDR has only three branches. Most of the Taiwanese banks prefer to establish overseas branches (28%) and representative offices (10%) rather than subsidiary banks (3.8%) (see Table 2). This phenomenon indicates that Taiwanese banks have different investment costs and expectations for the southeast Asian market. Moreover, Taiwanese banks didn't have sufficient knowledge and experience of expanding business in the southeast Asian region. Consequently, banks were more likely to cooperate with the "New Southbound Policy" and establish branches and representative offices at lower investment costs to serve Taiwanese firms and collect more market information in southeast Asian nations.

Compared to other Asian countries like Japan and South Korea, ASEAN economies have relatively lower financial market saturation and penetration. Since 2016, the Taiwanese government has implemented the New Southbound Policy that encourages domestic firms and banks to directly invest in South-Asian nations. However, the economic developments, financial regulations, and other institutional conditions vary across ASEAN nations. Location choices and entry strategy are crucial issues for overseas expansion of Taiwanese banks

In the Taiwan Industry Reports: 2021 Banking Industry, although the COVID-19 pandemic caused a negative impact on the overseas business of Taiwanese banks, lots of data show that Taiwanese financial holding corporations have stable performance in ASEAN in the recent year. Taiwanese banks have outstanding performance in ASEAN member states (AMS) in the recent years. However, AMS have implemented more strict financial regulations and increased the minimum registered capital for foreign banks to protect domestic banks. Therefore, many Taiwanese banks face the difficulty to obtain licenses for subsidiary establishment

Taiwanese banks utilize client relationships with Taiwanese multinational firms, further offer clients with financial services such as deposits and remittances service, wealth management to gain profits with lower credit-checking cost in foreign markets. After 2016, Taiwanese government implemented the "New Southbound Policy" that encourages domestic firms and banks to invest in South-Asia nations. The Finan-

**Table 2** Number of Overseas Branches of Domestic Banks in Asian Area

| Asian area | Total | Branches | Sub-Branches | Representative Offices | Subsidiary Banks | Others |
|---|---|---|---|---|---|---|
| Total | 426 | 99 | 28 | 48 | 15 | 236 |
| Hong Kong | 70 | 20 | 1 | 2 | 1 | 46 |
| Macau | 3 | 3 | 0 | 0 | 0 | 0 |
| Mainland China | 90 | 25 | 8 | 4 | 5 | 48 |
| Korea | 2 | 0 | 0 | 0 | 1 | 1 |
| Japan | 48 | 9 | 0 | 0 | 1 | 38 |
| India | 4 | 2 | 0 | 2 | 0 | 0 |
| ASEAN | 209 | 40 | 19 | 40 | 7 | 103 |

**Source**: Author, using Banking Bureau, R.O.C. (Taiwan) online data

cial Supervisory Commission (F.S.C.) of Taiwan also supports domestic banks to expand their regional footprints, especially in the ASEAN where the financial market penetration rate is relatively low. Nonetheless, Taiwanese bank may not always be able to follow Taiwanese firms because financial regulations vary across countries

# 4 Model

## 4.1 Model framework

This study adopts a gravity model framework and conducts a panel data model to examine which determinants affect the location choices of Taiwanese banks in ASEAN nations. The accumulated amount of Taiwanese OFDI in financial industry is considered as the dependent variable in the extended gravity models with panel data analysis. The yearly data was collected from the database of The Investment Commission R.O.C. (Taiwan).

The gravity model was derived from the Law of Universal Gravitation by Sir Isaac Newton. Newton also inferred that the gravitation decreases with the increase in the square of the center-to-center distance of the two objects. The concept of a gravity model emerged firstly in the field of economics was in 1889 when Ravenstein adopted it to examine migration patterns in the UK (Anderson, 2011). The concept of the estimation equation is the same as the above equation of the Law of Universal Gravitation, so it is called Gravity Model.

