THE IMPACT OF FINANCIAL INSTABILITY ON FOREIGN DIRECT INVESTMENT: EVIDENCE FROM EAST ASIA

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ABSTRACT

This research article examines the impact of financial instability on foreign direct investment flows received by countries located in the East Asian region. This study comprises a sample of nine countries from the region that were the most successful ones in terms of inward FDI flows during the last several decades. A sample data covers the period from 1996 to 2017 due to available data for stock markets and simultaneously captures the dynamics of evolution of FDI inflows into the region by including two periods of recessions observed in the world economy. The thesis investigates several macroeconomic determinants of FDI such as market size, trade openness, infrastructure, agglomeration, and financial instability. By applying two methods of estimation for dynamic panel data model namely estimation techniques of GMM and Pooled Mean Group (PMG), the paper reveals that under system GMM financial instability was a prominent factor affecting influx of FDI, whereas, estimation conducted by PMG persistently demonstrates the insignificance of financial instability as a strong influencer of inward FDI flows.

Keywords: foreign direct investment, financial instability, trade, economic growth

INTRODUCTION

All countries around the world are always trying to enhance economic growth for improving overall welfare. Accordingly, as it is clear from history some countries performed more successfully compared to others. Successful countries are often called "growth miracles" while their unlucky counterparts are named "growth disasters. This paper provides the review for the phenomena of "East Asian miracle" in economic history that describes eight countries of the region that achieved rapid and sustained growth patterns for several decades. Several studies attempted to analyse the factors lying behind this miracle and find out the applied policies that might be useful as an agenda in the development strategy of other countries. The key aspects of the miracle were properly discussed by Page (1994) in the framework of eight high performing Asian economies that include "four tigers" from East Asia: Hong Kong, Republic of Korea, Taiwan, and Singapore in addition to three new industrialized economies (NIEs): Indonesia, Malaysia, and Thailand from Southeast Asia and finally Japan. The basic distinguishing feature of these countries that led to grouping them as astonishing is growth rates that were well above those of other emerging market economies. The source of this tremendous growth was the main question researched by scholars to derive some policy implications.

Globalization trends observed over the last few decades promoted cross-border investment and prompted the inflow of foreign capital into developing countries. The desire of firms to internalize was inspired mainly by deregulation and liberalization policies preferred and accepted by many countries after reassessment of possible benefits from foreign investment and change in attitudes due to rapid globalization and technological improvements. An influx of foreign capital flows into many emerging market economies deserves a high degree of attention because of its powerful impact on the growth and prosperity of the countries in the world economy. According to the neoclassical growth theory introduced by Solow (1956), under a competitive market structure, the savings rate given exogenously is the main indicator for economic growth. As it is widely known most developing countries suffer from the gap between savings and investments. In this situation foreign direct investment (FDI) has been recognized as one of the possible major and stable sources of economic growth and development especially for countries exhibiting scarcity of funds. Moreover, even for advanced economies, FDI can bring plenty of benefits. First and foremost, FDI is evaluated as a valuable source for the transfer of technology, managerial expertise, and know-how.

This paper explores the potential role played by financial instability for foreign direct investment flows in East Asia. The basic focus of this paper is oriented on foreign direct investment which is by definition characterized as a category of investment with a long-lasting interest of investors and being least volatile in nature. To assess the significance of financial instability and recognize its deterministic power for FDI, particular attention will be given to the evaluation of FDI dynamics during and aftermath of recessions. Financial instability can be expressed as an opposite condition of financial stability (Ferguson, 2002). The existence of financial instability is characterized by three basic criteria:

- Sharp divergence of an important set of financial asset prices from fundamentals

- Distortion in the availability of credit and functioning of markets

- Deviation of aggregate spending

Ferguson (2002) emphasized the importance of concerns regarding financial stability for central banks. Particularly, the paper discussed the relevance of financial stability to be considered as a policy objective. Tools of monetary policy could be used to ensure financial stability or mitigate detrimental effects of financial instability. The necessity of management relies on potential market failures or externalities that can deteriorate the dynamics of economic activity. On the other hand, the definition and proper measurement of financial stability are challenging in practice. Gadanecz and Jayaram (2009) represented a set of commonly used indicators for financial stability taken from six main sectors. One of the sectors included in the set was financial markets. One of the measures proposed for assessing stability was the volatility of financial markets with signalling properties. Bueno and Schumacher (2003) defined market volatility as a determinant of financial stability. According to their interpretation, market risk entails exposure and volatility of the financial system and its components. Changes in volatility patterns will imply a change in risk level. There are two groups of indicators suggested by IMF for assessing financial stability (Bueno and Schumacher, 2003). These groups are core set indicators of the banking sector and market volatility indicators. The second group of indicators deals with the behaviour of markets and institutions crucial for providing financial stability such as the stock market and foreign exchange market. Empirically these indicators tested for market volatility in Israel from 1992 to 2000. Estimation is performed by calculating aggregate volatility indicator formed by the product of weights and corresponding variance-covariance matrix of three representative assets:

