FINANCIAL DEVELOPMENT AND FDI-GROWTH NEXUS: PANEL ANALYSIS

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ABSTRACT

This study examines the role of financial development in the FDI-growth nexus from 1998 to 2009 using dynamic panel GMM estimator. Past literature has identified financial development as one form of absorptive capacity that would enhance the positive impacts of FDI on economic growth. The financial development is examined using the indicator of financial freedom index. The findings indicate that higher financial development reflected by higher level of financial freedom is more able to benefit from the growth effects of FDI. In the greater context, this study establishes a new form of absorptive capacity by showing that the quality dimension of stock market development constitutes an important element in influencing the impact of FDI on economic growth. Insights from this study suggest that it is important to address the quality aspect of stock market development in enabling FDI to serve as an important driver of economic growth. The findings expand the existing literature and provide a clearer understanding of the FDI-financial development-growth nexus. This study finds that although FDI alone plays a negative role in influencing economic growth, countries with higher bank's intermediation efficiency gain significantly more from the growth effects of FDI.

Keywords: Foreign Direct Investment, Economic Growth, Financial Freedom

INTRODUCTION

The effect of foreign direct investment or FDI on country's economic growth has been argued and discussed extensively in the literature. FDI is theoretically potential to directly and indirectly impact the recipient country's growth through the achievement of synergies, efficiency and cost reduction as well as the development of new activities and particularly through the raising of total factor productivity. However, the previous empirical studies draw inconclusive results of the FDI-growth relationship. On the one hand, numerous studies find that FDI exerts positive growth effects on the recipient countries (see, for examples Vu & Noy 2007; Elsadig 2012) through technology and cross-sectors (see, for examples Liu 2002; Chakraborty & Nunnenkamp 2008). On the other hand, while some studies indicate that FDI has negative effects on the economy (see, for examples Elia et al. 2009; Doytch & Uctum 2011) other studies find no significant relationship between FDI and economic growth (see, for examples Beugelsdijk et al. 2008; Temiz & Gokmen 2013; Yalta 2013).

The past literature thus suggests that the positive spillover effect of FDI to economic growth does occur with the existence of absorptive capacity of recipient country. In other words, the level of absorptive capacity of the host country has been identified as the key explanatory variable for the varied conclusions. The positive impacts can be generated with conditions of the linkages between FDI and foreign trade flows, the spillovers and externalities and structural factors in the country (OECD 2002). According to Alfaro et al. (2009), local conditions matter where it can limit the extent to which FDI benefits materialize. Alfaro et al. (2009) empirically find that the improvement in total factor productivity plays an important role in benefiting from FDI spillovers and capital accumulation in both physical and human however does not.

Studies on FDI-growth nexus are extended by introducing financial development as the key channel of the link where it performs as precondition to the country for the FDI inflows to contribute to economic growth. Financial development of a country has been recognized as one form of absorptive capacity since it has the potential to spur economic growth by resolving various financial market imperfections which in turn allows the benefits of FDI to be materialized. Levine (2005) suggests that the increase in mobilizing savings and those banks are actively engaged in monitoring and risk-management activities due to the development in the financial sector. This indirectly indicates the higher level of efficiency in the financial sector that reflects the higher level of financial development. Extensive studies that empirically research on the role of financial development in FDI-growth nexus collectively find a positive relationship with a condition of an existence of well-developed financial system in a country (see Choong et al. 2005, 2012; Ang 2009a, b; Lee & Chang 2009; Azman-Saini et al. 2010a; Hosein 2015; among others).

The present study explores new dimension of financial development by capturing the dimension of financial freedom that can be used as another form of absorptive capacity in materializing the growth effects of FDI. Therefore, this study may provide new evidence on the role of financial development in influencing the relationship of FDI and economic growth. Recent studies on the impact of foreign direct investment to economic growth are abundant. However, many focusing on the direct impact between FDI to economic growth and very few uses intermediating variable to identify the relationship. Thus, this study proposes financial freedom as the intermediating variable, measured by the financial freedom index that is expected to contribute positively to the FDI-growth nexus.

The structure of the paper is as follows. Section 2 discusses the literature on the FDI-growth nexus, financial development and growth nexus and FDI-financial development-growth nexus. Section 3 provides data and methodology. Empirical analysis and results are reported and discussed in Section 4 and conclusion is offered in final section.

