# Selected Macroeconomic Determinants of Foreign Direct Investment Outflow of Singapore

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June 2010

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## INTRODUCTION

Foreign Direct Investment (FDI) outflow has become an essential component of economic growth particularly for developing countries. This is due to the fact that the main source of FDI outflow is from the developed countries. Nevertheless, the emergence of globalization leads to the removal of barriers among countries which allow some developing countries to gain a share as a source of global outward FDI. Global FDI outflows and outward stocks recorded significant growth as shown in Table 1. FDI outflows achieved US$1.32 billion in 2006 and expand with tremendous growth rate of 50.9% to reached US$1.99 billion in 2007. In related to that, developed countries play significant role as source of FDI outflow with the amount of US$1.69 billion or accounted approximately for 85% of total FDI outflow in 2007. Notwithstanding, developing countries particularly in Asia region have emerged as sources of FDI due to the globalization and trade liberalization. The contribution of Asia countries towards FDI outflow reached US$194,662 million which accounted approximately 77 percent of FDI outflow from developing countries.

**Table 1 Global FDI Outflows from 1990-2007**

| Item | Value at Current Prices (US$ billion) | | | Annual Growth Rate (%) | | | | | |
|------|------|------|------|------|------|------|------|------|------|
| | **1990** | **2006** | **2007** | **1991-1995** | **1996-2000** | **2004** | **2005** | **2006** | **2007** |
| FDI outflows | 2.39 | 1.32 | 1.99 | 16.5 | 36.1 | 63.5 | -4.3 | 50.2 | 50.9 |
| FDI Outward Stocks | 1.79 | 12.76 | 15.60 | 10.6 | 17.2 | 16.4 | 3.9 | 20.4 | 22.3 |

*Source: World Investment Report 2008, UNCTAD.*

In view of that, Singapore is among the countries in Southeast Asia region that involve actively in the FDI outflow. This is due to its ability to achieve remarkable economic growth especially during the 1970s until 1990s and resilience towards economic turbulence during the 2000s. Even, Singapore also known as the Newly Industrialized Economies (NIEs) and acknowledged by the World Bank (1992) one of the eight Highly Performance Asian Economies (HPAEs).

## Performance of FDI Outflows of Singapore

Singapore commenced to participate in abroad investment since 1972 with US$20.72 million and also experienced severe inverse implication in 1981 and 2006. However, Singapore recorded its peak investment abroad in 1996 and resilience towards the Asian financial crisis in 1998 with average strong abroad investment activities. The exception in 2006 indicates sharp diminishing trend to US$526 million but recovered impressively in 2007 to reached US$2,034 million and US$10,989 (see Table 2). In fact, the government of Singapore has adopted a number of national development strategies with the objective to enhance the sustainability of the country in the wake of globalization. In the early 1990s, the government of Singapore has implemented a

regionalization programme where domestic firms are encouraged to participate in the abroad investment. Most of the Singaporean firms involved in abroad investment related greenfield and joint ventures instead of cross-border M&A (UNCTAD, 2005).

Meanwhile, the investment destination for the Singaporean firms focuses more in Asia region which accounted for 45.8% in 2007, followed by 17.7% in South and Central America and the Caribbean, 15.0% in Europe, 5.8% in Oceania region, 4.6% in North America while 11.1% in others. In Asia region (see Table 3), the major destinations of Singapore's investment in 2007 are China (US$39.3 billion), Malaysia (US$21.2 billion), Indonesia (US$18.3 billion), Hong Kong (US$17.5 billion), Thailand (US$15.4 billion) and Taiwan (US$5.0 billion). Abroad investment of Singaporean firms in China recorded an upsurge of 17.2% from US$33.5 billion in 2006 to US$39.3 billion in 2007. In detail, most of the abroad investment of Singaporean firms is towards services sector such as financial and insurance service which accounted approximately 56.5%, followed by manufacturing, 22.1% in 2007 while the rest of the shares are as shown in Table 4.