- Exchange rate of Israeli Shekels per U.S dollar
- Weighted average index stock price of 25 main Israeli corporations
- The Interest rate on three-month treasury bills

The authors also denoted the upward trend in stock prices since 1997 due to economic stability and liberalization policy adopted for foreign investments. Gulen and Ion (2015) specified a correlation between high stock volatility and a high level of policy uncertainty. Meanwhile, policy uncertainty is found to be responsible for the reduction in investments and output along with employment levels. In this thesis besides financial instability, other control macroeconomic variables are taken into account to avoid omitted variables bias. The determinants of FDI included in the model are market size, trade openness, infrastructure, agglomeration and financial instability. Countries represented in the model are China (Mainland), Hong Kong SAR, Republic of Korea, Singapore, Thailand, Malaysia, Philippines, Indonesia and Vietnam. These countries are considered the most successful ones in terms of attracting FDI flows. Three of them are famous Asian Tigers. The data set captures foreign direct investment flows for a sample of nine countries from East Asia between 1996 and 2017. The purpose of this study is to investigate the impact of any financial instability sign that existed during the sample period. There are two severe recessions experienced by the region that covers the taken sample period. The first one refers to the Asian Crisis of 1997 while the second one is proposed to be the Global Financial Crisis (GFC) of 2007-2008.

1. HISTORICAL AND THEORETICAL BACKGROUND

To investigate features of East Asian FDI, it is reasonable to look back for history briefly. Among developing countries, it is worth emphasizing that up to recent years East Asia and

South-East Asia regions have been the leaders in terms of FDI flows. Starting from the late 1980s after the appreciation of the Japanese Yen followed by the Plaza Accord prompted a tendency for the Japanese companies to replace their production facilities in developing Asian countries by investing in labour-intensive production capabilities. The countries of the first destination were the Republic of Korea and Taipei, China. In the next stage, Japan shifted to other countries of the region that are members of ASEAN (Association of Southeast Asian Nations). One of the driving forces that led to a substantial influx of foreign investment flows into the region can be considered the participation of the countries in international and regional trade agreements that involve investment provisions. Particularly, China after joining the World Trade Organization (WTO) exhibited an increase in inward FDI flows which resulted in exponential growth. This period is highlighted in history as an East Asian miracle accompanied by tremendous growth rates for several member countries. Despite some slowdown that took place after the consequences of the Asian Crisis of 1997, the region was able to recover and continue on its growth path further. However, the role of this severe crisis exhibited by the region for FDI remains unclear as a research question and creates a lot of debates around this. According to some analysts, FDI flows might be squeezed by increasing uncertainty during a crisis period, while others claim about the existence of the "Fire sale FDI" concept by reminding stability of FDI resources compared to other forms of investment. Krugman (2000) discussed an increase in inward FDI flows into East Asian economies right after the crisis period by providing evidence from articles taken from the financial press about ongoing negotiations. The Asian Crisis of 1997 and its impact on FDI flows can be explained by the direct revision of challenges raised in the region. Akyüz (2000) evaluated this crisis as one of the post-Bretton Woods crises. The main feature of these crises is currency instability incurred after a surge of international capital flows into emerging market economies accompanied by a subsequent decline in these flows. The decline is originated by rapid domestic credit expansion, exacerbated conditions in the current account balance and asset bubbles in financial markets. The general outlook of East Asia in international markets was not so pessimistic but still, a sudden reversal in FDI flows was linked to macroeconomic disturbance. Hence the question that arises in this paper is related to the reasons that triggered this crisis and its consequences for foreign investment flows. One of the most important issues that caused massive loss of confidence was the recognized mismatch between risk and return prospects of borrowed funds that led to external debt burden. In this case, the soundness of financial markets that can ensure financial stability possibly acts as a significant factor for attracting foreign investment.

This study aims to investigate the significance of financial instability for inward FDI flows of East Asia. The role of financial instability for direct investment flows generated in the region can be assessed after a detailed analysis of events that occurred before, during and after the crisis period. The beginning of turmoil is stuck to the announcement of devaluation of the baht in July 1997. World Investment Report (1998) specified the five most severely affected countries of the region were Thailand, the Republic of Korea, Indonesia, Malaysia and Philippines.

Different FDI theories have been introduced for explaining the movement of international capital flows. This study reviews some of them with prospects to apply as regards the development model of East Asia.

FDI and FPI

The interest in the analysis of FDI appeared after the noticed tendency of multinational corporations (MNCs) in advanced economies to invest abroad in the past starting from the 1950s. The earliest perspective views connected direct investment with portfolio investment and interpreted it as being a subset. However, the key characteristic feature of direct investment was the existence of ownership control compared to portfolio investment. There are two main goals of multinationals to invest abroad (Shatz & Venables, 2000). The first aim is derived from willingness to serve local markets. The second one is inspired by a desire to obtain low-cost inputs. The first objective goal that, based on horizontal FDI, targets local markets by substituting trade with export. This implies that exporting is less efficient compared to replacing a business unit overseas.