PAST LITERATURE

FDI inflows have been an engine of economic growth where it does not only contribute to an increase in capital financing but it also overflows the benefits such as knowledge and technology spillovers that in turn could lead to an acceleration of economic growth of the recipient countries. FDI is perceived as the most important component of capital flows in international economy and a reliable source of external financing since it is more stable as compared to other types of

investment. According to Chuhan et al. (1996) that empirically examine the behavior of four major components of international capital flow in 15 developing and industrial countries for the period of 1985-1994, direct investment is found to be less volatile where it responds less dramatically to disturbances in other capital inflows and in other countries. In supporting to the findings by Chuhan et al. (1996), Bird and Rajan (2002) that examine Malaysia's balance of payment for the period of 1995-1998, empirically find economies that finance their current account mainly with FDI are seen to be less susceptible to a financial crisis. As a long term financing FDI is recognized as more stable since it is irreversible in the short run. Although there is still some riskiness that the country has to bear when they apply FDI as a major external financing but its benefits spillovers that help the development of the economy makes FDI is better than other forms of capital flows. Moreover, Albuquerque (2003) provides empirical evidence FDI has risk sharing advantage over other capital flows which is due to assumptions of imperfect enforcement of financial contract and inalienability of FDI that brings to lower default premium and lower sensitivity to changes in country's financing constraints. By modeling international capital flows based on the assumptions with samples of 111 countries for the period of 1975-1997, Albuquerque (2003) also suggests that financially constrained countries should borrow relatively more through FDI.

Consequently, the ultimate objective of FDI as the interjection of capital in economy is to accelerate growth rate. With its huge benefits, FDI is widely believed to have a positive effect on country's economic growth. Burgeoning past studies that have extensively researched on FDI-growth nexus finds somewhat mixed results. Although most of them empirically find that FDI contribute positively to growth (see for examples; de Mello 1999; Yao & Wei 2007; Vu & Noy 2009) however other empirical studies find conflicting results where there is no significant impact of FDI to economic growth is found (Herzer et al. 2008; Beugelsdijk et al. 2008; Carkovic & Levine 2002) and FDI only promotes growth under certain conditions (Blomstrom et al. 1992; Balasubramanyam et al. 1996).Over decades ago FDI has been generally recognized to have a positive relationship with growth. De Mello (1995) empirically finds that FDI inflows positively affect an output growth in all panels, with and without country-specific factors (i.e. institutions, trade regime, political risk, policy, etc.). The study uses time series and panel data with dynamic panel model for a sample of 15 OECD and 17 non-OECD countries in the period 1970-90.

In addition, Yao and Wei (2007) provide empirical evidence that FDI positively contributes to economic growth where it has been identified as a powerful driver of economic growth for a newly industrializing economy to catch up with the world's most advanced country as a mover of production efficiency and a shifter of production frontier. Yao and Wei (2007) tests two propositions on the dual role of FDI with regressions for the data that are based on a panel of 29 provinces and municipalities of China for the period 1979-2003. Meanwhile Vu and Noy (2009) analyze developed countries by sectoral data for a group of six OECD countries with regression and find that FDI has a significant and positive effect on economic growth both directly or through its interaction with labor, but the effect is not equally distributed across countries and sectors. In some sectors however, Vu and Noy (2009) find no evidence that FDI can enhance economic growth.

Study by Hosein (2015) supports the previous findings where he finds that in general FDI has a positive impact on economic growth, but it magnitude depends on the host country conditions to achieve economic growth and sustainable development. Hosein (2015) examines the growth-effects of FDI on 24 developing country recipients of FDI inflows selected from three regions i.e. Asia, Africa and Latin America from 1971 to 2005 using the same method of GMM panel data technique. Gulcin (2014) that examines the interactions between FDI and economic growth of transition countries in the context of Baltic countries using panel data analysis for the period of 1996 until 2008 discovers a positive and statistically significant relation between the growth rate of GDP and FDI. Meanwhile, Mahesh (2014) also supports the previous findings by discovering a significant impact of FDI on India's economic growth. Mahesh (2014) investigates the impact of FDI on economic growth in India entirely on secondary data and also finds that FDI can help to raise the output, production and export at the sectoral level of the Indian economy. In addition, Saleem and Ulfat (2015) that investigate the impact of FDI on the level of gross domestic production in Pakistan in long run period find that FDI has statistically significant and positive impact on the level of gross domestic production either in long or short run.

