Southern Voice

Can Foreign Portfolio Investment Contribute to Post-2015 Development Goals in Asia?

Pradeep Agrawal

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Preface

The *Southern Voice on Post-MDG International Development Goals* works as an open platform, and is a network of 48 think tanks from Africa, Latin America and Asia that seeks to contribute to the global post-2015 dialogue. Motivated by the spirit of wide academic inquiry, the initiative is committed to provide quality data, empirical evidence and policy analyses, derived from research in the countries of global South. Through strategic engagements, *Southern Voice* aspires to address the existing 'knowledge asymmetry' and 'participation deficit' afflicting the global discourse on post-2015 agenda.

With these goals in mind, *Southern Voice* launched a call for papers among its members to inform the global debate based on promoting original research on new issues that have emerged from various reports, structured conversations concerning the post-2015 agenda as well as from the discussions around them and beyond. Eleven research grants were offered during this phase.

In response to the call, we received numerous proposals which were reviewed by *Southern Voice* members. The research papers were also peer reviewed, and the revised drafts were later validated by the reviewer.

The resulting collection of papers highlights some of the most pressing concerns for the countries of the global South. In doing so, they explore a variety of topics including social, governance, economic and environmental concerns. Each paper demonstrates the challenges of building an international agenda which responds to the specificities of each country, while also being internationally relevant. It is by acknowledging and analysing these challenges that the research from the global South supports the objective of a meaningful post-2015 agenda.

In connection with the ongoing debates on post-2015 international development goals, **Can Foreign Portfolio Investment Contribute to Post-2015 Development Goals in Asia?** by *Dr Pradeep Agrawal*, RBI Chair Professor of Economics and Head of the RBI Endowment Unit at the Institute of Economic Growth, India, analyses the economic impacts of equity and bond foreign portfolio investment (FPI) inflows on GDP growth, domestic investment and equity market capitalisation in the host country, using panel data from 10 developing Asian countries for the period 1995-2011.

Contributions of *Ms Andrea Ordóñez*, Research Coordinator of the initiative and *Ms Mahenaw Ummul Wara,* Research Associate, Centre for Policy Dialogue (CPD) and Focal Point at the Southern Voice Secretariat) in managing and organising the smooth implementation of the research programme are gratefully acknowledged.

I would also like to thank *Dr Khondaker Golam Moazzem*, Additional Research Director, CPD, Bangladesh for peer reviewing, and *Mr Michael Olender* for copy editing the paper. I would like to take this opportunity to recognise the support of Think Tank Initiative (TTI) towards Southern Voice, particularly that of *Dr Peter Taylor*, Programme Leader, TTI.

I hope the engaged readership will find the paper stimulating.

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Abstract

This paper analyses the economic impacts of equity and bond foreign portfolio investment (FPI) inflows on GDP growth, domestic investment and equity market capitalisation in the host country, using panel data from 10 developing Asian countries for the period 1995-2011. Increases of equity FPI inflows in Asia are found to be associated with higher GDP growth, increased domestic investment and higher market capitalisation. Bond FPI inflows, on the other hand, appear not to have significant effects. Notably, foreign borrowing has a positive but less strong impact on GDP growth and domestic investment than equity FPI inflows. These results suggest that developing countries should promote inflows of equity FPI to supplement financial resources dedicated to achieving the post-2015 development goals.

Contents

Acronyms

AB	Arellano-Bond
FDI	Foreign Direct Investment
FPI	Foreign Portfolio Investment
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
GNI	Gross National Income
MDG	Millennium Development Goals
ODA	Overseas Development Assistance
UN	United Nations
USD	United States Dollar

Can Foreign Portfolio Investment Contribute to Post-2015 Development Goals in Asia?*

Pradeep Agrawal

1. Introduction

Success in the achievement of the post-2015 development goals that follow the Millennium Development Goals (MDGs) would be greatly facilitated by developing countries gaining improved access to financial resources. Better access can be realised by more overseas development assistance (ODA) from developed countries and concessional loans, which are sometimes a component of ODA. To date, the large majority of developed countries have failed to live up to their promise to increase ODA to the level of 0.7 per cent of gross national income (GNI), a target that has been approved in United Nations (UN) resolutions more than once since 1970. Given the ongoing economic problems in Europe linked to the sovereign debt crisis and in the United States due to the lingering fallout from the 2008-09 financial crisis, it is unclear whether sufficient increases in ODA will materialise. Therefore, it is important that developing countries try to make the best possible use of available private foreign capital flows, such as foreign direct investment (FDI) and foreign portfolio investment (FPI). While the economic impacts of FDI have been previously researched, there are very few studies that have carefully assessed the economic impacts of FPI.

How can FPI help meet post-MDG development goals? Suppose a country gets some foreign assistance and loans for development projects related to post-MDG goals. Such access to financial resources can help meet post-MDG goals if the amount of resources is sufficient. Suppose the likely case that the amount is insufficient to meet all the country's post-MDG goals. The alternative is to access private foreign capital, such as that in the form of FDI or FPI. Such capital may not *directly* help to meet a post-MDG goal, but if it promotes investment and growth of the domestic economy, it likely helps increase employment, gross domestic product (GDP) and government revenues (which are usually a constant or slightly increasing proportion of GDP in most countries). Increased employment generally reduces poverty and promotes development, while increased government revenues enable the government to increase its expenditures, including those on projects related to post-MDG goals. Thus, FPI can *indirectly* help a country strengthen its economy and achieve its development goals.

However, this argument is valid only if FPI indeed promotes investment and domestic economic growth. This relationship is not well established. This study investigates whether FPI can play a significant role in increasing domestic capital formation and economic growth in developing countries. To this end, a detailed analysis of the economic impacts of equity and bond FPI inflows is undertaken using panel data from 10 developing Asian countries. At the macroeconomic level, the important contentious issues are the impact of FPI on GDP growth and the impact of FPI on domestic investment and market capitalisation. FPI can be in the forms of equity of domestic firms and bonds issued by the government or domestic firms. These two types of FPI can have fairly different characteristics and impacts, hence they are considered separately throughout the analysis.

In the context of Asian countries, very little work has been done to evaluate the impacts of FPI on economic growth. Agarwal (1997) analysed the determinants of FPI and its impacts on the economies

of six developing Asian countries for the period 1986-1993. Inflation rate, real exchange rate, index of economic activity and the share of domestic capital market in the world stock market capitalisation were found to be four statistically significant determinants of FPI. A few bi-variate correlations with macroeconomic variables and FPI were reported, but the study did not adequately address the issue of the impacts of FPI on GDP or capital formation. Some studies have examined the impacts of FPI on economic growth in developing countries more generally. Durham (2003) examined the effects of FPI on economic growth using data of 88 countries from 1977 through 2000, finding that FPI has no effect on economic growth. He also found that some forms of non-FPI and non-FDI foreign investments (such as cross-border bank lending) had a negative impact on economic growth. Vita and Kyaw (2009) examined the impacts of FDI and FPI flows on economic growth in low-income, lower middle-income and upper middle-income countries with a large set of 126 developing countries for the period 1985-2002. They found that developing countries which have reached a minimum level of economic development and absorptive capacity capture the growth-enhancing effects of both forms of investment inflows. Rachdi and Saidi (2011) examined the impacts of FDI and FPI on economic growth in 100 developing and developed countries over the period 1990-2009. They found that there is a statistically significant positive relationship between FDI and economic growth, while the coefficient for FPI is negative but not statistically significant in developing countries and positive and significant in developed countries. Aizenman *et al.* (2013) examined the relationship between economic growth and lagged international capital flows, disaggregated into FDI, equity investment and short-term debt, in 100 countries during 1990-2010. They found a large and robust relationship between FDI – both inflows and outflows – and growth. The relationship between equity investment and growth is smaller and less stable, while there was no significant relationship between growth and short-term debt until the 2008-2009 international financial crisis. Soto (2000) analysed the effects of different forms of private capital inflows on GDP growth in 44 developing countries using dynamic panel data analysis for the period 1986-1997, finding that portfolio bond flows are not significantly linked to economic growth, while bank-related inflows are negatively correlated with the growth rate in the short and long-run in countries with undercapitalised banking systems.