International equity flows are organized in two major ways:

• Foreign Direct Investment flows (FDI)
• Foreign Portfolio Investment flows (FPI)

Goldstein and Razin (2005) explained the difference between FDI and FPI through analysis of asymmetric information issues. Direct investors are better informed about projects they run compared to portfolio investors because of ownership control. This advantage brings additional capital gain if investors can participate in management. A drawback of direct investments is accounted for illiquidity challenge that appears when the projects under control being sold before time to maturity. The main damage of FPI is related to its volatile nature which may be exposed to financial distress especially during recessions.

The most widely recognized and famous theories attempting to investigate motives and causes of MNCs to integrate into markets other than domestic can be found in the papers of Kojima (1973), Hymer (1976) and Dunning (1988). In this study, only three major theories were considered for finding potential determinants of FDI in East Asia as they closely follow assumptions on the evolution of FDI there. Dunning (1988) developed a theory in framework market imperfections for the so-called Eclectic Paradigm. According to this theory, firms can decide on foreign direct investment if certain conditions are satisfied. These conditions are generated by ownership location and internalization advantages. As opposed to previous theories introduced in the literature, the Eclectic Paradigm combines all the aspects shown before and summarizes them to more explicitly illustrate the reasons of variability in the spread of FDI across countries.

Currency area theory

Some researchers tried to establish a link between the strength of the currency and the attractiveness of recipient countries for FDI. Aliber (1970) received wide acceptance for currency area theory which claims that companies originally from strong currency areas might prefer to borrow in financial markets of weak currency areas at a lower cost. The difference in the strength of currencies can successfully explain the willingness of foreign investors to get involved in risky investments in host countries. This argument finds empirical support for FDI flows from the United States, the United Kingdom and Canada. One misleading point of this theory is the impossibility to explain FDI originated from developing countries going to advanced economies.

In East Asia, a similar pattern supporting the currency strength theory of FDI emerged during the expansion of Japanese MNCs into the Asian economies after the appreciation of the yen in 1985. Baek, Okawa (2001) analysed the role of exchange rates between the yen against the Asian currencies and the yen against the US dollar and Asian currencies against the US dollar for the influx of FDI. The finding of the study confirms that appreciation of the yen against both the US dollar and the Asian currencies played a significant positive role in the increase in Japanese FDI into the Asian countries. The paper also included wage rates, labour productivity differential and import tariff as determinants of FDI. All of the theories discussed above hint at potential determinants of FDI in East Asia.

1.1 Macroeconomic Factors of FDI

The fact that foreign direct flows are allocated unevenly across countries prompted researchers to find out the reasons behind this variety. The reasons that might influence the direction of international capital flows can be at first sight related to liberalization policies favoured by many countries during the last few decades. The importance of liberalization in trade and investments for investment activities induced by MNCs had been discussed by Asiedu, Gyimah-Brempong (2008) in the context of 33 African countries adopted liberalization policies at accelerated speed during the last few decades. The study found a positive and significant effect of liberalization on investments but could not admit a direct effect on employment in the host economy. However, the general framework is not applicable in this issue as there is the possibility of the existence of country-specific effects that vary across countries but are constant over time. FDI generated in East Asia can be defined by its unique features that should be evaluated based on the theoretical and historical background discussed above. The determinants of FDI in this region were analysed in the framework of the gravity model by Liu, Chow and Li (2006). The paper claims that economic determinants of inward FDI are market size, per capita income and country risk indicators along with economic and cultural ties in addition to information asymmetry. The sustained growth pattern experienced by the majority of countries in the region implies the necessity of establishing a common set of factors that can explain events, policies and strategies that led to large inflows of foreign investment sources.

One of the most prominent distinctive features of FDI is the power of ownership control acquired by investors for the safety of investments. This kind of control makes investments more secure and mitigates possible detrimental effects that can be generated by local policymakers. In the past, one of the most important threats of foreign investors was the risk of expropriation (Büthe & Milner, 2008). Nowadays, despite this event being quite rare, interest in ownership control still presents since firms bring their financial, technological and managerial resources into the recipient country while investing overseas. So, all of these actions taken in affiliates creates a necessity of participation in the decision-making process for the foreign investors. Another study done by Thangavelu and Findlay (2011) highlights the role of implemented regional trade agreements (RTAs) for provision of investment flows.