On the other hand, Herzer et al. (2008) discovers inconsistent findings. Herzer et al. (2008) that examine the link of FDI-growth for 28 developing countries by using single equation by Gregory-Hansen approach find neither a long-term nor a short-term effect in the vast majority of countries and no existence of positive unidirectional long-term effect of FDI to GDP in any country. The other study by Beugelsdijk et al. (2008) also find no significant effect in developing countries either from horizontal (market seeking) or vertical (efficiency seeking) FDI even there is empirically positive and significant growth effects found in developed countries in both types of FDI. However, Beugelsdijk et al. (2008) also finds a superior growth effect of horizontal FDI over vertical FDI. This study applies growth regressions and generalized methods of moments (GMM) dynamic panel estimation which includes absorptive capacity effect with samples of 44 recipient countries and one home country that is United States of America for the period of 1983-2003. Moreover, Carkovic and Levine (2002) that empirically re-examine the relationship of FDI and economic growth by using OLS and GMM panel estimator based on panel dataset from for the period of 1960-1995 find that the exogenous component of FDI does not exert positive impact on economic growth. Carkovic and Levine (2002) particularly conclude that there is no reliable cross-country empirical evidence that support FDI to contribute independently to economic growth.

The other study by Afzalur (2015) also contributes conflicting result. Afzalur (2015) identifies the relationship between FDI and macroeconomic indicators such as GDP, inflation rate and balance of trade. The study covers for the period 1999 to 2013 by using multiple regression analyses. Afzalur (2015) finds the correlation between FDI and economic growth is negative. This finding supports the previous result that the impact of FDI to economic growth is insignificant (Herzer et al. 2008; Beugelsdijk et al. 2008; Carkovic & Levine 2002).

Studies on FDI-growth nexus are extended by focusing on an absorptive capacity of the recipient country to investigate and explain the relationship between FDI and economic growth. The literature has identified financial development as one form of absorptive capacity and collectively, empirical evidence indicates that financial development of a country allows the growth effects of FDI to be realized (see, for examples Hermes & Lensink 2003; Alfaro et al.

2004; Azman-Saini et al. 2010a; among others). Hermes and Lensink (2003) empirically analyze the cross section of the data set of 67 of less developed countries (LDCs), from the Latin American and Asian continents, for the period of 1970 to 1995 using the regressions of growth equation. He concludes that FDI of LDCs positively contributes to growth only when their domestic financial systems are improved. Alfaro et al. (2004) show consistent evidence similar to that of Hermes and Lensik (2003), where the level of local financial markets is important in realizing the positive effects of FDI-growth link. The study empirically examines the link of FDI and economic growth with financial markets as a channel using cross-country data.

Azman-Saini et al. (2010a) also consistently establish the same finding of the positive link of FDI-growth with the pre-condition that the financial development has reached a certain level. Both studies use FDI inflows over GDP to measure FDI and Azman-Saini et al. (2010a) follow Alfaro et al. (2004) for four variables in measuring banking sector development. Study by Azman-Saini et al. (2010a) which includes cross-country observation for 91 countries for the period of 1975-2005, employed private sector credit as a threshold variable in the regressions where they found that the impact of FDI on growth becomes positive only after financial development exceeds the threshold level. Similarly, in a recent study, Choong (2012) also find that a well-developed domestic financial market is a precondition for FDI to affect economic growth positively. Other studies on FDI-financial development-growth nexus also collectively show positive findings. Chee and Nair (2010) that examine the relationship on these three variables using panel data methods on a sample of 44 Asia and Oceanic countries starting from 1996 until 2005, conclude that financial sector development enhances the contribution of FDI on economic growth in the region. Meanwhile, Sghaier and Abida (2013) that pursue the same study using GMM panel data analysis discover that the development of the domestic financial system is an important prerequisite for FDI to have a positive effect on economic growth. The study focuses on four countries of North Africa over the period of 1980 to 2011.