In this paper, the impacts of equity and bond FPI on economic growth and capital formation are analysed econometrically. We undertake dynamic panel data analysis using the generalized method of moments (GMM) procedure due to Bond (1991) for ten developing Asian countries. The choice of developing countries over developed countries is obvious, since the issue of post-MDG development goals and the role of FPI in the achievement of those goals are mainly relevant for developing countries. The choice of Asia has the advantage of having a group of countries that have reasonably similar economic structures and levels of development (as the review of earlier studies indicates, impacts of FPI can vary based on level of development). All developing countries in Asia[1] were vetted initially, but a large number of them had to be eliminated since they did not have adequate (or any) data on FPI inflows. The 10 countries that have most of the relevant data for the period 1995 onward are – Bangladesh, India, Pakistan and Sri Lanka from South Asia; and China, Indonesia, Malaysia, the Philippines, Thailand and Vietnam from East and Southeast Asia. The analysis uses annual data from these 10 countries for the period 1995-2011. The possibility of using a panel cointegration procedure was considered but it was found to be inapplicable, because the variables of interest are a mix of stationary and non-stationary variables with even some of the dependent variables (especially GDP growth) being stationary. Therefore, the GMM estimation procedure, which has the advantage that potential endogeneity of variables usually does not significantly affect the estimated parameters, was chosen to be used. The overarching objective of this study is to provide a better understanding of the economic impacts of FPI on developing countries in Asia.

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[1]The list of developing Asian countries grouped by region is taken from the World Bank. It includes: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka from South Asia; Cambodia, China, Fiji, Indonesia, Kiribati, North Korea, Laos, Malaysia, Mongolia, Myanmar, Palau, Papua New Guinea, the Philippines, Samoa, Solomon Islands, Thailand, Timor-Leste, Tuvalu, Tonga, Vanuatu and Vietnam from East Asia and the Pacific; and Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, Egypt, Iran, Iraq, Jordan, Lebanon and Syria from Central Asia and the Middle East (World Bank, 2014).

The rest of this paper proceeds as follows. Section 2 provides a brief discussion about FPI inflows into developing Asian countries and other country groups. Section 3 analyses the impacts of FPI on GDP growth in Asia – the impacts of equity FPI and bond FPI are analysed separately. Section 4 analyses the effects of equity and bond FPI on capital formation and equity market capitalisation in the host country. Some concluding remarks are provided in Section 5.

2. Foreign Portfolio Inflows in Developing Asia

Equity FPI refers to shares of firms listed on domestic stock exchanges, while bond or debt FPI refers to bonds sold through various exchanges by domestic firms and the government. These two forms of capital can have fairly different impacts. Equity FPI can increase share prices, and thus increase equity market capitalisation in a country through increased demand for shares, which can have the effects of boosting business sentiment and encouraging more investment and production by domestic firms. In a well-functioning capital market, equity FPI, through its signaling effects, can also help direct resources to more productive uses in the domestic economy. Bond FPI can help finance the borrowing needs of specific firms, which may facilitate additional investment by them, but it generally does not have economy-wide ramifications. This study considers both types of portfolio investment separately and evaluates their economic impacts separately.

Table 1 shows FPI inflows into the emerging countries of East and South Asia during the period 1990-2012. In India, FPI has increased dramatically from approximately 0.04 per cent of GDP in 1990 to 2.38 per cent in 2010. In the cases of Pakistan, Bangladesh and Sri Lanka, only marginal improvements in FPI inflows have been observed over time. For several East Asian countries such as China, Thailand, the Philippines and Vietnam, the FPI shares in GDP have increased significantly over the period. FPI in Thailand, for example, increased from approximately 0.41 per cent of GDP in 1990 to a peak of 3.57 per cent of GDP in 2005, after which it fell to a moderate 1.05 per cent of GDP in 2012.

Table 1: Share of FPI in GDP for Emerging Asian Countries

(in Per cent)

Country	1990	1995	2000	2005	2010	2011	2012
India	0.04	0.51	1.68	0.98	2.38	-0.24	na
Bangladesh	0.00	-0.04	0.00	0.03	0.00	-0.01	na
Pakistan	0.00	0.02	0.05	1.40	-0.38	-0.02	0.08
Sri Lanka	na	na	-0.31	-0.88	-0.10	0.64	na
China	-0.01	0.04	0.60	1.13	0.72	0.25	0.36
Indonesia	0.02	1.85	-1.86	0.54	0.63	0.15	0.19
Malaysia	-2.82	2.75	0.51	-0.49	0.82	1.05	na
Philippines	0.89	1.50	1.97	2.48	1.61	0.60	0.69
Thailand	0.41	2.60	-0.26	3.57	1.55	0.40	1.05
Vietnam	na	na	na	1.56	3.17	0.84	na

Source: World Bank (2014b).

Until the late 1980s, ODA (which can include grants and concessional loans) and foreign debt (at market interest rates), were the main forms of foreign capital used by developing countries. As more market-oriented policies were adopted by developing Asian countries and private foreign capital flows increased in response to perceived opportunities for gaining better returns in these growing economies, more capital flows came into these countries.

FPI became substantial for emerging Asian countries during the early to mid-1990s following the liberalisation of capital controls relating to FDI and FPI in most of these countries. Many developing

Asian countries received attention from international portfolio investors because of their high rates of economic growth, sound macroeconomic environments, liberalisation of financial markets and reasonably stable exchange rates.

FDI flows also became large, exceeding both ODA and foreign debt flows in most of these countries (a few of the smaller and relatively lesser developed countries of South Asia fared less well). With the further development of capital markets in these countries, along with liberalisation of international flows related to those capital markets, annual FPI flows grew to around USD 100 billion for the 10 developing Asian countries selected for this study, averaging twice as much as ODA (Figure 1). For comparison, in 2012 in those countries the annual inflows of foreign debt amounted to about USD 150 billion, and those of FDI to about USD 350 billion. It is evident that FPI is becoming more salient, and at least in the developing Asian countries with developed capital markets, could keep growing to become much more important.

Figure 1: Total Foreign Capital Inflows into 10 Developing Asian Countries: 1970-2012
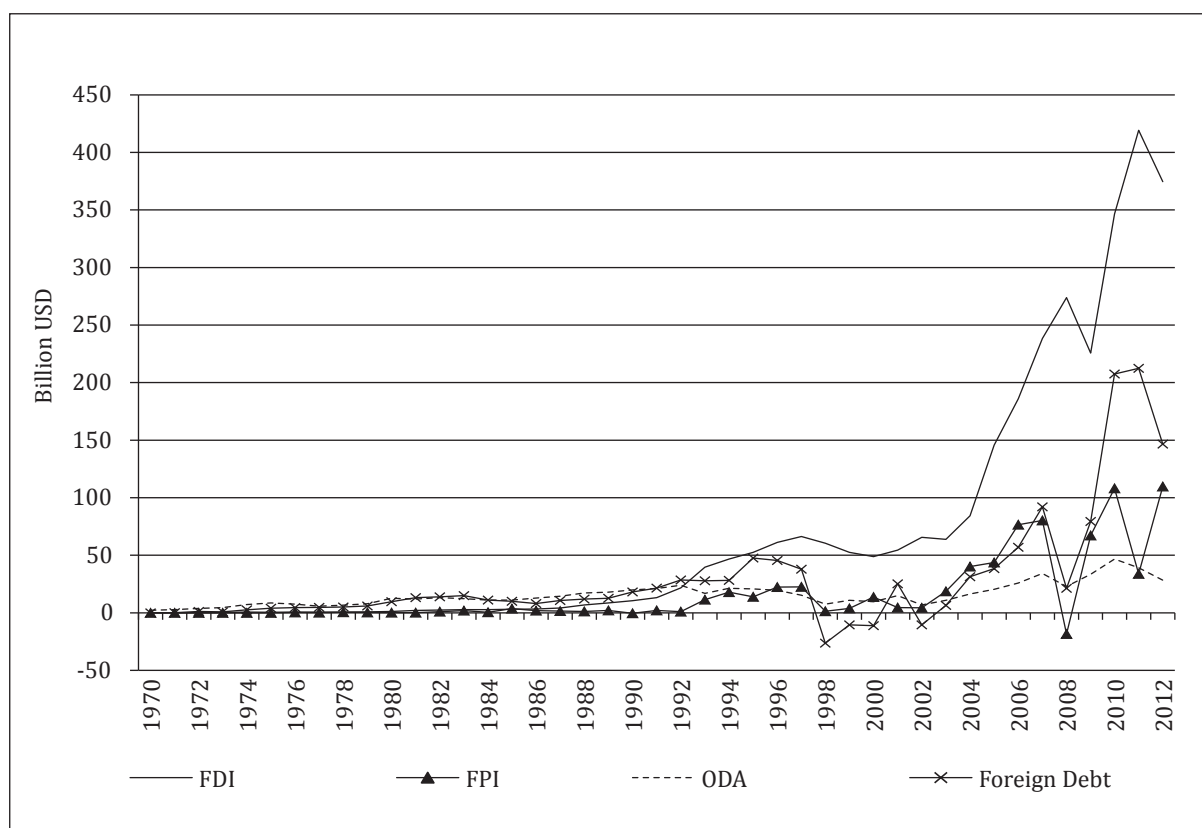
Source: Based on data from World Bank (2014b).