A large body of literature recognizes East Asian Miracle to be spurred by some common factors that influenced the whole region. One of these factors exhibited by so-called miracle economies was tremendous growth in the share of manufactured exports. The first wave of industrialization arrived in China, Hong Kong, Korea and Singapore. The second wave was observed for Malaysia, Thailand and Indonesia. The wave also achieved to a lesser extent

Vietnam. Altogether, they formed newly industrialized economies. All of these countries adapted trade liberalization and export promotion strategies in the economy after the 1970-1980ss. Besides, trading activity shifted from exports of primary products to capital and technology-intensive products. Quibria (2002) described the outward-oriented strategy of miracle economies concerned about a share of exports and imports that contributed substantially to economic development and poverty reduction. Among implemented policies supporting outward orientation were mentioned lowered tariffs and export taxes, eliminated and reduced barriers for trade and international investment flows. Generally, trade openness is considered to be one of the key determinants of FDI inflows. Openness to trade refers to trade liberalization and is measurable through exports-imports balance. Meanwhile, openness reflects the ability of the host country to attract foreign capital. Elimination of restrictions and trade barriers satisfies the needs and interests of foreign investors who decided to establish business units abroad. However, the expected impact of trading activity on FDI used to be ambiguous depending on applied trade policies by the recipient country. Liargovas and Skandalis (2012) examined the importance of trade openness for inward FDI flows for a sample of 36 developing countries between 1990 and 2008. In conclusion, the paper admits the positive and significant role of trade openness for inward FDI. Additionally, the paper mentioned trade openness as a stimulating factor for export-oriented FDI.

MNCs are expected to undertake FDI in more intensively clustered industries as it brings an opportunity to get positive externalities such as enhanced competition among suppliers that increase the quality of supplies. Overall, the agglomeration effect is influenced by three important factors attributed to the quality of infrastructure in the host country, the existing stock of FDI and the degree of industrialization. An early study conducted by Wheeler and Moody (1992) found a significant impact of these factors on the agglomeration (clustering) of U.S. manufacturing FDI.

The importance of infrastructure for attracting foreign investors was discussed by several researchers. General opinion is on the way of positive impact coming from good infrastructure facilities for prosperity of growth and foreign direct investment flows. Bakar, Mat, Harun (2012) emphasized the role of infrastructure for FDI inflows to Malaysia. Along with infrastructure, several macroeconomic factors like trade openness, market size and human capital have also been taken into account. The study confirms the positive and significant impact of infrastructure on inward FDI flows to Malaysia. Another study by Addison and Heshmati (2002) found that inward FDI flows are influenced positively by reduced transaction and production costs due to the spread of ICT. Additionally, the paper explored negative sign for infrastructure expressed as the number of phones per 1000 people and chosen as the determinant of FDI.

The concept of financial stability encompasses the ability of the financial system to restrict and prevent the growth of imbalances in the markets in addition to the absence of financial crisis in the economy. The stability of the financial system is ensured through a self-corrective mechanism that helps to avoid systemic risks in the economy.

According to the description provided by Schinasi (2004), a stable financial system should improve economic performance in many dimensions whereas an unstable financial system fails in doing so. There is no certain unit of measurement for financial stability. Prediction of financial instability appears to be challenging and requires a forward-looking approach to

evaluate potential risk and imbalances. The importance of financial stability is mostly felt during economic turbulence and crisis. An effective financial system provides financial development and as a result, also guarantees financial stability in the economy. Several empirical studies assert that FDI contributes positively to the financial system of the host country through various channels of interaction. Albulescu et al. (2010) mentioned several potential benefits derived from FDI for the financial system by summarizing findings of numerous research papers:

1. Ensuring soundness of the financial system
2. A decline in sensitivity of the financial system to credit cycles
3. Stabilizing function during the recession period

In the paper of Albulescu et al. (2010), financial stability was presented as a determinant of FDI for Central and Eastern European countries together with other traditional determinants such as trade openness, labour productivity and lending rate. After applying panel data techniques, the authors found financial stability to be a significant positive factor for attracting FDI flows.

2. DATA AND METHODOLOGY

This study takes into consideration longitudinal data for a sample of nine countries from East Asia and Pacific region that are supposed to be miracle economies that reached a substantial level of economic development over several decades. One of the prominent sources of growth across these economies according to the vast majority of the literature has been recognized inward foreign direct investment flows. The countries in the data set are:

- China (Mainland)
- Hong Kong SAR
- Republic of Korea
- Indonesia
- Malaysia
- Philippines
- Thailand
- Singapore
- Vietnam

The sample period covers the interval between 1996 and 2017. The choice of exactly these years is related to the availability of the most recent data on financial instability. The panel data is unbalanced due to a few missing values for financial instability. As this research aims to determine the role of financial instability for inward FDI flows, the dependent variable - FDI inflows expressed as a percentage of GDP is regressed on financial instability and a set of control variables implemented in previous studies. The relevant determinants used in this paper are market size, trade openness, infrastructure (hard) and agglomeration. Overall, we include five explanatory variables for the dynamic version of the model.

2.1 Descriptive Statistics: By Country

The panel data used to be fairly balanced except for few missing values for the stock price volatility index. Cross-country comparison illustrates that the mean of stock price volatility was the highest for China (27%) and the Republic of Korea (25%), while the least volatility was observed in Malaysia (16%) and Singapore (17%). To understand a variety of dynamics in variables country profiles are briefly described to capture the most important features and policies.