Prior studies that have investigated the role of financial development in the FDI-growth nexus collectively find that financial development matters in realizing the positive growth effects of FDI. However, no study has examined the other aspects of financial development in influencing the impacts of FDI on economic growth that is from financial freedom perspective. Hence, the present study extends the FDI-financial development-growth literature by incorporating the financial freedom aspect of financial development at the country-level in examining the relationship between FDI and economic growth. Financial freedom plays important roles in economic prosperity for most countries since banking institutions provide services and facilitate economic growth. Thus, greater direct control of banks by government is a threat to these functions because government interference can introduce inefficiencies and outright corruption. Indeed, heavy bank regulation reduces opportunities and restricts economic freedom; therefore, the more a government restricts its banking sector, the lower its economic freedom score will be (Sohrabian & Sohrabian, 2014). In addition, developed financial freedom allocate funds to maximize profits and typically generate funds through their own operations (Merter Akinci et al. 2015). Eventually, financial freedom may stimulate country's financial development and therefore generate an economic growth which positively affects productivity.

Previous research has shown a positive relationship between financial freedom and the economic growth. Major findings from past study suggest that the country which has higher level of

freedom tend to experience faster growth rates, lower inflation and unemployment rate. In MENA banking sectors, the level of inflation rate has a positive influence on banking's profitability when the monetary and financial freedom variables are well-controlled. Sufian et al. (2008) provide the evidence that greater financial freedom positively influences the profitability of Islamic banks operating in the MENA banking sectors. In this research, the coefficient of the financial freedom variable has been entered and regressed with a statistically significant positive sign. The result suggests that banking security and independence from government interference utilizes positive effect on Islamic banks' profitability. Indeed, the more banks are controlled by the government, the less free they are to engage in essential financial activities that facilitate private sector led economic growth (Sufian et al., 2008). Meanwhile, Merter Akıncı et al. (2015) find that central bank independence and financial freedom are the important factors for determining the national output level. They also find that the increasing financial liberalization and central bank independence would assure the price stability and accelerate the gross domestic product especially via decreasing current account imbalances, and inflation rates. These long run relationships among variables will ultimately influenced in the process of economic growth in the positive direction.

Thus, in conclusion, the higher degree of financial freedom subsequently leading to higher level of financial development as it encourages banks to be more innovative and productive, increases competition as well as improves capital allocation. As a result, the capital will be allocated efficiently to its most productive use and thus, it will enable a country to realize the positive growth effects of FDI. In other words, financial development that is captured by financial freedom is expected to serve as a new form of absorptive capacity in enabling a country to reap the positive growth effects of FDI. Therefore, the hypothesis of the study is posited as follows:

H1: Higher financial development, captured by higher degree of financial freedom through higher financial freedom index enhances a country's ability to benefit more from the growth effects of FDI.

DATA AND METHODOLOGY

This study employs the balanced panel data for a sample comprising 30 developed and emerging countries over the sample period from 1999-2009. The list of countries is shown in Appendix A. The estimation model of this study employs the dynamic panel using generalized methods of moment (GMM) estimators. The dynamic panel is more efficient as it mitigates statistical flaws and controls for country-specific effects and simultaneity bias caused by the possibility that some explanatory variables can potentially be endogenous. According to Baltagi et al. (2009), the dynamic panel GMM estimator developed by Arellano and Bond (1991) has been transformed into the first difference form in order to eliminate any endogeneity arising from the correlation between country-specific, time invariant factors and the right hand side regressors. In addition, it also ensures that all regressors are stationary.

The estimation that uses the dynamic panel GMM estimator is generally specified as follows:

$$GDPG_{i,t} = \alpha GDPG_{i,t-1} + \beta_1 FDI_{i,t-1} + \beta_2 FF_{i,t} + \beta' X_{i,t} + \eta_i + \varepsilon_{i,t} \quad (3.1)$$

$$GDPG_{i,t} = \alpha GDPG_{i,t-1} + \beta_1 FDI_{i,t-1} + \beta_2 FF_{i,t} + \beta_3 (FDI \times FF)_{i,t} + \beta' X_{i,t} + \eta_i + \varepsilon_{i,t} \quad (3.2)$$

Empirical models of equation (3.1) and (3.2) are used to test the following hypothesis stated as follows:

H1: Higher financial development captured by degree of financial freedom through higher financial freedom index enhances a country's ability to benefit more from the growth effects of FDI.