Figure 2 shows total ODA, foreign debt, FDI and FPI inflows in low-income, lower middle-income and upper middle-income countries (these are standard World Bank categories that correspond to per capita GDP of under USD 1,200, USD 1,200 to USD 6,000, and USD 6,000 to USD 12,000, respectively) for the period 1970-2012. In low-income countries, ODA is the largest of the foreign capital inflows while FPI is almost insignificant. FPI is much larger than ODA in upper middle-income countries, though FDI and foreign debt are larger than FPI. Thus, developing countries with reasonably well-developed capital markets could consider addressing their foreign capital needs with FPI as a supplement to FDI. Other developing countries should seek to develop their capital markets and possibly open them further to foreign capital inflows.

However, before we proceed with inviting large FPI inflows, it is crucial to take a careful look at the economic impact of FPI inflows to make sure that they are indeed beneficial. This is the purpose of the rest of this paper.

Figure 2: Total Foreign Capital Inflows into Various Country Groups: 1970-2012

a) Low-Income Countries
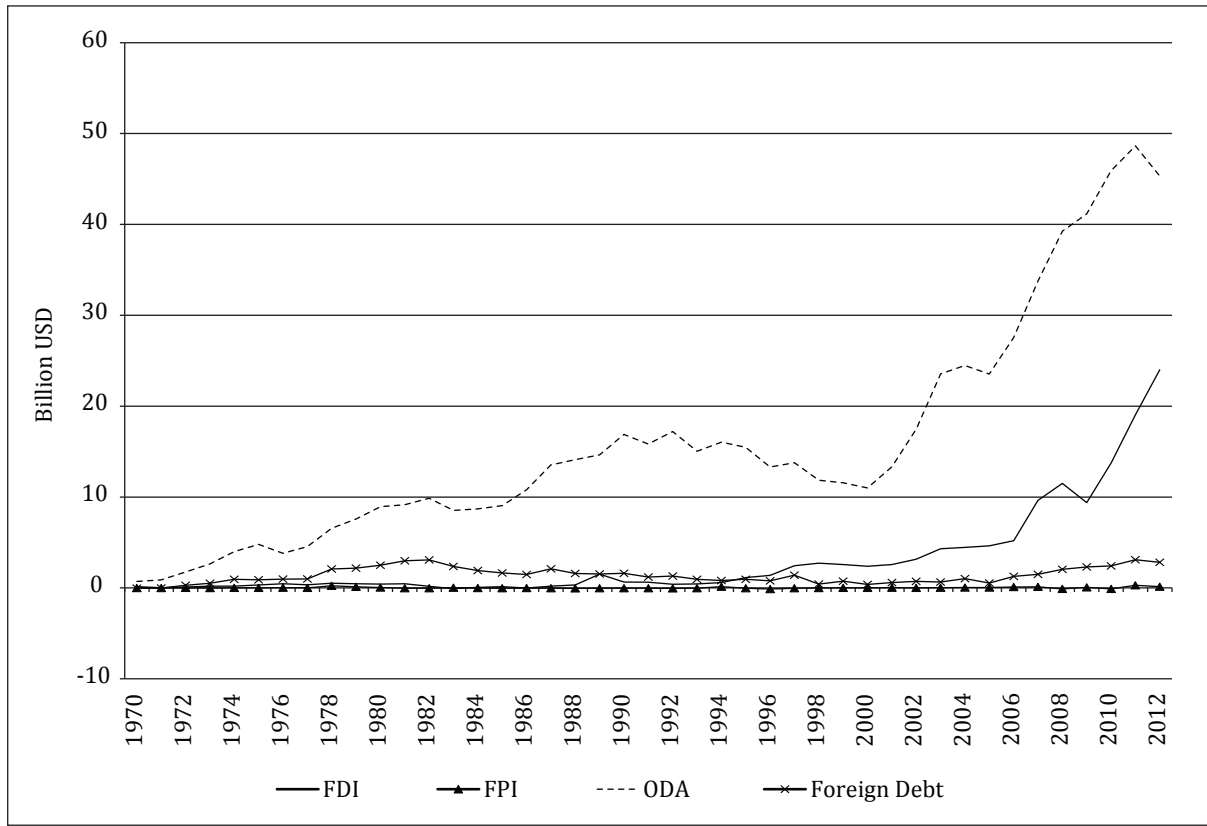
b) Lower Middle-Income Countries
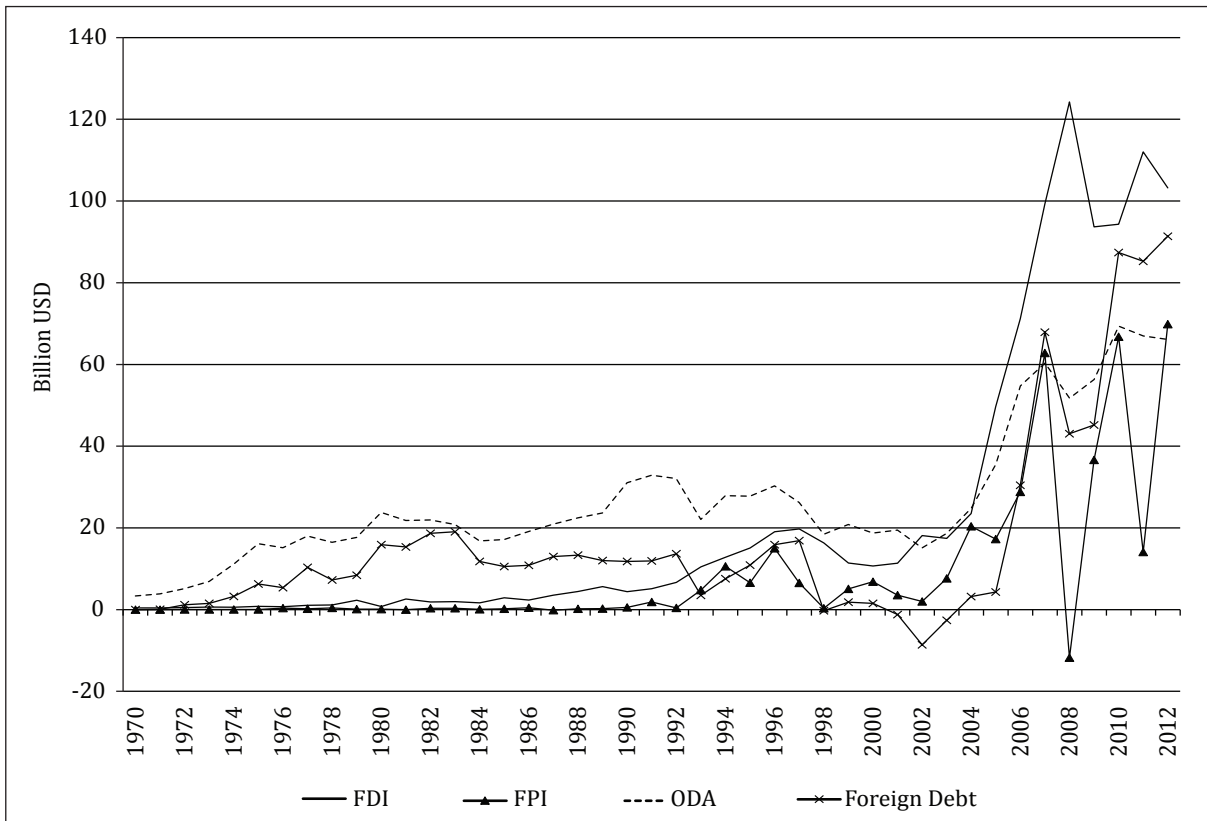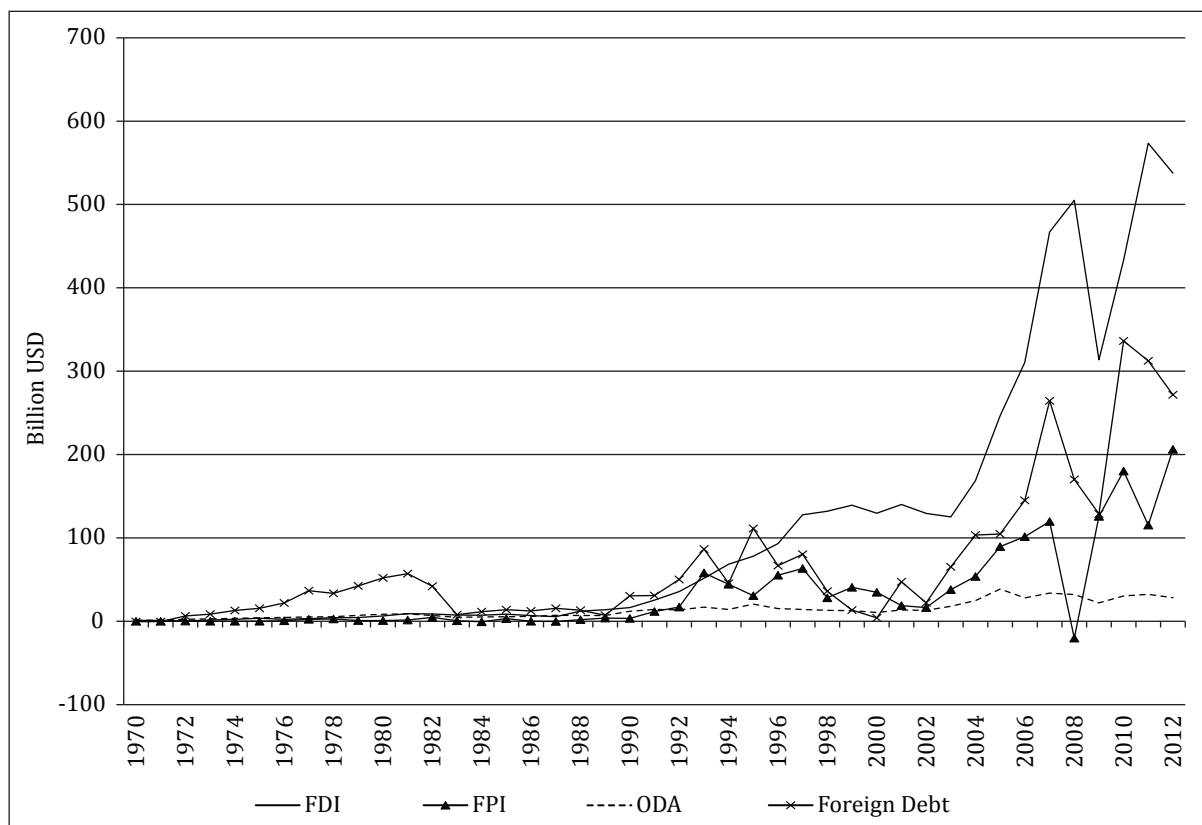
c) Upper Middle-Income Countries