Table 1: Descriptive Statistics of Variables

| Summary Statistics	Inward FDI	SPV index	GDP per capita growth	Trade	Ln (Mobile)
Mean	7.05	22.56	3.89	154.2	*3.68*
Standard Deviation	9.85	9.36	3.61	116.03	*1.64*
Skewness	2.37	.952	-1.29	1.08	*- 1.50*
Kurtosis	8.91	3.44	7.62	2.88	*4.61*
Number of Obs.	198	187	198	198	198

To summarize, a mean of inward FDI stocks by the percentage of GDP sorted by countries in Figure 1, it becomes evident that the highest level of FDI was attracted into the region by Hong Kong SAR (25.8%) and Singapore (18.1%).

Figure 1: FDI Inflows by Country
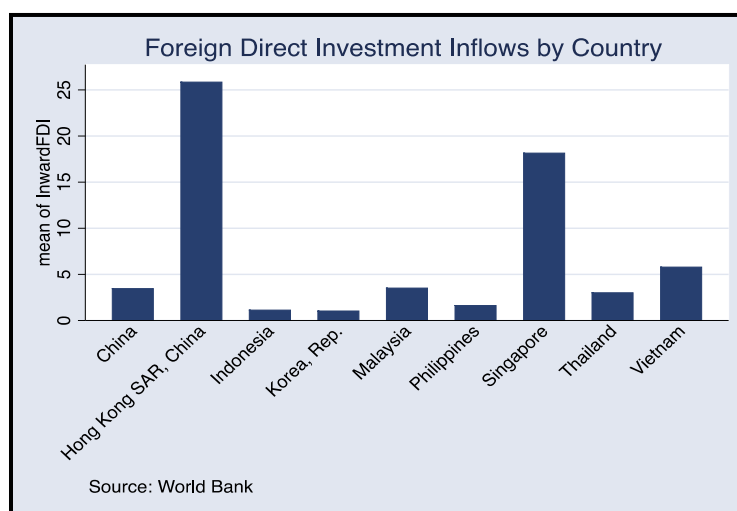
The role of exports was discussed in the literature as one of the key factors that accelerated a rapid growth across miracle economies. Weiss, John (2005) denoted increasing returns to scale in the production process supported by exporting activity to act as the main catalyst for dynamics of exports. As in the case of inward FDI, the level of exports was the highest again for Hong Kong SAR and Singapore (Figure 2). Inference about the relationship between FDI and exporting investigated by Bhatt (2013) and considered exports model for Vietnam where export was represented as a function of FDI and GDP. When it comes to infrastructure, investigation of mobile cellular subscriptions per 100 people demonstrates the leadership of Hong Kong SAR and Singapore in terms of communication facilities as well.

Figure 2: Export of Goods and Services (% of GDP) by Country
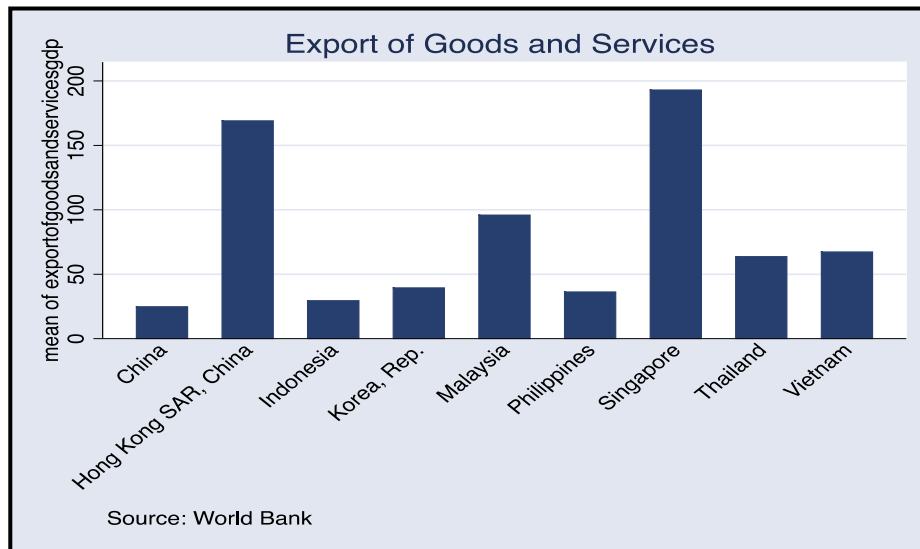
3. EMPIRICAL ANALYSIS

In order to estimate the effect of a set of determinants which are explanatory variables on the outcome variable which is inward FDI flows by using panel data, a convenient starting point can be the conduct of a dynamic fixed-effect model. However, certain assumptions must be satisfied for obtaining unbiased and consistent estimates. First of all, all independent variables assumed to follow strict exogeneity and error terms must be serially uncorrelated and iid. The panel data is usually susceptible for heteroskedasticity, serial correlation, endogeneity and cross-sectional dependence as well. These challenges prevent us from obtaining reasonable estimates. In order to detect and overcome these issues, if they present, the relevant tests must be conducted.