**Table 2: FDI Outflow of Singapore, 1990-2007 (USD Millions)**

| Year | Total | Year | Total |
|------|-------|------|-------|
| **2007** | 2,034 | **1998** | 8,002 |
| **2006** | 526 | **1997** | 5,915 |
| **2005** | 1,317 | **1996** | 19,965 |
| **2004** | 2,152 | **1995** | 2,329 |
| **2003** | 4,577 | **1994** | 2,695 |
| **2002** | 6,787 | **1993** | 10,803 |
| **2001** | 7,951 | **1992** | 6,943 |
| **2000** | 10,904 | **1991** | 12,241 |
| **1999** | 2,165 | **1990** | 12,300 |

*Source: International Financial Statistic, IMF*

**Table 3: Destination of Singapore FDI Outflow (USD Million)**
**− Top 8 Investment Destinations based on 2007**

| Country | 2003 | 2004 | 2005 | 2006 | 2007 |
|---------|------|------|------|------|------|
| China | 19,816 | 22,183 | 27,254 | 33,519 | 39,294 |
| British Virgin Island | 21,973 | 23,744 | 25,941 | 33,587 | 34,342 |
| United Kingdom | 7,534 | 7,222 | 7,220 | 20,197 | 31,210 |
| Mauritius | 5,987 | 11,097 | 10,513 | 15,715 | 30,789 |
| Malaysia | 13,592 | 14,733 | 17,878 | 18,925 | 21,159 |
| Indonesia | 10,298 | 12,024 | 14,631 | 16,730 | 18,270 |
| Hong Kong | 11,059 | 11,768 | 15,324 | 15,579 | 17,514 |
| Australia | 4,648 | 11,081 | 8,935 | 10,872 | 15,791 |

*Source: Department of Statistics, Singapore*

**Table 4: Singapore FDI Outflow by Activity (USD Million)**

| Country | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|
| Financial & Insurance Services | 85,140 | 99,124 | 104,756 | 131,240 | 167,983 |
| Manufacturing | 33,009 | 37,502 | 46,352 | 54,761 | 65,802 |
| Wholesale & Retail Trade | 9,222 | 10,342 | 11,215 | 13,137 | 13,574 |
| Information & Communication | 7,057 | 9,252 | 10,365 | 13,021 | 14,556 |
| Real Estate, Rental & Leasing Services | 7,440 | 7,540 | 8,986 | 10,744 | 11,684 |
| Transport & Storage | 5,800 | 6,766 | 9,335 | 8,250 | 8,410 |
| Professional & Technical, Administrative & Support Services | 913 | 2,819 | 4,035 | 4,457 | 4,952 |
| Hotel & Restaurant | 2,350 | 2,241 | 2,230 | 2,323 | 2,651 |
| Construction | 749 | 978 | 881 | 850 | 615 |
| Others | 1,892 | 3,178 | 3,866 | 4,905 | 7,325 |

*Source: Department of Statistics, Singapore*

Despite the economic uncertainties, Singapore has the capability to engage in the abroad investment activities where some corporations have been listed in the top 100 non-financial Transnational Corporations (see Table 5). Among the exceptional performance of Singaporean firms are Singtel Limited (ranked 6) followed by top 50 corporations such as Capitaland Limited (ranked 17), Flextronics International Limited (ranked 35), Keppel Corporation Limited (ranked 50) and six corporations from ranked between 50 to 100. Among the industries involved are telecommunications, real estates, electrical and electronic, food and beverages, transport and storage and hotels.