Source: Based on data from World Bank (2014b).

3. Impacts of FPI on GDP Growth

In this section, the impacts of equity FPI and bond FPI on GDP growth are evaluated. As mentioned, FPI inflows can promote GDP growth by increasing share prices that, in turn, promote greater investment in the host country. As well, inflows can have signalling effects that help direct resources to more productive uses that also boost employment, output and subsequently growth. Inflows also serve to provide more capital for the capital-scarce developing Asian economies, and often improve managerial and technological know-how through various channels.

On the other hand, Brecher and Diaz-Alejandro (1977) has argued that foreign capital inflows would result in immiserising economic growth (i.e. reduced economic welfare in the host economy) if trade market distortions present foreign capital with opportunities to earn excessive profits (and this is allowed to be taken out of the host country untaxed). While trade market distortions in the forms of tariffs and quotas are minimal by now in most developing Asian countries, many other distortions still exist, such as financial markets distortions, market manipulations, corruption, etc. Further, Brecher and Diaz-Alejendro's argument can be easily generalised to include all forms of market imperfections including market manipulations, corruption, etc. that can result in the owners of foreign capital earning excessive profits, that can lead to immiserising growth or reduced host country welfare.

Given these conflicting possibilities, an empirical evaluation of the impacts of FPI on GDP growth is essential, and could help clarify the conditions that lead to these contrasting results and inform us about policies that ensure that FPI enhances welfare in developing Asian countries. This is attempted next. Equity and bond forms or FPI are treated separately to allow for the possibility of them having different economic impacts.

3.1 The GDP Growth Function

To test the impacts of equity and bond FPI on GDP growth, the conventional neo-classical production function is used, but with foreign capital added as an additional variable. Thus, the production function can be written as:

$$Y = F(L, K_d, K_f, t) \tag{1}$$

where,
Y= GDP in real terms
L = labour input
K_d = stock of domestic capital in real terms
K_f = stock of foreign capital in real terms
t = time trend that captures the improvement of labour productivity due to technological progress

Assuming the production function to be a double-log function (but not necessarily linear homogeneous), the function is:

$$LogY = LogA + bLogK_d + cLogK_f + dLogL \tag{2}$$

Taking the logs and differentiating with respect to time, the function becomes:

$$G = a + b\hat{K}_d + c\hat{K}_f + d\hat{L} + u \tag{3}$$

where the hat on a variable denotes its growth rate – thus, for example, $\hat{L} = \dfrac{1}{L}\dfrac{dL}{dt}$. G denotes the growth rate of real GDP (Y), a (the growth rate of A) denotes the growth rate of GDP due to factors other than input growth (such as technological progress), and u denotes a random-error term consistent with the assumption of a log-linear production function. In view of serious difficulties associated with measuring capital stocks (even more so in the context of developing countries), the precedent set in numerous previous studies is followed: the rate of growth of domestic capital is approximated by the ratio of domestic fixed investment to GDP (i.e. INV/Y). Finally, the stock of foreign capital is divided into stocks of FPI_{equity} and FPI_{bond} and stock of total foreign borrowing or foreign debt. Then, as with domestic capital, the rate of growth of FPI is proxied by the ratio of net FPI inflows to GDP (FPI_{equity}/Y and FPI_{debt}/Y), while the rate of growth of foreign debt is proxied by net annual inflows of foreign debt as a percentage of GDP (FDebt/Y). The purpose of including foreign debt as a separate variable is to make a comparative assessment of the contributions of FPI and foreign debt to GDP growth. Thus, the equation to be estimated is:

$$G = a + b\frac{INV}{Y} + c_e\frac{FPI_{equity}}{Y} + c_b\frac{FPI_{bond}}{Y} + d\frac{FDebt}{Y} + e\hat{L} + u \tag{4}$$