The dependent variable *GDPG* is the logarithm of real GDP per capita (constant 2000 US dollars). The independent variables are as follows. *FDI* is the one-period lagged of foreign direct investment net inflows as a percentage of GDP. *FF* is the financial freedom index that is a measure of financial development. *FDI x FF* is the interaction of foreign direct investment and financial freedom index. *X* is a vector of control variables that affects economic growth which includes financial openness i.e. the Chinn-Ito Index or *KAOPEN*, human capital i.e. the average year of secondaryschooling (Barro and Lee 2012); government consumption i.e. general government final consumption expenditure as a percentage of GDP, and inflation i.e. inflation, GDP deflator in annual percentage, η_i is the unobservable individual effect of country, $\varepsilon_{i,t}$ is an error term, i is country index and t is time index. The sources of data for FDI, GDP growth, and control variables such as government consumption and inflation, are from World Development Indicators (WDI) Database. The human capital data are from Barro and Lee's website; and the financial openness data (*KAOPEN*) are sourced from the Chinn-Ito's website. The financial freedom index is sourced from the Heritage Foundation (2010).

The financial freedom index is employed to proxy the dimension of financial freedom in financial development. In theory, the higher financial freedom index indicates higher degree of financial freedom subsequently leading to higher level financial development as it encourages banks to be more innovative and productive, increases competition as well as improves capital allocation. As a result, the capital will be allocated efficiently to its most productive use and thus, it will enable a country to realize the positive growth effects of FDI. According to the Heritage Foundation (2010) that provides the data, the index focuses on five broad areas that include;

> *..the extent of government regulation of financial services, the degree of state intervention in banks and other financial firms through direct and indirect ownership, the extent of financial and capital market development, government influence on the allocation of credit, and openness to foreign competition*.

Collectively past studies empirically find an overall positive relationship between economic freedom and economic growth (see for examples, Doucouligos & Ulubasoglu 2006; Carlsson & Lundstrom 2002; De Haan & Sturm 2000; Sturm & De Haan 2001). More recent study by Azman-Saini et al. (2010b) that investigate the systemic link between economic freedom, FDI and economic growth in a panel of 85 countries using GMM estimator, discover that economic freedom plays a significant and positive role in enhancing the impact of FDI on growth as higher economic freedom encourages more productive investment. It thus causes greater FDI spillovers to be realized and indirectly promote higher economic growth. The empirical finding of the study by Azman-Saini et al. (2010b) provides a direction on the quality of banking development as a new form of absorptive capacity in the FDI-growth nexus since the economic freedom index constitutes the financial freedom index that specifically measures the efficiency level of the

banking sector. Hence, the higher financial freedom will encourage banks to be more innovative and productive and thus enable a country to realize the positive growth effects of FDI. In the study, they apply the economic freedom index by the Fraser Institute that measures freedom quality in five major areas which are the size of the government, the legal structure and security of property rights, access to sound money, exchange with foreigners, and regulation of capital, labor, and business.

Fadzlan and Muzafar (2010) provide empirical evidence that economic freedom exerts a positive impact on bank's performance. Specifically, the study finds that the higher economic freedom leads to the higher banks' profitability since banks have higher freedom on undertaking activities and encouraging entrepreneurs to start businesses. Fadzlan and Muzafar (2010) examine the relationship by focusing on the Malaysian banking sector for the period of 1999-2007 with the multivariate regression analysis. In addition, Low et al. (2010) investigate the role of economic freedom in banking sector development in six East Asian countries for a period of 1975-2006 and find that economic freedom is positively and strongly related to banking development. The finding of the study by Low et al. (2010) also indicates the different effects of economic freedom in different countries where higher level of economic freedom is linked with higher level of banking development.

EMPIRICAL ANALYSIS AND RESULT

The empirical results of dynamic panel that examine the effects of financial development on the FDI-growth nexus are presented in Tables 1. The coefficients of the control variables i.e. government consumption and human capital are highly significant in all models. The coefficients of inflation are improved where it is found to be significant in all models except in model 3. The coefficients of financial openness are significant in models 1 to 3.