**Table 5 Top 100 Non-Financial Transnational Corporation for Singapore in 2006**

| Ranking | Corporation | Industry | Assets (US$ million) | Sales (US$ million) | Employment (Persons) | No. of Affiliates |
|---|---|---|---|---|---|---|
| 6 | Singtel Limited | Telecommunications | 21,288 | 8,575 | 19,000 | 108 |
| 17 | Capitaland Limited | Real Estate | 13,463 | 2,053 | 32,876 | 233 |
| 35 | Flextronics International Limited | Electrical & Electronic | 12,341 | 18,854 | 116.000 | 149 |
| 50 | Keppel Corporation Limited | Diversified | 9,009 | 4,956 | 29,185 | 233 |
| 56 | Fraser & Neave Limited | Food & Beverages | 6,307 | 2,475 | 14,000 | 143 |
| 58 | City Developments Limited | Hotels | 7,175 | 1,660 | 12,281 | 54 |
| 62 | Asia Food & Properties | Food & Beverages | 2,370 | 458 | 45,000 | 3 |
| 63 | Neptune Orient Lines Limited | Transport & Storage | 4,271 | 7,264 | 11,000 | 107 |
| 73 | Stats Chippac Limited | Diversified | 2,458 | 1,617 | 13,817 | 17 |
| 95 | Want Want Holdings Limited | Food & Beverages | 1,206 | 868 | 31,740 | 129 |

*Source: World Investment Report 2008, UNCTAD.*

**RELATED LITERATURE REVIEWS**

There are several critical macroeconomic determinants of FDI outflow such as the income of a country (Kyrkilis and Pantelidis, 2003; Wu et al., 2003). In term of the income, the economic structure of a country will experience modification along with the growth of the income. Subsequently, country will move towards capital-intensive industry and has the capability to increase production despite become more efficient. This is due to the effect of economies of scale and adoption of new technologies (Chenery et al., 1986). This will lead to the potential of establishing production abroad due to the gaining of ownership advantage (Lall, 1980; Grubaugh, 1987). Meanwhile, the well-known concept of Investment Development Path (IDP) introduced by Dunning (1981) provides essential point associating income and FDI outflow. IDP consists of five degree of FDI expansion – Level 1: Almost non-existence of outward FDI; Level 2: Low pace of inward and outward FDI growth rate; Level 3: Gradual expansion of inward and outward FDI; Level 4: Expansion of outward FDI surpasses inward FDI; Level 5: Expansion of outward and inward FDI resume. IDP indicates linkages between net FDI outflows and varies stages of development of a country, measured by income of a country. This framework further postulated that higher income is link to higher level of FDI outflows.

Meanwhile, trade liberalization or trade openness has great implication on the FDI outflow (Kogut, 1983; Scaperlanda and Balough, 1983; Scaperlanda, 1992). The association of higher degree openness led to higher level of FDI outflow is mainly due to the acquisition of knowledge on the foreign market. This valuable knowledge includes skills related to operating or managing production abroad. Eventually, this will become the driving force for the firms to engage in the foreign investment rather than relying on exportation. Firms will be able to gain advantage in term of internalization (Dunning, 1993).

Despite that, interest rate also play significant role on the FDI outflow (Hymer, 1976; Lall, 1980, Pugel, 1981; Grubaugh, 1987). Their justification on the inverse association between interest rate and FDI outflow is due to the abundance capital in home country that serve as motivation to expand firms dominance such as establishing operation abroad. Capital abundance in fact decrease the opportunity cost of seeking capital. Therefore, firms have the ability to finance their abroad investment via the lower interest rate.

Besides that, exchange rate serves as prominent indicator towards FDI outflow (Kohlhagen, 1977; Stevens, 1993; Gopinath et al., 1998; Kyrkilis and Pantelidis, 2003). Their findings implied significant association between home country exchange rate and FDI outflow. Appreciation of currencies enables home country firms to conduct abroad investment due to the ability to mitigate the capital requirement. On the other hand, depreciation of the currencies indicates higher cost of abroad investment and therefore will hinder domestic firms to participate in oversea investment.

## METHODOLOGY

This study employs annually data range from 1975 until 2007. The data set consists of FDI outflow of Singapore as endogenous variable while real income of Singapore, trade openness, interest rate of Singapore and nominal exchange rate as exogenous variables. The real income variable is measured in real Gross Domestic Product (GDP), trade openness is proxied by the summation of aggregate export and import of Singapore, meanwhile interest rate refers to Euro-Dollar rates. Euro-Dollar rates is used as a proxy of interest rate in Singapore as Singapore is play prominent roles as international financial hub and moreover, foreign interest rate has great influence on the interest rate in Singapore. All the data are obtained from World Investment Report, UNTACD and International Financial Statistics from International Monetary Fund. All the variables in the data set are transformed into natural logarithms for statistical purpose.