Some literature propose that there was a sizeable relationship between the size of extended markets and the stock of FDI. (see Levy-Yeyati, Stein, & Daude, 2003). The larger the extended market of the host country, the higher the amount of FDI inflows. The larger the extended market of the home country, the smaller the amount of OFDI flows. Interestingly, the influence of distance was not significant and was not consistent with the expectation of the gravity model. Combining theories, the static model for determinants of FDI was investigated using the following basic specifications:

$$lnFDI_{ijt} = \alpha + \beta_1 lnMS_{jt} + \beta_2 EF_{jt} + \beta_3 lnBT_{ijt} + \beta_4 lnTDI_{jt} + \beta_5 Dist_{ij} + \beta_6 Cor_{jt} + \beta_7 Int_{jt} + \epsilon_{ijt}$$

where the dependent variable (*FDI*) is the Taiwanese OFDI in financial industry, and $t$ indicates time. $\alpha$ stands for the constant term. $MS_{jt}$ refers to the market size of host countries. $Dist_{ij}$ indicates the geographical distance between host and home countries. $EF_{jt}$, $BT_{ijt}$ and $TDI_{jt}$ represent the economic freedom, the bilateral trade value, and Taiwanese OFDI, respectively. $Cor_{jt}$ refers to control of corruption. $Int_{jt}$ indicates the interest rate spread.

## 4.2  Variables and Hypothesis

### 4.2.1  Market Size (*MS*)

Market size is a key determinant affecting a country's FDI attractiveness and a crucial factor influencing internationalization of firms. (Brouwer et al., 2004; UNCTAD, 2008). Empirically, the relation between the host country's economic and market size and FDI is the most tested hypothesis (see for example, Wheeler & Mody, 1992; Bevan & Estrin, 2004; Becker & Cieslik, 2020). Per capita income of host country is positively related to the number of overseas offices or branches of multinational banks in that nation (Goldberg & Johnson, 1990; Yamori ,1998). In this study, per capita GDP is used as the proxy for market size. The open-source data was gathered from the database of World Bank.

**Hypothesis 1**  The GDP per capita of a host country has positive influence on FDI of Taiwanese banks in a host country. The greater the GDP per capita of a host country, the greater the OFDI of Taiwanese banks in the host country.

### 4.2.2  Economic Freedom (*EF*)

Economic freedom is found to cause a consistently positive impact on FDI inflows (Sambharya & Rasheed, 2015; Economou, 2019). This indicator should be classified as the market-seeking variable. The index of economic freedom is graded on a scale of 0 to 100 and provided by The Heritage Foundation as yearly data. The lower the index, the more the restrictions in host countries are.

**Hypothesis 2**  The degree of economic freedom of a host country has positive influence on the FDI of Taiwanese banks in a host country. The higher the degree of economic freedom, the greater the OFDI of Taiwanese banks in the host country.

### 4.2.3  Bilateral Trade Value (*BT*)

Several literatures suggests that "customer following" and "market seekers" explain the pattern and trend of internationalization of service companies including financial firms. Banking industries internationalize to follow their customers (Miller & Parkhe ,1998). Location choices of the banking industry to establish branches abroad were positively influenced by the export volume from home country to host countries (Heinkel & Levi, 1992; Mutinelli & Piscitello, 2001; Buch & Lipponer, 2007). In this study, the bilateral trade value equals the total value of imports plus the total value of exports between Taiwan and the host countries. The Ministry of Finance, R.O.C. provides the essential annual data.

**Hypothesis 3**  The value of bilateral trade between Taiwan and a host country has positive influence on the FDI of Taiwanese banks in a host country. The greater the

value of bilateral trade between Taiwan and a host country, the greater the OFDI of Taiwanese banks in the host country.

### 4.2.4  Outward direct Investment from Taiwan (*TDI*)

In order to examine whether Taiwanese banks follow their major customers to go internationalization, OFDI from Taiwan which is measured by the aggregate amount of outward investments except of the investments in financial and insurance industry to get rid of the problem of autocorrelation. Financial service companies sometimes display the phenomena of "customer following" and "market seeking". (Hellman, 1996; Àlavarez-Gil et al., 2003). The statistic of Taiwanese OFDI gathered from the Investment Commission R.O.C. (Taiwan) as yearly data.