Table 1: Dynamic Panel (GMM) Estimator: Financial Development in the FDI-Growth Nexus

	Model 1	**Model 2**	**Model 3**
ln $GDPG_{it-1}$	0.884***	0.892***	0.886***
GC	-0.022***	-0.022***	-0.020***
HC	0.033***	0.031***	0.026***
INF	-0.001***	-0.001**	-0.001
FO	0.011***	0.011**	0.015**
FFID	-0.005	-0.006	-0.020*
FDI_{it-1}		-0.001***	-0.002***
FDI x FFID			0.002***
S.E. of regression	0.024	0.024	0.024
AR(2) test (*p*-value)	(0.851)	(0.766)	(0.960)
J-test (*p*-value)	(0.201)	(0.190)	(0.073)
Total observations	270	270	270

Notes: Dependent variable is the logarithm of real GDP per capita growth rate (constant 2000 US dollars) or ln GDPG. The variables are defined as follows: GC = Government Consumption; HC = Human Capital; INF = Inflation; FO = Financial Openness; Foreign Direct Investment; FFI = Financial Freedom Index. Figures in parentheses are *t*-statistics. ***, ** and * indicate significance at 1%, 5% and 10% levels, respectively.

The coefficients of FDI are negative and significant at 1% level in models 2 and 3. In model 3, the coefficient of financial freedom is shown to be negatively and significantly related to growth at 10% level. The coefficient of the interaction of FDI and financial freedom index is positive and highly significant at 1% level in model 3. This model 3 has passed both specification tests namely, the second-order serial correlation and the *J*-test of over-identification tests indicating that the model is adequately-specified. Therefore, this result provides strong evidence that the impact of FDI on growth depends on the degree of freedom in a country's financial market. Although FDI alone contributes negatively to economic growth, its interaction with the financial freedom index turns out to be positive. This suggests that financial development in a country can serve as a new form of absorptive capacity that enables the positive growth effects of FDI to be materialized. This result supports hypothesis 1 that higher financial development, captured by degree of financial freedom through higher financial freedom index enhances a country's ability to benefit more from the growth effects of FDI.

The effect of FDI on economic growth is contingent on the level of financial development that is a newly identified absorptive capacity of a recipient country. Taken together, the overall results in Table 1 suggest that financial development of a country serves as an important absorptive capacity that allows the positive growth effects of FDI to be realized. That is, the impact of FDI on economic growth is found to be dependent on this newly identified absorptive capacity that emphasizes on the degree of financial freedom. Thus, the evidence suggests that higher financial development captured by higher financial freedom index enhances a country's ability to benefit from the growth effects of FDI.

CONCLUSION

Financial freedom index suggest that degree of financial freedom is an important quality dimension that contributes positively to the FDI-growth relation. Financial freedom, proxied by the financial freedom index measures the openness of the financial sector and the extent to which banks and other financial institutions are free to operate their businesses. Hence, higher score on the financial freedom index provides indication of higher development in the financial sector. In sum, the financial freedom dimension for financial sector represents a newly identified absorptive capacity that serves as important precondition for a country to realize the positive growth effects of FDI. The findings of this study are consistent with those of prior studies showing that the impact of FDI on growth is contingent on the absorptive capacity of the recipient countries (see for examples, Lee & Chang 2009; Azman-Saini et al 2010a; Hosein2015; among others). The findings of this study imply that a country's policy framework for financial sector development should also emphasize on the aspect of financial freedom. The policy strategies directed towards attracting FDI should be put in line with the policies for promoting the degree of financial freedom.

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Appendix A
List of Countries in the Sample of Studies

1	Argentina	11	Germany	21	Malaysia
2	Australia	12	Greece	22	Mexico
3	Brazil	13	Hong Kong	23	Peru
4	Canada	14	Hungary	24	Philippines
5	Chile	15	India	25	Poland
6	China	16	Indonesia	26	Singapore
7	Colombia	17	Israel	27	South Africa
8	Czech Republic	18	Italy	28	Spain
9	Egypt, Arab Rep.	19	Japan	29	Thailand
10	France	20	Korea, Rep.	30	United States