Equation (1) represents the assumption that FDI outflow of Singapore is determined by several factors as shown:

$$LOFDI_t = \alpha_1 + \alpha_2 LRGDP_t + \alpha_3 LTO_t + \alpha_4 LINT_t + \alpha_5 LEXC_t + e_t \quad (1)$$

where *LOFDI* signifies logarithm of FDI outflow of Singapore, *LRGDP* denotes logarithm of real income of Singapore, *LTO* represents logarithm of trade openness of Singapore, *LINT* denotes interest rate, *LEXC* denotes nominal exchange rate, $\alpha_s$ are coefficients to be estimated and *e* represent error term.

The vector error-correction model (VECM) is adopted with the purpose to examine the long run deviation from the equilibrium association between endogenous variable, FDI outflow of Singapore and the determinants. The model is as shown in Equation (2).

$$\begin{bmatrix} \Delta LOFDI_t \\ \Delta LRGDP_t \\ \Delta LTO_t \\ \Delta LINT_t \\ \Delta LEXC_t \end{bmatrix} = \Gamma(L) \begin{bmatrix} \Delta LOFDI_{t-1} \\ \Delta LRGDP_{t-1} \\ \Delta LTO_{t-1} \\ \Delta LINT_{t-1} \\ \Delta LEXC_{t-1} \end{bmatrix} + \Pi \begin{bmatrix} LOFDI_{t-1} \\ LRGDP_{t-1} \\ LTO_{t-1} \\ LINT_{t-1} \\ LEXC_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{OFDI} \\ \varepsilon_{RGDP} \\ \varepsilon_{TO} \\ \varepsilon_{INT} \\ \varepsilon_{EXC} \end{bmatrix} \quad (2)$$

where $\Gamma(L)$ represents a 5x5 polynomial matrix of coefficient to be estimated. $\Gamma$ denotes the short run adaptation among the variables across the five equations in the system while $L$ denotes the lag operator. Furthermore, $\Pi$ signifies the error-correction component at levels, $\Delta$ represents the first difference operator and $\varepsilon$'s denotes the white noise error terms.

## EMPIRICAL RESULTS AND DISCUSSION

Initially, the test for stochastic trends in the autoregressive representation of each individual time series will be conducted prior cointegration test. This study adopted the Augmented Dickey-Fuller (ADF) unit root test proposed by Dickey and Fuller (1981) as shown in Equation (3).

$$\Delta Y_t = \beta_0 + \beta_1 Y_{t-1} + \sum_{i=1}^{p} \alpha_i Y_{t-i} + \varepsilon_t \qquad (3)$$

where $\Delta Y_t$ represents the first difference of the $Y_t$, $\beta_1$ and $\beta_0$ refer to the coefficients and intercept respectively, $t$ denotes time, $p$ is the number of lagged terms chosen while $\varepsilon_t$ refers to white noise. The selection of optimal lag length of $p$ is based on Schwartz Information Criteria (SIC). The null hypothesis can be rejected when the $t$-statistic value is negative and statistically significant. Table 6 depicts the results of the ADF unit root test. The results indicate that the null hypothesis of a unit root cannot be rejected at level, nevertheless, it can be rejected after first differencing at 1% and 10% significance level respectively. This implies that all the time series variables are non-stationary at level $I(0)$, but stationary at first difference, $I(1)$.

**Table 6: Augmented Dickey-Fuller Unit Root Tests Results**

| Variable | Level | First Difference |
|----------|-------|------------------|
| LOFDI | -1.682(3) | -4.788(2)*** |
| LRGDP | -0.742(0) | -4.107(0)*** |
| LTO | -2.392(2) | -2.739(1)* |
| LINT | -2.898(6) | -3.647(5)*** |
| LEXC | -1.823(0) | -4.871(0)*** |

Notes: LOFDI = natural log of FDI outflow, LRGDP = natural log of real GDP, LTO = natural log of openness of the economy and LINT = natural log of Euro-Dollar rate, LEXC = natural log of nominal exchange rate. Asterisks (***) and (*) indicate significant at 1% and 10% levels respectively.