**Hypothesis 4**  The Taiwanese outward direct investment in a host country has positive influence on the FDI of Taiwanese banks in a host country. The greater the Taiwanese outward direct investment in a host country, the greater the OFDI of Taiwanese banks in the host country.

### 4.2.5  Geographical Distance (*Dist*)

Differences in time zones have a significantly negative impact on the location of FDI (Stein & Daude, 2007). Berger (2007) suggested that geographical proximity is also a prominent motive for explaining the banks' decision to expand their business in a certain country. In gravity model research, the time-variant geographical distance which is measured by the price of crude oil multiply the distance between the capital cities of the two nations is often act as a proxy of information costs. In this study, the bilateral time-variant distance variable is measured by the yearly average prices of crude oil multiply the distance between the capital cities of Taiwan and the nine ASEAN nations (in kilometers). The information about geographical proximity was collected from the French center for research and expertise on the world economy (CEPII). Data for the crude oil annual spot price per barrel (in USD) was procured from the World Bank Commodity Price database.

**Hypothesis 5**  The geographical distance between Taiwan and a host country has negative influence the FDI of Taiwanese banks in a host country. The greater the geographical distance between Taiwan and a host country, the lower the amount of the OFDI of Taiwanese banks in the host country.

### 4.2.6  Control of Corruption (*Cor*)

Corruption level in the host country has a negative impact on FDI inflows (Sadig, 2009; Alemu, 2012; Zander, 2021). Nevertheless, sometimes the adverse influences of corruption vanish and even becomes positive but statistically insignificant after

controlling for other features of the host country. Levels of corruption were calculated by the Control of Corruption (COC) Index of the World Bank´s Worldwide Governance Indicators. Refer to Zander (2021), the index was rescaled to that it ranges from 0 to 5. The lowest COC index is represented as 0, while 5 being the highest. In the year 2001, the COC Index does not have values, so the value in 2001 was estimated by using the average of the years before and after.

**Hypothesis 6** The degree of control of corruption of a host country has positive influence on the FDI of Taiwanese banks in a host country. The higher the degree of control of corruption of a host country, the greater the OFDI of Taiwanese banks in the host country.

### 4.2.7  Interest Rate Spread (*Int*)

Interest rate spread is the difference between average interest rate charged by banks on loans to private sector customers and the average deposit interest rate paid by commercial banks. which is regarded as an essential component of retail bank profitability. Both Latin-American and Asian banks are market seekers (Hsieh, Shen, & Lee, 2010). The higher the relative interest rate in the host country, the higher is the

**Table 3**  Variable description and sources

| Variables | Description | Data Source |
|---|---|---|
| *MS* | Host country per capita GDP (current US$) | World Bank National Accounts data |
| *CEGDP* | Volume of domestic credit to the private sector on total GDP (%), average 3 years | World Bank National Accounts data |
| *EF* | Economic freedom index is graded on a scale of 0 to 100 | The Heritage Foundation |
| *BT* | The total value of imports and exports between Taiwan and the host countries respectively | The Ministry of Finance, R.O.C. (Taiwan) |
| *TDI* | The total investment amount of Taiwan except the investments in financial and insurance industry | The Investment Commission R.O.C. (Taiwan) |
| *Dist* | Bilateral distance between Taipei City and capital cities of AMS | CEPII The World Bank |
| *Cor* | Control of corruption | World Bank Governance Indicators |
| *Int* | Interest rate spread (Lending rate minus deposit rate, %) | The World Bank, IMF |

**Source**: Authors

willingness for foreign banks to enter that country (Drumond & Jorge, 2013). The data was collected from the open-source database of IMF and the World Bank.