For the purposes of this study, the crucial variables are FPI_{equity}/Y and FPI_{bond}/Y. Note that coefficients b and c_e of domestic investment and FPI_{equity} should be equal if FPI is as efficient in promoting GDP growth as domestic investment. If FPI_{equity} is able to contribute to growth in ways other than through capital (for example, by creating market signals that direct resources to more productive uses), then it could be more efficient in promoting growth, which would be indicated by coefficient c_e being larger than coefficient b of domestic investment. On the other hand, if the owners of foreign capital take excessive profits out of the host country without contributing much to the domestic economy in terms of improving productivity, the coefficient c_e should be smaller than coefficient b. Finally, if the coefficient c_e of FPI_{equity}/Y were to turn out negative, it would imply that equity FPI has a net negative impact on GDP growth, i.e. FPI inflows result in immiserising growth. A similar comparison

applies to the coefficient c_b of FPI_{bond}. If the value of coefficient c_b of FPI_{bond} or coefficient d of foreign debt is larger than coefficients b and c_e, bond FPI is more efficient in contributing to GDP growth, otherwise it is less efficient. A negative sign for c_b or d indicates that foreign borrowing is leading to immiserising growth. The coefficients of rate of growth of exports and rate of growth of labour are expected to be positive.

As a variation and to ensure that a missing variable does not affect the evaluation of the impacts of FPI, human capital, H (proxied by the average number of years of school per adult), is included as an additional variable in equation (2), which leads to its growth rate being included in the equation to be estimated:

$$G = a + b\frac{INV}{Y} + c_e\frac{FPI_{equity}}{Y} + c_b\frac{FPI_{bond}}{Y} + d\frac{FDebt}{Y} + e\hat{L} + f\hat{H} + u \qquad (5)$$

Further, following several empirical studies that have supported the export-led growth hypothesis (Ram, 1985; Salvatore and Hatcher, 1991; Greenaway and Sapsford, 1994; Edwards, 1996), exports are introduced as a variable in the production function. Exports are included because they can result in a higher rate of technological innovation and dynamic learning from abroad through various channels. Exports also impose market discipline, thus reducing the rent-seeking ability of special-interest groups, and thereby minimising distortions in the economy. The relation to be estimated becomes:

$$G = a + b\frac{INV}{Y} + c_e\frac{FPI_{equity}}{Y} + c_b\frac{FPI_{bond}}{Y} + d\frac{FDebt}{Y} + e\hat{L} + f\hat{H} + g\hat{X} + u \qquad (6)$$

The empirical analysis was carried out using annual time-series cross-section data from the 10 selected developing Asian countries (listed in Table 1) over the period 1995-2011. The GMM estimation procedure, which is briefly explained below, was used.

3.2 Econometric Estimation Procedure: GMM

To estimate the relations throughout this paper, the dynamic panel data analysis method, following the GMM estimation procedure, was used. This method takes into consideration the dynamic structure between the dependent and independent variables (Baltagi, 1995). The use of panel data in estimating ensures control for missing or unobserved variables, while relationships allow identification of country-specific effects (Arellano-Bond, 1991). The dynamic panel data model allows dynamic effects to be introduced into the model and feedback from current or past shocks by using the first differences of the variables as instruments. The dynamic panel data model estimates an equation such as:

$$y_{it} = \delta y_{it-1} + \beta x_{it} + u_{it}$$

where y_i is the dependent variable for i=1,2,...,n different countries in the panel, and t=1,2,...,t refers to the (yearly) time period. δ is a scalar, x is k x1 vector of explanatory variables, μ_i denotes the country effect for country i and u_{it} is the error term of regression.

The inclusion of the lagged dependent variable along with the fixed effects can cause estimations to be biased. The GMM estimation procedure uses the first differences of explanatory variables as instruments to minimise bias effects. The Sargan test is used to check the suitability of the instruments and that they are not correlated with the error term, while the Arellano-Bond (AB) test is used to check that a serial correlation problem does not affect estimates. The GMM procedure has the advantage that potential endogeneity of variables usually does not significantly affect the estimated parameters. The source of data is discussed and relevant definitions are provided in the Appendix.

3.3 Empirical Results

The results of the estimations of the GDP growth function represented by equations (4), (5) and (6) are shown in Table 2 as models 1, 2 and 3, respectively. Key results in Table 2 include the coefficients for domestic investment being consistently positive in all models with values around 0.10. The estimations show that the coefficient of FPI_{equity}/Y is positive and significant at 1 per cent level and rather large at around 0.6, implying that an increase in FPI_{equity} by 1 per cent of GDP can increase GDP growth by 0.6 per cent. For comparison, a similar increase in domestic investment increases GDP growth by only one-sixth or about 0.1 per cent, suggesting that equity FPI could have several positive externalities for the economy. On the other hand, the coefficient for FPI_{bond} was consistently found to be insignificantly different from zero, implying that bond FPI does not have a significant impact on GDP growth. This is somewhat surprising, in view of the strong positive impact of FPI_{equity}. It is possible equity FPI has important positive externalities for the economy that are missing in the case of bond FPI. These externalities could work through the share market – such as helping direct resources to the more productive firms by way of signalling effects related to investing in shares of these firms or by improving these firms' share market capitalisation through increased equity purchasing and thus raising the valuation of domestic firms, which would boost business sentiment in the domestic economy and encourage greater domestic investment and production.

To explore these ideas further, share market capitalisation as percentage of GDP (MktCap/Y) is included as an additional variable in the estimations. The results for this variable are reported under model 4 in Table 2, and show that increased market capitalisation does have a positive and statistically significant effect on GDP growth. The determinants of share market capitalisation are estimated separately in the next sub-section to explore the impacts of equity FPI and bond FPI on share market capitalisation.

Table 2: Impacts of FPI on GDP Growth in Asia

Criteria	Model 1	Model 2	Model 3	Model 4
Constant (α)	2.38***	0.50	0.003	-0.14
Domestic Investment/Y (INV/Y)	0.09*	0.13***	0.13***	0.08**
FPI_{equity}/Y	0.64***	0.57***	0.58***	0.44***
FPI_{bond}/Y	-0.001	-0.12	-0.29	-0.20
Foreign Debt/Y	0.28***	0.27***	0.28***	0.25***
Growth of Labour Force ($\hat{L}$)	-0.0007	-0.05	-0.001	0.04
Growth of Schooling ($\hat{H}$)		0.53***	0.53***	0.55***
Growth of Exports ($\hat{X}$)			0.05***	0.05***
Market Capitalisation/Y (MktCap/Y)				0.024***
Wald test of joint significance	77.05***	95.77***	104.76***	119.04***
Sargan test (p-value)[1]	0.08*	0.09	0.16	0.45
AB test (p-value)[2]	0.66	0.84	0.94	0.09
Observations	145	145	145	145
Countries	10	10	10	10

Source: Author's calculations.
Note: [1]The Sargan test's null hypothesis is that the instruments are not correlated with the residuals.
[2]TheAB test's null hypothesis is that there is no serial correlation.
***/**/* imply significance at 1 per cent,5 per cent and 10 per cent confidence levels, respectively.

Estimations in Table 2 also show that increased foreign debt in emerging Asian countries contributes significantly to GDP growth, possibly by increasing private sector investment or public spending on education, infrastructure and other determinants of economic growth. However, as evident under model 3 in Table 2, an increase in foreign debt inflows by 1 per cent of GDP can increase GDP growth by about 0.28 per cent, which is approximately half the effect of the same proportion of equity FPI, GDP growth of about 0.58 per cent, probably given the many positive externalities of equity FPI. Thus, if a developing country needs to access foreign capital, whether to address a balance of payments deficit or augment economic growth, FPI is preferable to foreign debt.