Since the variables are stationary at first difference, then we can proceed with the cointegration test as introduced by Johansen (1988) and Johansen and Juselius (1990). The main purpose of this test is to investigate the existence of a long run association among the variables which are integrated with same order. Table 7 indicates the results of the cointegration test. The null hypothesis of non-cointegration (r=0) can be rejected as both trace ($\lambda_{\text{trace}}$) and max-Eigen ($\lambda_{\text{max}}$) statistic values exceed the critical values and significant at 1% level. Meanwhile, the null hypothesis of at most one cointegration vector cannot be rejected. This indicates that existence of a single cointegration vector in the model and implies a stable long run linear equilibrium among the variables.

**Table 7: Johansen and Juselius Cointegration Test Results**

| $H_0$ | $H_1$ | $\lambda_{trace}$ | CV $_{(trace, 5\%)}$ |
|---|---|---|---|
| Variables: LOFDI, LRGDP, LTO, LINT, LEXC | | | |
| $r = 0$ | $r \geq 1$ | 88.708*** | 66.819 |
| $r \leq 1$ | $r \geq 2$ | 36.724 | 47.856 |
| $r \leq 2$ | $r \geq 3$ | 14.619 | 29.797 |
| $r \leq 3$ | $r \geq 4$ | 2.485 | 15.495 |
| $r \leq 4$ | $r = 5$ | 0.009 | 3.841 |
| $H_0$ | $H_1$ | $\lambda_{max}$ | CV $_{(max, 5\%)}$ |
| $r = 0$ | $r = 1$ | 51.983*** | 33.877 |
| $r = 1$ | $r = 2$ | 22.104 | 27.584 |
| $r = 2$ | $r = 3$ | 12.135 | 21.132 |
| $r = 3$ | $r = 4$ | 2.476 | 14.265 |
| $r = 4$ | $r = 5$ | 0.009 | 3.841 |

Notes: $r$ is the number of cointegrating vector. Asterisks (***) indicate significant at the 1% level.

Table 8 presents the normalized cointegrating vector results. The coefficient estimates of the cointegrating vector denote the long run elasticity of the variables and are statistically significant at 1% significance level. The results portray that FDI outflow of Singapore is elastic with respect to all the determinants in the long run with exchange rate has the tendency to be more elastic in relative to the determinants.

**Table 8: Johansen Cointegration Equation Parameter Estimates**

| | Parameter Estimates Normalized | $t$-statistics |
|---|---|---|
| Constant | 7.567 | |
| LOFDI | 1.000 | |
| LRGDP | 5.730 | 3.468*** |
| LTO | −3.036 | −3.101*** |
| LINT | −1.313 | −5.389*** |
| LEXC | −6.091 | −5.040*** |

Note: Asterisks (***) indicates significant at the 1% level.

Granger causality test based on Vector Error Correction Model (VECM) is adopted subsequently existence of cointegration among the variables. The main purpose of this test is to examine the causality linkage among the variables within the VECM environment. The system consists of a lagged ECT in each of them as to capture the long run adjustment upon their equilibrium trail. The inclusion of the ECT is prominent as to overcome the misspecification and exclusion of vital constraints. Table 9 indicates the outcome of the Granger causality based on the VECM. The results portray that all the determinants have causality association with the FDI outflow of Singapore in the short run, except for exchange rate variable.

**Table 9: Granger Causality Test based on Vector Error Correction Model**

| Variables | $\Delta LRGDP$ | $\Delta LTO$ | $\Delta LINT$ | $\Delta LEXC$ | $ECT_{t-1}$ |
|---|---|---|---|---|---|
| $\Delta LOFDI$ | 3.460 | 13.837 | 5.062 | 0.683 | –0.758 |
| | (0.063)* | (0.001)*** | (0.025)** | (0.409) | (0.000)*** |

**Diagnostic Test**

| JB | AR (2) | ARCH (1) | RESET (1) | CUSUM | CUSUM$^2$ |
|---|---|---|---|---|---|
| 1.309 | 1.414 | 0.005 | 1.166 | Stable | Stable |
| (0.519) | (0.272) | (0.945) | (0.295) | | |

Note: JB is the Jarque-Bera statistic for residuals normality test. AR is a test of $2^{nd}$ order serial correlation using Breusch-Godfrey serial correlation LM test. ARCH and RESET refers to White Heteroscedasticity test and Ramsey RESET specification test respectively. Parenthesized values are the probability of rejection (*p*-value). Asterisks (***), (**) and (*) indicates significant at the 1%, 5% and 10% level respectively.