**Hypothesis 7** The interest rate spread of a host country has positive influence on the number of FDI of Taiwanese banks in a host country. The higher the interest rate spread of a host country, the greater the OFDI of Taiwanese banks in the host country.

The estimation was undertaken by applying pooled OLS model, fixed and random effect models. Variance inflation factors (VIF) detects the multicollinearity issue in the model. Fisher unit root test was performed to check whether the panel data set is stationary or not. Then, Hausman (1978) test denotes the optimal choice of models. Table 3 shows the variable description and sources in the model of this study. Table 4 presents an overview of statistics of the dependent and independent variables in this study. In this study, STATA 13 computer packages was applied to conduct an empirical model and estimate the coefficients

Lastly, few statistical challenges have to be addressed

(1) Missing values are dealt with by listwise deletion.
(2) Negative values are set to zero.
(3) Heteroskedasticity: Breusch Pagan testing reveals the presence of heteroskedasticity.

**Table 4** Summary statistics with mean, standard deviation (sd), minimum and maximum value

| Variables | Obs | Mean | Std. Dev. | Min | Max |
| --- | --- | --- | --- | --- | --- |
| FDI | 180 | 539,000 | 1,280,000 | 0 | 6,590,000 |
| lnFDI | 180 | 9.57 | 4.906 | 0 | 15.701 |
| MS | 180 | 7269.536 | 14149.882 | 137.168 | 66188.781 |
| lnMS | 180 | 7.779 | 1.402 | 4.921 | 11.1 |
| CEGDP | 155 | 65.364 | 47.271 | 3.121 | 149.373 |
| lnCEGDP | 155 | 3.748 | 1.09 | 1.138 | 5.006 |
| EF | 180 | 59.434 | 12.953 | 33.5 | 89.4 |
| lnEF | 180 | 4.062 | 0.212 | 3.512 | 4.493 |
| BT | 180 | 7364.144 | 6895.152 | 3.567 | 29113.557 |
| lnBT | 180 | 7.671 | 2.356 | 1.272 | 10.279 |
| TDI | 180 | 4,700,000 | 10,800,000 | 860 | 43,947,841 |
| lnTDI | 180 | 12.994 | 2.717 | 6.757 | 17.599 |
| Dist | 180 | 160,000 | 87353.546 | 28404.82 | 402,000 |
| lnDist | 180 | 11.822 | 0.591 | 10.254 | 12.903 |
| Cor | 180 | 3.273 | 2.541 | 0 | 10 |
| Int | 169 | 6.58 | 5.215 | 1.431 | 25 |
| lnInt | 169 | 1.645 | 0.665 | 0.358 | 3.219 |

**Source**: Author's computations

## 5 Result

This section presents the results obtained via our gravity model. The results of Fisher unit root test tell that all panel series are stationary. Further, the values of variance inflation factors (VIF) of the series are all greater than the 0.2. According to Hair et al. (2010), the multicollinear predictors may not affect the linear regression. Based on the output of Hausman test, fixed effect model is the optimal model.

### 5.1 Static Panel model

Table 5 presents the results of the static panel model. The significant variables are shown to be per capita GDP (*lnMS*), economic freedom (*lnEF*), Taiwanese OFDI in real sectors (*lnTDI*), and geographical distance (*lnDist*). The significantly positive influences of per capita GDP (*lnMS*) and economic freedom (*lnEF*) on OFDI of Taiwanese banks support the OFDI of Taiwanese banks' market-seeking motivation proposed in the previous literatures. In terms of the customer-following motive, the results of *lnBT* and *lnTDI* indicate that bilateral trade and OFDI in real sectors have significantly positive effects on OFDI of Taiwanese banks. In other words, the Taiwanese banks followed the overseas expansion of Taiwanese enterprises in ASEAN. Geographical distance (*lnDist*) contributed significantly negative impact on *lnFDI* at the 1%level. It means that Taiwanese banks preferred to expand in the ASEAN nations which have closer geographical proximity.