The coefficient for growth of labour force is found to be insignificantly different from zero in all four models. This is not surprising given the context of labour abundance in the selected developing Asian countries, where growth of the labour force is not likely to be a significant determinant of GDP growth (the equation for model 1 was estimated again with this variable dropped and the results for other variables were not significantly affected). In models 2, 3 and 4, the growth rates of average years of schooling (the proxy for the growth rate of human capital) are included and found to be strongly positive and significant at 1 per cent level. The coefficient of approximately 0.5 suggests that each 1 per cent increase in average years of schooling results in GDP growth of about 0.5 per cent, which demonstrates the importance of developing human capital to promote economic growth. Notably, in model 3, exports have the expected positive impact on GDP growth, but do not materially affect the results for other variables, including both forms of FPI. The coefficient for exports is 0.06, which means a 1 per cent increase in export growth leads to a 0.06 per cent increase in GDP growth.

Overall, the results of the above estimations show that equity FPI has a strong positive impact on GDP growth. This impact is six to seven times stronger than that of domestic investment. On the other hand, bond FPI does not seem to have a significant impact on GDP.

4. Impact of FPI on Domestic Capital Formation and Market Capitalisation

The estimations in Section 3 indicate that equity FPI has a positive and significant impact on GDP growth while the impact of bond FPI is negligible. This section explores how the two forms of FPI work to impact domestic capital formation and market capitalisation. As mentioned, impacts might happen through FPI, especially equity FPI, increasing market capitalisation and improving business sentiment and thus investment in the host economy. FPI can also increase investment by providing more funds (bond FPI) or raising the market value of a firm (equity FPI) that enables it to invest more by raising more debt or by selling some equity at a higher price. Thus, this section empirically evaluates the impact of equity FPI and bond FPI on domestic capital formation and market capitalisation. An investment function is developed in Section 4.1, and then estimated in Section 4.2 to analyse the impacts of equity FPI and bond FPI on domestic investment. In Section 4.3, the impacts of equity FPI and bond FPI on equity market capitalisation are assessed.

4.1 Specification of the Investment Function

A vast literature exists on the determinants of the investment rate (see literature reviews in Fry, 1995; Schmidt-Hebbel *et al.* 1996; also see Fry, 1998; Greene and Villanueva, 1991; Arrieta, 1988; Blejer and Khan, 1984; Wai and Wong, 1982; Abel, 1980; Nickell, 1978). The explanatory variables commonly used in a flexible accelerator model for developing countries (Fry, 1995; Schmidt-Hebbel *et al.* 1996) where firms' investment is negatively affected by credit and foreign exchange constraints include: GDP growth rate (G) over the previous year, domestic credit availability as share of GDP (CRDT/Y) and real exchange rate (RER). Further, since the objective is to evaluate the impacts of foreign capital inflows, equity FPI and bond FPI as shares of GDP (FPI_{equity}/Y and FPI_{bond}/Y) as well as net annual inflows of foreign debts as a percentage of GDP (FDebt/Y) are included as explanatory variables. In addition, the neo-classical theory of investment (see Jorgenson, 1967) emphasises the role of cost of capital (proxied here by the real interest rates on bank loans). Rama (1993) recommends using the explanatory variables suggested by both the neo-classical and flexible accelerator approaches.

Synthesising these explanatory variables yields the following investment function:

$$\frac{INV}{Y_t} = b_0 + b_1 G + b_2 \frac{CRDT}{Y_t} + b_3 \frac{FPI_{equity}}{Y} + b_4 \frac{FPI_{bond}}{Y} + b_5 RER + b_6 \frac{FDebt}{Y} + b_7 RL \qquad (7)$$

The real GDP growth rate (G) over the previous year is an important determinant of the investment rate (INV/Y) since higher growth implies higher capital requirements and hence a higher investment rate. The GDP growth rate is also a good proxy for the quality of institutions and policies being pursued in the host country at a given time. These, in turn, affect the profit opportunities available in the country's economy and thereby the investment rate.

The availability of domestic bank credit as a percentage of GDP (CRDT/Y) is another important determinant of the investment rate in developing countries (see Blinder and Stiglitz, 1983; Fry, 1995). Stiglitz and Weiss (1981) demonstrated that asymmetric information between borrower and bank regarding true default probability will lead to credit rationing even in perfectly competitive liberalised markets. Further, the market for bank loans is a customer market, in which borrowers and lenders are imperfect substitutes. A credit squeeze rations out some borrowers, who may be unable to find loans elsewhere, so they are unable to finance their investment projects (Blinder and Stiglitz, 1983). Therefore, the investment rate, INV/Y, is influenced by the ratio of domestic bank credit to GDP, CRDT/Y.

Now consider the impact of an increase in the real exchange rate (RER), which is defined as follows:

$$RER = E \frac{P^f}{P} \qquad (8)$$

where E is the exchange rate (domestic currency units relative to the USD), P is the domestic price level (the GDP deflator) and P^f is the foreign price level (proxied here by the US GDP deflator). An increase in RER would increase the price of imported capital and intermediate goods and result in a contraction of investment (Serven and Solimano, 1992; Fry, 1995). An increase in RER would also reduce imports and encourage expansion of the production of import substitutes, which could encourage more demand for capital. Notably, Van Wijnbergen (1982) developed a model with two sectors (domestic and tradable) that demonstrates the net effect of a real depreciation is ambiguous – investment in tradable sector increases while that in domestic sector declines.

True domestic costs of capital are difficult to measure in the developing Asian countries examined in this study because of the lack of data on tax rates, selective credit policies and disequilibrium institutional interest rates. Therefore, the real interest rate on loans (RL) is used as a proxy for the cost of capital. RL is obtained by subtracting the average of the current year's and next year's inflation rates from banks' nominal prime lending rate. The expected sign is negative since a higher interest rate means a higher cost of capital.

For the private sector, foreign borrowing can be a source of funding for investment, though for the public sector it is also a source of (partial) funding for urgent government budgetary requirements. Thus, net annual inflows of foreign debt as a percentage of GDP (FDebt/Y) are also included as an explanatory variable. This variable allows the comparison of the relative effectiveness of foreign borrowing and FPI inflows in promoting investment.

The primary objective here is to study the impacts of FPI inflows on investment or domestic capital formation. FPI can promote domestic investment through (i) the purchase of bonds issued by domestic firms in the domestic market (which should enable domestic firms to undertake greater investment); (ii) the purchase of shares in the primary share market by domestic firms; and (iii) increased demand for domestic shares that raises the market value of the firms and thereby enables them to raise more funds either by issuing more debt or selling part of their equity at relatively

higher prices. The first category of purchases is considered to be bond FPI (FPI_{bond}), while the last two categories are considered equity FPI (FPI_{equity}). The use of equity FPI depends on the various policies toward FPI, such as the maximum foreign equity share allowed, regulations relating to entry and exit of FPI, tax rates on long and short-term capital gains, various other policies and regulations relating to industry and stock markets, and the size of the domestic market.

For the purposes of this study, the crucial variable is FPI. The coefficients b_3 and b_4 of equity FPI and bond FPI, FPI_{equity}/Y and FPI_{bond}/Y in equation (7), determine the impacts of FPI on investment.

4.2 Empirical Results

Equation (7) is estimated using pooled time-series cross-section data for the 10 selected developing Asian countries by way of the GMM estimation procedure (see Section 3.2). The source of data is discussed in the Appendix. Whether or not FPI inflows are really contributing to domestic capital formation in the selected Asian countries is of primary interest here.