The empirical outcomes depict the significance of the income, openness, interest rate and exchange rate as the determinants of the FDI outflow of Singapore in the long run as proven by Kyrkilis and Pantelidis (2003). Nevertheless, interesting to discover that income, interest rate and exchange rate carry similar effect on FDI outflow while only openness exhibits contradict direction on the endogenous variable for the case of Singapore.

The income of Singapore exhibits positive linkage towards FDI outflow in the long run and is parallel to the studies conducted by Kyrkilis and Pantelidis, (2003) and Wu et al., (2003). The association of the ownership, location and internationalization advantages gained by Singapore has contributed to the economic development path of the country. Singapore had experienced tremendous economic growth in the 1960s and known as the Newly-Industrialized Economies (NIEs) as well as being recognized as one of the 10 economies of the East Asian Miracle by World Bank (1992). This recognition is due to the exceptional economic growth of above average 6% and ability to maintain for a long time of periods. The significant changes of the economic structure of Singapore towards export-led regime of capital accumulation have contributed to the sustainable of its economic performance. Subsequently, Singapore has transformed from an entreport to an economy that highlight on high value-added particularly manufacturing products as well as nexus of international financial and business centre (Huff, 1994 and Perry et al., 1997). These accumulations of resources have been the solid pillar for Singapore to expand its foreign investment globally. Furthermore, sturdy fundamental economic policy enable the country to become resilient to the external economic turbulences such as Asian Financial Crisis in 1998, economic recession in 2001 and global recession in 2008. Despite that, the realization of the government of Singapore on the saturation of the domestic growth expansion constraint, the adoption of regionalization policy (Kanai, 1993 and Reigner, 1993) in the 1990s had contributed to the expansion of the international trade and investment activities. Consequently, this further generates sustainable income to the country and thus auxiliary encourage investment at broader aspect such as Asia region and Western region.

Meanwhile, the empirical results indicate that linkage between exchange rate and FDI outflow of Singapore is moving together in the same direction in the long run. The empirical results indicate that exchange rate variable has great tendency to influence the FDI outflow where it carries the highest coefficient estimates or very elastic in relative to the other determinants. This means that appreciation of the Singapore currency tends to increase the volume of abroad investment activities (Kohlhagen, 1977; Stevens, 1993; Gopinath et al., 1998; Kyrkilis and Pantelidis, 2003). Great achievement of economic performance during the past three decades with average of US$5,222 million, US$19,305 million and US$70,965 million respectively due to the successful economic strategies. Despite economic turbulences in several periods such as oil crisis in 1985, Asian Financial Crisis in 1998, United States recession in 2001, effect of severe acute respiratory syndrome (SARS) and recently global financial crisis, the economy of Singapore is resilient towards those phenomenons and demonstrated swift recovery process. These has induces sturdy currency in the market and therefore contributed to the expansion of the abroad investment of Singaporean domestic firms. Ultimately, appreciation of Singapore's currency indirectly minimizes the capital requirements of the foreign investment activities. This also means that it is easier for the Singaporean firms in obtaining capital in order to finance their abroad investment.

In term of the interest rate effect, empirical results portray that existence of inverse relationship between interest rate and FDI outflow of Singapore in the long run (Hymer, 1976; Lall, 1980, Pugel, 1981; Grubaugh, 1987). Furthermore, the results also indicate that this determinant has the lowest coefficient estimates or elasticity compared to the other determinants. The lessening of the interest rate reflects abundance of capital in Singapore and subsequently reduces the opportunity cost in seeking capital elsewhere. Ultimately, this will serve as the motivation for the Singaporean firms to rigorously expand their abroad investment activities. In other words, those firms have competitive advantage in financing foreign investment due to lower cost of borrowing in home country. On the other perspective, higher interest rate may reduce the intention of the domestic firms to invest abroad. This is due to the higher interest rate may attract more accumulation of investment via the saving. Therefore, domestic firms will have the tendency to invest locally to gain favorable return instead of taking risk investing abroad.