In this section in order to test the validity of chosen determinants and estimate their expected signs, we are going to perform dynamic panel estimation methods called Difference GMM introduced by Arellano and Bond (1991) and System GMM discovered by Blundell and Bond (1995). Dynamic panel models establish a link between dependent variable and regressors by trying to deal with endogeneity problem through implementation of lagged values of the dependent variable into regression and elimination of unobserved heterogeneity by taking first differences.

The original model can be represented by the following functional form:

- FDI= f (Agglomeration, Financial instability, Infrastructure, Market size, Trade openness)

This model can be rewritten in dynamic linear form:

$$FDI_{it} = \beta_0 \beta_1 FDI_{t-1} + \beta_2 SPVindex_{it} + +\beta_3 \ln(mobile)_{it} + +\beta_4 GDPpg_{it} + \beta_5 Trade_{it} + u_i + \varepsilon_{it} \qquad (1)$$

where, u_i accounts for individual specific effects and represents idiosyncratic error term.

Notation:

FDI_{it}- Inward FDI flow in country i at time t

FDI_{t-1}- Inward FDI flow in country i at time t-1

$SPVindex_{it}$– Stock price volatility index in country i at time t

$\ln(mobile)_{it}$ – Log of mobile subscriptions per 100 in country i at time t

$GDPpg_{it}$– GDP per capita growth (annual) in country i at time t

$Trade_{it}$– Trade as percentage of GDP in country i at time t

The table shown below captures all variables used with their relevant proxies. All data for variables except Stock Price Volatility index (SPV) has been taken from World Bank Development Indicators. SPV index was obtained from Global Financial Development Database (2019).

Table 2 and Table 3 summarize the results of estimation of Model I and Model II:

Table 2: Model I- Difference GMM Estimates

Variable	Coefficient	P value
Lagged Inward FDI	1.08**	0.008
SPV index	0.03	0.076
GDP per capita growth	0.30****	0.000
Trade	0.04.**	0.000
Ln(mobile)	-2.87	0.394
Constant	2.17	0.846

Note: * p<.05; ** p<.01; *** p<.001

Table 3: Model II- System GMM Estimates

Variable	Coefficient	P value
Lagged inward FDI	1.10**	0.007
SPV index	0.04*	0.014
GDP per capita growth	0.30***	0.000
Trade	0.04 ***	0.000
Ln(mobile)	-2.34	0.478
Constant	-0.03	0.998

Note: * p<.05; ** p<.01; *** p<.001

We can check the validity of Arellano-Bond estimator by testing the existence of second order autocorrelation in Table 4. As it is obvious, we accept the null hypothesis of absent autocorrelation in the second order. It means that just one lag included for estimation captures all dynamics of the dependent variable.

Table 4: Autocorrelation in first-differenced errors

Order	p value
2	0.0947

As it is obvious from Table 2 for difference GMM estimation, all explanatory variables excluding stock price volatility index (SPV index) and mobile subscriptions per 100 people appear to be statistically significant and positive determinants of inward FDI flows. Coefficient for infrastructure in regression output of system GMM presented in Table 3, still is an insignificant determinant. But proxy of financial instability SPV index turns to be significant.

3.1 Long-Run Equilibrium Analysis

Dynamic panel methods such as Arellano and Bond (1991) requires strict homogeneity of dynamics among individual members of the panel. Violation of this assumption yields inconsistent estimates in macro type aggregate data (Pedroni, 2018). Cross-sectional heterogeneity does not ensure convergence for pooled coefficients in lagged dependent variables as it is expected. The paper of Pesaran, Shin & Smith (1999) investigated empirically two applications about consumption function of 24 OECD economies and energy demand functions of 10 Asian Developing economies based on Maximum Likelihood (ML) estimators. The process of estimation involved pooling of long-run coefficients and averaging across groups by allowing short-run coefficients, intercepts and error variances to vary across groups. Only long-run coefficients are assumed to be constant. The authors elaborate on the long-run homogeneity argument by relying on the existence of the long-run relationship between variables across groups. Otherwise, dynamics of evolution in variables is observed through both short-term and long-term horizons.

The model is explained in the framework of Autoregressive Distributed Lag (ARDL) model adopted by Pesaran, Shin & Smith (1999).

$$\Delta y_{it} = \phi_i (y_{i,t-1} - \theta'_i X_{it)} + \sum_{j=1}^{p-1} \lambda^*_{ij} \Delta y_{i,t-1} + \sum_{j=0}^{q-1} \delta_{ij}{}^* \Delta X_{i,t-j} + \mu_i + \varepsilon_{it} \qquad (2)$$

In equation (3) parameter ϕ captures the error correction speed of the adjustment term. If this in the model equals zero, then a long-run relationship is absent. In this study, we apply ARDL (1,1,1,1) model by including lagged values of all explanatory variables into regression. Choice of 1 lag is adjusted according to the rare appearance of cointegration of order higher than 1 in panel data (Phillips & Loretan, 1991) and limited sample size.