The results of estimating equation (7) for the period 1995-2011 are shown under model 1 of Table 3. The investment function has the expected positive sign for GDP growth rate (G) and bank credit as a percentage of GDP (CRDT/Y), while the impact of a higher real interest rate on loans (RL) is negative, as expected, since it represents the cost of capital. The variable RER was found to be insignificant in all the models and dropped from the regression. The sign of foreign debt as a percentage of GDP (FDebt/Y) is also positive and significant. However, the coefficients for both equity FPI and bond FPI as percentages of GDP (FPI_{equity}/Y and FPI_{bond}/Y) are found to be insignificantly different from zero.

Table 3: Impacts of FPI Inflows on Gross Capital Formation

Explanatory Variables	Model 1	Model 2	Model 3
Constant (b_0)	2.97	13.59***	23.13***
Growth of GDP (G)	2.81***	1.18***	
Bank Credit as share of GDP (CRDT/Y)	0.11**	0.11***	0.08**
Real Interest Rate on Loans (RL)	-0.03	-0.35***	-0.56***
FPI_{Equity}/Y	-0.64	0.62*	1.21***
FPI_{Bond}/Y	-0.63	-0.52	-0.55
Foreign Debt as share of GDP (FDebt/Y)	1.12***		0.14
Wald test of joint significance	1074***	285.44***	205.68***
Sargan test (p-value)[1]	0.47	0.07*	0.11
AB test (p-value)[2]	0.41	0.17	0.27
Observations	135	100	100
Countries	10	10	10
Data Period	1995	2000-11	2000-11

Source: Author's calculations.
Note: [1]The Sargan test's null hypothesis is that the instruments are not correlated with the residuals.
[2]The (AB test's null hypothesis is that there is no serial correlation
***/**/* imply significance at 1 per cent, 5 per cent and 10 per cent confidence levels, respectively.

These results are somewhat surprising in view of the findings regarding the impacts of FPI on GDP growth. Thus, the equation was re-estimated for the period 2000-2011 (it should be noted that FPI flows were relatively small in most developing Asian countries during the 1990s, as shown in Figure 1) with the idea that results on the impacts of FPI may be more reliable when a shorter period during which FPI flows were larger is considered. The re-estimation results are reported under model 2 in Table 3. The coefficients for GDP growth rate, bank credit and real interest rate on loans remain largely the same, but the coefficient for FPI_{equity}/Y is now positive though significant at 10 per cent

level. The coefficient for FPI_{debt}/Y is still insignificant. These results imply that equity FPI helps increase domestic capital formation while bond FPI does not appear to do so.

Further, it was noted that higher GDP growth often helps attract more FPI, which suggests that the two variables are correlated. The variable for GDP growth rate could be affecting the coefficients for FPI variables, especially that for equity FPI. An estimation of equation (7) for the period 2000-2011 was conducted without including variable for the GDP growth rate. The results of the estimation are shown under model 3 in Table 3. The coefficients for most variables remain largely the same, but the coefficient for FPI_{equity}/Y has become large, positive and significant at 1 per cent level. The coefficients for FPI_{bond}/Y and FDebt/Y are found to be insignificantly different from zero. The results of model 3 are arguably the most reliable.

Overall, the results show that equity FPI probably increases domestic capital formation. Further, the coefficient for FPI_{equity}/Y is very large in both model 2 and model 3 and cannot be explained by part of equity FPI being used to invest in the shares of domestic firms since the proportion of equity FPI that goes to share markets rarely exceeds 10-15 per cent of total investment. Bond FPI does not appear to contribute to domestic capital formation as its coefficient was insignificant in all three models. Foreign debt seems to be supportive of domestic capital formation in model 1 but is found to be insignificant in the more reliable model 3.

4.3 Impact of FPI on Market Capitalisation

How does FPI increase investment? One way is that the increased demand for domestic shares raises their prices and subsequently the market capitalisation of individual firms and eventually the valuation of the whole share market. This enables the domestic firms to raise more funds for investment through raising more debt or selling more equity shares at the higher valuation. In addition, FPI funneled to relatively more productive firms creates market signals that help to direct resources to more productive uses. Some of these possibilities are empirically examined below.

First evaluated are the impacts of FPI inflows on equity market capitalisation as a percentage of GDP in the 10 selected developing Asian countries. Market capitalisation as a percentage of GDP was estimated as a function of GDP growth rate, equity FPI and bond FPI as percentages of GDP (FPI_{equity}/Y and FPI_{bond}/Y), domestic nominal interest rate on one-year bank deposits (INT_{dep}) and the real exchange rate (RER) defined earlier in equation (8). The function to be estimated is:

$$MktCap/Y = a + b\,G + c_e\,FPI_{equity}/Y + c_b\,FPI_{bond}/Y + d\,INT_{dep} + e\,RER \tag{9}$$

where a is a constant. The expected sign of coefficient b is positive since a higher GDP growth rate (G) would normally be associated with good business sentiment, the expanding productive capacity of firms and rising valuation. The expected sign of coefficient c_e is also positive since higher equity FPI (FPI_{equity}) should increase the prices of domestic shares. Bond FPI (FPI_{bond}) is unlikely to have much impact on share prices and thus coefficient c_b could be insignificant or mildly positive, but the variable is included to test it empirically. The expected sign of coefficient d for domestic nominal interest rate on one-year bank deposits (INT_{dep}) is negative since higher returns on bank deposits would reduce the funds going into equity markets and lower share prices, and hence market capitalisation. The expected sign of coefficient e for RER is ambiguous since real depreciation of domestic currency – rising RER – could increase exports and raise the value of domestic exporting firms, but could also lower the value of domestic importing firms. Moreover, during times of uncertainty regarding further depreciation due to political or economic problems in a country, real depreciation of domestic currency can cause capital flight and reduce market capitalisation.

Equation (9) is estimated using pooled time-series cross-section data for the 10 selected developing Asian countries by way of the GMM estimation procedure (see Section 3.2). The source of data is

Table 4: Impacts of FPI on Market Capitalisation

Explanatory Variables	Model 1	Model 2	Model 3
Constant (α)	25.98*	-3.41	-2.52
Growth of GDP (G)	3.82***	4.37***	4.23***
FPI_{equity}/Y	10.56***	9.49**	9.39**
FPI_{bond}/Y	-1.34	-1.80	-2.61
Nominal Deposit Interest Rate (INT_{dep})	-0.47	-0.74	-0.79
Real Exchange Rate (RER)	0.003	0.003	0.003
CRDT/Y		0.33	0.33
FDebt/Y			0.45
Wald test for joint significance	66.80***	68.40***	68.03***
Sargan test (p-value)[1]	0.79	0.79	0.78
AB serial correlation test (p-value)[2]	0.53	0.67	0.65
Observations	130	130	130
Countries	10	10	10

Source: Author's calculations.

Note: [1]The Sargan test's null hypothesis is that the instruments are not correlated with the residuals.

[2]The AB test's null hypothesis is that there is no serial correlation.

***/**/* imply significance at 1 per cent, 5 per cent and 10 per cent confidence levels, respectively.

discussed in the Appendix. The results of the estimation are shown under model 1 in Table 4. The coefficient for GDP growth is positive, as expected. The coefficient for FPI_{equity} is found to be positive and statistically significant at 1 per cent level, which indicates that the effect of equity FPI inflows on market capitalisation is positive. The coefficient for FPI_{equity}/Y is 10.56, which implies that an increase in FPI_{equity} by 1 per cent of GDP leads to a large 10.5 per cent increase in market capitalisation. The coefficient for FPI_{bond} is insignificant, as expected, since the purchase of government or corporate bonds does not materially affect the share markets or their valuations. The coefficient for RER is found to be positive but insignificant, which implies an insignificant effect of real depreciation of domestic currency on market capitalisation.

In order to test the robustness of these results, equation (9) was re-estimated by adding plausible variables. In model 2, the ratio of bank credit to GDP (CRDT/Y) was included as an additional variable. Higher availability of credit for firms could help them expand productive capacity and become more valuable over time. The results of the re-estimation indicate that CRDT/Y is statistically insignificant and the results for other variables are not materially affected.