Nevertheless, the trade openness of Singapore exhibits inverse linkage towards the FDI outflow of Singapore in the long run and contradict to the findings from Kogut (1983), Scaperlanda and Balough (1983) and Scaperlanda (1992). This may due to the substitution effect of the trade activities against the FDI outflow of Singapore. Singapore ranked first for the most open economy for international trade and investment ahead of Hong Kong and Switzerland (The Global Enabling Trade Report 2009, World Economic Forum). This favorable atmosphere has attracted many foreign firms to invest in Singapore despite attractive tax incentive and condusive business environment. Most of the source of the foreign companies and entrepreneurs laying operation in Singapore are from Asia and European. Subsequently, domestic firms have the tendency to establish cooperation with the foreign companies particularly via joint venture. As a result, this may mitigate the opportunity cost for the domestic firms to invest abroad as they will enjoy great benefits from the cooperation with the foreign companies in Singapore.

Meanwhile, the determinants such as income, trade openness and interest rate have causality relationship with the FDI outflow of Singapore in the short run. The level of income of Singapore, the degree of trade openness in Singapore which represents the volume of the international trade activities and attractive interest rate will influence the volume of the FDI outflow of Singapore in the short run. On the other hand, exchange rate has no causality implication on the FDI outflow of Singapore in the short run. This may due to the monetary policy adopted by the government of Singapore. Exchange rate targeting policy has been adopted by Singapore since late 1970s. This means that the fluctuation of the exchange rate in the market is closely monitored by the government as to ensure the exchange rate is competitive. Due to that, exchange rate has no implication towards the FDI outflow of Singapore in the short run.

**CONCLUSION**
This study aims to investigate the association between FDI outflow of Singapore and selected macroeconomic determinants namely income, trade openness, exchange rate and interest rate. Empirical outcomes depicted that income has significance influence on the FDI outflow of Singapore where generation of higher income will contribute to the expansion of abroad investment of Singaporean firms. Therefore, sustainable economic growth is crucial with the ability of the economy to be resilient during economic uncertainties. The saturation of the domestic expansion and accumulation of valuable resources further encourage the Singaporean firms to invest oversea. Meanwhile, favorable interest rate indicates abundance of capital in home country. This will enable Singaporean firms to expand their cross border investment due to lower cost of financing in the home country. Besides, higher interest rate tends to influence the domestic firms to invest locally due to higher return instead of investing abroad, hence restraint the expansion of FDI outflow. In term of exchange rate, currency also plays significant role in the abroad investment of Singapore where stable economy and flexible towards external economics turbulences strengthen the currency of Singapore and thus encourage foreign investment by domestic firms in the long run. However, in the short run, exchange rate has no significance implication towards FDI outflow. This is due to the close monitoring on the fluctuation of the Singapore currency under the Exchange rate targeting policy. Nevertheless, results also indicate that trade openness exhibited inverse association with FDI outflow of Singapore. This is due to the substitution effect as higher degree of trade openness contributed to the influx of establishment of foreign companies and entrepreneurs in Singapore. Subsequently, Singaporean firms will have the propensity to cooperate with those foreign companies via joint venture. Due to that, the motivation for domestic firms to invest abroad will decline as they will still enjoy enormous benefits if they are able to cooperate with foreign companies.

Despite that, the continuous pledge towards integrating with the countries globally provides solid foundation for the Singaporean firms to participate in the international trading and investment activities. This can be seen via the establishing of Free Trade Area such as China-ASEAN Free Trade Area or maintaining current trading agreement such as ASEAN Free Trade Area (AFTA). The expansion of the abroad investment provide the solution for Singapore to acquire necessary resources particularly technologies adoption as well as valuable knowledge as to support the development of Singapore in the future.

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