PMG estimator is preferred to analyse cointegration among variables and primarily to observe the impact of short-run and long-run movements in financial instability for FDI inflows. Indicators of principal interest are usually long-run coefficients. General implementation of the estimation method reveals the following results shown in Table 5.

Table 5: PMG Estimates

D. INWARD FDI	SHORT-RUN ESTIMATES	LONG-RUN ESTIMATES
ERROR CORRECTION TERM	-0.362***	0.020
SPV INDEX D1	-0.056	0.324***
GDP PER CAPITA D1	-0.010	0.302***
TRADE D1	0.0009	-0.430**

Note: * p<.05; ** p<.01; *** p<.001

According to Table 5, among the long-run coefficients, only stock price volatility index (SPV index) that stands for financial instability is a statistically insignificant determinant of inward FDI flows into East Asia as it was in two previously shown methods. Market size and trade openness influenced influx of FDI flows positively while lack of mobile cellular subscriptions taken in log form and attributed to communicational facilities had a detrimental effect on our outcome variable.

Switching attention to short-run coefficients, first of all, clearly makes evident the significance of cointegration among variables. As regards short-run estimation results, all other coefficients are jointly negligible for statistical inference. Speed of adjustment based on parameter ф= -0.36. It is reasonable to expect a negative sign for adjustment term if convergence to long-run equilibrium is predicted.

To analyse and find out the role of each determinant for each country separately for a short-term period, it is possible to conduct PMG estimation across cross-sectional units to realize short-run movements. The next step is to rewrite model (3) as time series observation for each country.

The following model (3) can be illustrated as:

$$\Delta y_i = \phi_i y_{i,-1} + X_i \beta_i + \sum_{j=1}^{p-1} \lambda_{ij}{}^* \Delta y_{i,-j} + \sum_{j=0}^{q-1} \Delta X_{i,-j} \delta_{ij}^* + \mu_i i + \varepsilon_i \qquad (3)$$

The summary of Table 6: Cross-Country Comparison of Short-Run Estimates results for each cross-sectional unit is aligned in Table 6:

Table 6: Cross-Country Comparison of Short-Run Estimates

Country	SPV index	GDP per capita growth	Trade	Ln(mobile)	Error correction term
China	-.015	-.008	.032	-.071	-.529**
Hong Kong SAR	-.188	.522	.0001	15.93	-.127
Indonesia	-.073	-.525	-.0091	-.557	-.164
Korea Rep.	.224	.038*	.021*	.472	.058
Malaysia	.0029	.0594	.0176	-7.369***	-.766***
Philippines	.0091	-.096	-.046*	-1.787**	-.497**
Singapore	-.596	.301	-.116*	15.33	-.250
Thailand	.144*	-.018	.0038	-.674	-.822***
Vietnam	.188*	-.845	.106**	-.624	-.162

Note: * p<.05; ** p<.01; *** p<.001

It becomes clear from Table 6 that stock price volatility index movements in the short term were an important factor for inward FDI flows in Thailand and Vietnam. These results imply the role imposed by financial imbalances on deviations of incoming FDI flows. The sign of short-term coefficients in both countries appeared to be positive and strongly significant. It provides supporting evidence for "Fire Sale FDI" hypothesis discussed as one of the potential reactions. Before the Asian Crisis of 1997, Thailand expanded its short-term borrowing in foreign currency to finance long term projects. Maturity mismatch created financial instability. The market size was found to be important only for the Republic of Korea. Another determinant of inward FDI called trade openness that strongly depends on the shift in economic policies can vary across time and countries. Openness to trade appears to be a significant factor in the short time horizon for Korea, Philippines, Singapore and Vietnam. Moreover, the divergence in sign of coefficients across the countries signalizes the type of FDI engaged. The negative contribution from trade openness was monitored in Philippines and Singapore. Furthermore, the Republic of Korea and Vietnam that are extensively involved in export-oriented production were able to obtain a positive impact from the open trade economy. When it comes to infrastructure, assessed through mobile cellular subscriptions per 100 people, Malaysia and Philippines exhibited strong negative relationship between enlarging communication facilities and inward FDI flows. Negative

sign for infrastructure might be explained by the abundance of resource-based sectors in FDI. Speed of adjustment to long-run equilibrium was found statistically relevant in other sample countries except Hong Kong, Indonesia, Korea, Singapore and Vietnam. Attention to estimation results discloses extraordinary behaviour and unique evolution of dynamics in variables. For example, the positive impact from financial instability imposed on FDI inflows in the short term could be explained by the increase in cross-border mergers and acquisitions by foreign companies across affected countries to gain cost advantage. Thailand and the Republic of Korea are examples of such engagement where after 1999 most foreign direct investments had been attracted for M&A deals rather than for greenfield investments. This tendency was connected with the restructuring of local firms severely affected during crisis. By contrast, in Vietnam M&A activities were rarely seen due to conventional policies preventing M&A deals such as restriction for ownership up to 35% of shares.