**Table 5** Panel regression model results

| Sample (Model) Variable | MODEL1-OLS | MODEL2-RE | MODEL3-FE |
|---|---|---|---|
| *lnMS* | 1.672*** | 1.672*** | 0.945* |
| | (0.326) | (0.580) | (0.503) |
| *lnEF* | 10.862*** | 10.862*** | 4.058** |
| | (1.417) | (3.397) | (1.990) |
| *lnBT* | 0.276 | 0.276 | 1.279*** |
| | (0.192) | (0.309) | (0.471) |
| *lnTDI* | 1.003*** | 1.003*** | 1.677*** |
| | (0.110) | (0.176) | (0.307) |
| *lnDist* | -1.036*** | -1.036*** | -1.516*** |
| | (0.305) | (0.365) | (0.390) |
| *Cor* | -1.007*** | -1.007*** | 0.384 |
| | (0.137) | (0.296) | (0.279) |
| *lnInt* | 0.547 | 0.547 | -0.588 |
| | (0.416) | (0.495) | (0.581) |
| *_cons* | -48.104*** | -48.104*** | -28.741*** |
| | (6.093) | (14.488) | (8.659) |
| Number of Obs | 169 | 169 | 169 |
| $R^2$ | 0.526 | 0.526 | 0.635 |

Standard errors in parentheses

*, ** and *** indicate statistical significance at 10%, 5% and 1% levels

**Source**: Author's computations

In terms of the effect of control of corruption (*Cor*) of host countries, the estimation outputs give complicated evidence. In pooled OLS and random effect models, *Cor* is significantly and negatively related to the dependent variable (*lnFDI*). In the fixed effect model, the relationship is insignificantly positive. Although several studies proposed that the level of control of corruption positively affected foreign direct capital inflows. Sadig (2009) found that sometimes the effect of corruption control becomes negative and insignificant after controlling the institutions factors. *lnInt* (Interest rate spread) is the only macroeconomic variable which was found to have an insignificantly negative impact on *lnFDI*. This result does not match the evidence of existing studies.

## 5.2 Robustness Checks

Alternative variables were chosen for the robustness checks. The *lnMS* was substituted with *lnCEGDP* (Volume of domestic credit to the private sector on total GDP (%), average 3 years). Domestic credit to private sector refers to financial resources provided to the private sector by financial and depository corporations.

Table 6 shows the robustness check with the substituted variable (*lnCEGDP*) to test the reliability of the previous results. According to the results, *lnCEGDP* had sig-

**Table 6** Panel regression model results (Robust)

| Sample (Model) Variable | MODEL1-OLS | MODEL2-RE | MODEL3-FE | MODEL4-FE |
|---|---|---|---|---|
| *lnCE-GDP* | 1.760*** | 1.760*** | 1.724*** | 1.734*** |
| | (0.263) | (0.522) | (0.334) | (0.349) |
| *lnEF* | 9.698*** | 9.698*** | 5.639*** | 3.569 |
| | (1.499) | (3.405) | (1.978) | (2.213) |
| *lnBT* | 0.666*** | 0.666 | 0.419 | -0.097 |
| | (0.212) | (0.485) | (0.472) | (0.560) |
| *lnTDI* | 0.487*** | 0.487 | 1.513*** | 0.687* |
| | (0.129) | (0.331) | (0.256) | (0.363) |
| *lnDist* | -0.386* | -0.386 | -0.629* | 0.887 |
| | (0.230) | (0.403) | (0.364) | (0.743) |
| *Cor* | -0.455*** | -0.455*** | 0.332 | 0.738** |
| | (0.093) | (0.154) | (0.296) | (0.356) |
| *lnInt* | 0.826* | 0.826** | -0.287 | 0.094 |
| | (0.449) | (0.421) | (0.613) | (0.668) |
| _cons | -43.197*** | -43.197*** | -36.092*** | -33.624*** |
| | (6.166) | (16.105) | (8.320) | (11.128) |
| Number of Obs | 155 | 155 | 155 | 155 |
| $R^2$ | 0.596 | 0.596 | 0.687 | 0.726 |
| Year FE | | | | YES |