The Role of Financial Crisis

The role of financial crises on FDI flows can be analysed under a separate body of research. Interestingly, the Asian countries that suffered from crisis have been assessed as highly attractive to foreign investors. Despite the fact that these countries successfully implemented all necessary FDI policies to ensure long-lasting effect for foreign investments, the financial crises that occurred in short and medium time horizons affected FDI flows considerably in negative direction (UNCTAD,1998). Stoddard and Noy (2015) also reviewed the dynamics of FDI inflows in times of financial crisis and confirmed negative role played for FDI flows and particularly M&A. Meanwhile, the scope of research in this paper is restricted to financial instability analysed in the framework of market volatility with specific focus on stock markets. In order to distinguish the impact generated by stock price volatility that derived from consequences of financial crisis, it is reliable to estimate our data by including two crisis dummies for accounting recession periods of 1998 and 2008. The estimation is conducted for PMG estimates as it was found to be a preferred option. Two countries in the sample namely Vietnam and Singapore do not have data in 1998 for stock price volatility index. Yet we can also observe the role of the Global Financial Crisis of 2008 on estimates.

Table 3.23: PMG Estimates with Crisis Dummies

Variable	Short-Run Estimates	Long-Run Estimates
Error correction term	-0.336*	-
SPV index	-0.20	0.0101
GDP per capita growth	0.09	0.724***
Trade	-0.001	0.012***
Ln(mobile)	0.86	-0.199
Slope dummy1	0.001	0.197**
Slope dummy2	-0.01	-0.037

Note: * p<.05; ** p<.01; *** p<.001

- Slope dummy1- dummy variable that takes value 1 in 1998 for SPV index or 0 otherwise

- Slope dummy2- dummy variable that takes value 1 in 2008 for SPV index or 0 otherwise

PMG estimates obtained with crisis dummies illustrate that stock price volatility which took place during 1998 contributed significantly to inward FDI flows in the long run with its positive sign, while the impact of SPV index in 2008 was not crucial for FDI inflows in East

Asia. By contrast, short-run estimates have statistically negligible impact on the influx of FDI in both periods of recession.

4. CONCLUDING REMARKS

FDI became a primary external source of financing across emerging market economies after the 1990s with the start of liberalization and privatization policies. Globalization of the world economy accelerated integration processes and prompted international capital flows. This paper aimed to discuss and evaluate empirically the impact of financial turbulence in the recipient countries on inward foreign direct investment flows into East Asia along with several reviewed traditional determinants. The relevant determinants are identified through an investigation of the historical and theoretical background of FDI in the region. The sample of the countries captures nine miracle economies achieved successful growth path over the last several decades. According to a large body of literature, a substantial level of FDI flows received by the region was accepted as one of the major sources of growth across these countries. Some common features of industrial policy applied in the region was liberalization and export-oriented growth model. Despite heavy pressure generated by the recession that occurred twice during the sample period, East Asia demonstrated a positive upward trend in incoming FDI and outgoing FDI.

Overall, all determinants proposed by literature and employed in this paper used to be vital factors affecting the influx of FDI flows. The analysis is performed through two different methods of estimation namely GMM (Generalized Method of Moments) and PMG (Pooled Mean Group). Both methods reveal different results according to obtained estimates. Estimation stressed the validity of three various hypotheses regarding causality between financial instability and inward FDI flows. The conventional view of neutrality for FDI inflows was approved by coefficients in PMG estimates. "Fire Sale FDI" hypothesis discussed by Krugman (2000) found evidence only for the short-time horizon in two out of nine countries. The existence of negative effects from financial instability was not observed in any of the estimated results. It is possible to conclude that assumption of stable FDI flows within contraction is supported along with the assumption of "Fire Sale FDI" for countries with relatively fragile financial systems and weak regulatory supervision. An increase in inward FDI right after the crisis can be explained by cross-border investments in the form of M&A that was a way to restructure companies in affected countries. This finding eventually accepts the suggestion of Krugman (2000).

The robustness of these findings can be stressed by including dummies for particular years of crisis. PMG estimates reviewed with slopes of crisis dummies show that stock price volatility exhibited only during 1998 that is aftermath Asian Crisis of 1997 influenced FDI inflows positively. Stock price volatility observed in 2008 during GFC have not affected inward FDI in the region. A detailed review of profiles and historical evolution of industrial policies across countries provides insight into the diversity in sign and significance of factors in cross-country comparison and unequal distribution of foreign investments.

Comparison of findings and conclusions of this paper with studies from academic literature leads to a lot of controversial points. For instance, according to Stoddard, Noy (2015) Fire Sale FDI hypothesis was rejected, but the authors note that this might be true particularly for their sample rather than for East Asia. The argument is based on the assumption of region-

specific characteristics. On the other hand, the role of financial instability observed in conditionally separated periods referring to financial crisis times and financial stability periods. The results admitted neutrality of FDI inflows in years that did not entail contraction. If we consider these years as periods of financial stability on average, the conclusion obtained from Albulescu, Briciu, Coroiu (2010) about the significance of financial stability for FDI inflows has not been found.

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