Standard errors in parentheses

*, ** and *** indicate statistical significance at 10%, 5% and 1% levels

**Source**: Author's computations

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nificantly positive effect on *lnFDI* at the 1%level. The more the volume of domestic credit to the private sector on total GDP in ASEAN nations, the more attractive to the location choice of OFDI of Taiwanese banks. The effects of economic freedom (*lnEF*), and Taiwanese OFDI in real sectors (*lnTDI*) were significantly positive on OFDI of Taiwanese banks. Interest rate spread was found to have an insignificantly negative impact on *lnFDI* in the fixed effect model without considering fixed effect of year. This result shows the same implications from the models that used *lnMS* (per capita GDP) as the proxy of market size.

## 6 Conclusion and Recommendation

This study analyzed the determinants for the location choice of outward FDI of Taiwanese banking industry into ASEAN member countries using gravity model with panel data from 2000 to 2019 which treated the Taiwanese OFDI in financial industry as the dependent variables and included market size, economic freedom, bilateral trade volume, OFDI from Taiwan in real sectors, geographical distance, control of corruption, and interest rate spread as independent variables. Because there have been no overseas branches of Taiwanese banks in Brunei Darussalam, the selected countries consist of Cambodia, Indonesia, Lao PDR, Thailand, Philippines, Malaysia, Myanmar, Singapore, Vietnam. The expected effects of the variables are positive except of geographical proximity. However, the results from panel data analysis give complex and mixed outcome.

Although Taiwanese banks are expanding internationally at an accelerating pace, their limited knowledge of foreign markets and financial sectors, and the various macroeconomic conditions of ASEAN nations severely complicate their FDI strategies currently, including the decision of where to invest in particular. This paper not only reviews the theoretical literature explaining financial FDI, also provides evidence on how the macroeconomic determinants of AMS influenced OFDI Taiwanese banks. From this review, major conclusions are as follows.

First, the results found that Taiwanese banks follow their corporate customers to expand business in ASEAN nations, which means that ODFI of Taiwanese banks in ASEAN were determined by the customer-following factor, such as FDI from Taiwan and the value of bilateral trade between Taiwan and AMS. Additionally, Taiwanese banks was also market-seekers who preferred to directly invest or establish branches in AMS which had high per capita GDP and/or the volume of domestic credit to the private sector on total GDP. High volume of domestic credit lent to the private sector compared to the GDP ensuring the prospective economic expansion and further FDI inflows in financial industry of the host countries. When Taiwanese banks considering the oversea expansion and FDI in financial industry of ASEAN, market-seeking factor are influential determinants. Another indicator be classified as the market-seeking variable is the economic freedom index. This paper indicates that the countries with higher levels of economic freedom were more preferable for internationalization of the Taiwanese banking industry.

Second, the fluctuation of interest rate in host countries had insignificantly positive effect on the location choice. This was because the interest rate determined both

the return and the cost of lending. The fluctuation made the profit control more difficult and discouraged the OFDI of the Taiwanese banks. Third, the effects of corruption control were uncleared. Taiwanese banks realized that host countries in ASEAN may face high corruption situation, but they might ignore this problem because corruption does not harm banking industry much under the transparency control by the central banks of AMS governments. This shield of the transparency control allowed Taiwanese bank to focus on their businesses without worries on the high corruption.

The empirical results offer useful decision information for both governments and financial corporations. Typically, the effect for each location determinant will be distinctive noticeably in terms of the relationship and volatility transmission in different perspectives and uses the result of this study as the decision path of investment for the academician, practitioners, policymakers, and investors. For the governments, business environment in the host countries, including economic development and regulations could be improved. For instances, enhancing foreign direct investment attractiveness and developing preferential policies in financial industry.

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