In model 3, net annual inflows of foreign debt as a percentage of GDP (FDebt/Y) was included as an additional variable in addition to CRDT/Y, included in model 2, to see whether the increased availability of foreign borrowing affects market capitalisation. The results of the re-estimation again show that the additional variable does not significantly affect either market capitalisation or the values of the coefficients of other variables.

Model 1 therefore appears to be appropriate and its results prove to be quite robust. The impact of equity FPI on market capitalisation is strongly positive for emerging Asian countries. On the other hand, bond FPI is insignificant for market capitalisation. This is reasonable since bond FPI denotes the purchase of government and corporate bonds, not corporate shares, and so does not affect the value of shares directly.

These results suggest that equity FPI supports faster GDP growth by increasing market capitalisation, i.e. by buoying the value of domestic firms, which strengthens business sentiment and facilitates increased investment and production. While bond FPI may help selected firms through

foreign borrowing, it does not seem to have significant economy-wide effects on firm values or GDP growth. Thus, emerging Asian countries should adopt policies that promote equity FPI.

5. Conclusions

The achievement of the post-MDG development goals in developing Asian countries will likely hinge on greater access to financial resources. In the absence of substantial increases in ODA, private foreign capital inflows such as FDI and FPI can be used by these countries to facilitate success. While the economic impacts of FDI have been widely researched, very few studies have carefully assessed the economic impacts of FPI. This paper presents the results of a study on the economic impacts of equity FPI and bond FPI using panel data for the period 1995-2011 from 10 developing Asian countries for which adequate data were available.

First, the impacts of FPI inflows on the GDP growth rate were considered. Equity FPI inflows were found to have a strong positive impact on the host country's GDP growth rate that is much stronger than the positive impacts of domestic investment or foreign borrowing. Somewhat surprisingly, bond FPI inflows were found to have insignificant effects on GDP growth.

Some of the other important determinants of GDP growth were found to be domestic investment, growth rate of exports and equity market capitalisation. While the growth rate of labour force was found to have no significant effect on GDP growth, which is not surprising in view of the abundant – perhaps surplus – labour in many of the developing Asian countries, the growth rate of average years of schooling per adult (a proxy for human capital) was found to have among the most important positive impacts on GDP growth. This suggests that improving education for common citizens should be an urgent focus for governments.

The impacts of FPI inflows on domestic investment were also estimated. An increase in equity FPI inflows was found to be associated with increased domestic capital formation. Foreign debt too seemed to have some positive impact on domestic investment, but bond FPI inflows were found to again have insignificant effects.

The impacts of FPI inflows on equity market capitalisation were also estimated. An increase in equity FPI inflows was found to be associated with increased equity market capitalisation, while both bond FPI inflows and foreign debt were found to have insignificant effects on equity market capitalisation.

Evidently, equity FPI inflows seem to have particularly desirable effects on the host country. Equity FPI seems to have several positive externalities for the country's economy. Unlike foreign debt and even FDI, inflows of equity FPI are immediately noticeable because they affect share prices very quickly. The increase in share prices appears to boost business sentiment and encourage more investment and production. On the other hand, if FPI leaves the country in substantial amounts, it can lead to depreciation of domestic currency, bring down the share markets and dampen business sentiment. But this reflects the signalling effects that FPI can have, highlighting problems with the domestic economy or government policies, and thereby potentially helping prevent or address them. Moreover, equity FPI can send useful market signals that help direct resources to more productive firms. The increased valuation of these firms' share prices due to equity FPI also increases the value of domestic firms' equity more generally, which is a positive externality. This enables domestic firms to invest more through issuing equity shares at higher valuation and by being able to raise more debt for lower costs as the value of their equity increases. These externalities are missing from foreign debt and bond FPI inflows, which do not have nearly as much positive impact on the economy. Yet, FPI is more volatile than other forms of foreign capital, but volatility can be handled with increased foreign exchange reserve holdings by the central bank, facilitated, in turn, by the same FPI inflows. Arguably, the positive externalities of FPI outweigh the costs of the somewhat higher volatility associated with FPI.

These findings suggest that, to the extent that foreign capital is needed in the host country to supplement financial resources for attaining post-MDG development goals, equity FPI inflows are desirable because of their strong positive impacts on GDP growth and domestic capital formation, and preferable to bond FPI and foreign borrowing. The results of this study provide support for more liberal policies that promote equity FPI in particular, since it has been found to be beneficial for developing Asian countries in terms of enhancing welfare.

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Appendix: Data Source and Definitions

The study covers a panel of 10 developing Asian countries over the period 1995-2011. The 10 countries are Bangladesh, India, Pakistan and Sri Lanka from South Asia; and China, Indonesia, Malaysia, the Philippines, Thailand and Vietnam from East and Southeast Asia. The selection of these countries was constrained by data limitations and attempts were made to obtain a panel dataset that is as balanced as possible. All data were collected from World Bank (2014b). The definitions of the variables used are provided below (taken from World Bank, 2014b):

Growth of GDP (G) is the annual growth rate of GDP as a percentage based on constant 2005 US dollars.

INV/Y is the investment rate, otherwise the gross capital formation as a percentage of GDP. Gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements, such as fences, ditches, drains, and so on, plant, machinery and equipment purchases and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings as well as commercial and industrial buildings.

FPI_{equity}/Y is the net inflows of FPI in the form of equity securities as a percentage of GDP. Equity FPI refers to net inflows of equity securities other than those recorded as direct investment and includes shares, stocks, depository receipts (American or global) and direct purchases of shares in local stock markets by foreign investors.

FPI_{bond}/Y is the net inflows of bond FPI as a percentage of GDP. Bond FPI refers to securities issued with a fixed rate of interest for a period of more than one year and includes net flows through cross-border public and publicly guaranteed and private non-guaranteed bond issues.

Note: With regard to both FPI_{equity} and $FPI_{bond,}$ "net inflows" refer to net of any sale of equity or bond and withdrawal of sale proceeds by a foreign portfolio investor, *not* net of outward portfolio investments made by domestic investors abroad.

FDebt/Y is the net flows of total foreign debt as a percentage of GDP. Net flows of external debt are disbursements of long-and short-term external debt and International Monetary Fund purchases minus principal repayments on long-term external debt.

Bank Credit as a share of GDP (CRDT/Y) is the domestic credit available to the private sector by banks as a percentage of GDP. Credit refers to the financial resources provided to the private sector by other depository corporations, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establishes a claim for repayment.

Market Capitalisation/Y (MktCap/Y) refers to market capitalisation, which is the share price times the number of shares outstanding, as a percentage of GDP.

Growth of Exports ($\hat{X}$) is the annual growth rate of exports of goods and services based on constant 2005 US dollars. Exports of goods and services represent the value of all goods and market services provided to the rest of the world.

Growth of Labour Force ($\hat{L}$) is the annual growth rate of total labour force as a percentage. Total labour force comprises people aged 15 to 64 years who meet the International Labour Organization definition of the economically active population.

Growth of Schooling ($\hat{H}$) is calculated from the Barro-Lee dataset of average years of total schooling completed by people over the age of 15. The data in the Barro-Lee dataset provide a data point for

average years of schooling for every five years (i.e. 1990, 1995 and so on), hence annual growth rates between two data points were calculated and interpolated for the missing years. From the interpolated series, the growth rate of average years of schooling was calculated.

Real Interest Rate on Loans (RL) is the lending interest rate adjusted for inflation as measured by the GDP deflator.

Nominal Deposit Interest Rate (INT$_{dep}$) is the rate paid by commercial or similar banks for demand, time or savings deposits that are not adjusted for inflation.

Real Exchange Rate (RER) is defined as the official exchange rate adjusted for inflation as measured by the GDP deflator. The official exchange rate refers to the exchange rate determined by national authorities. It is calculated as an annual average based on monthly averages in domestic currency units relative to the US dollar.

Appendix Table 1 reports the summary statistics for these variables.

Appendix Table 1: Summary Statistics for Various Variables of Interest

Variable	Mean	Standard Deviation	Coefficient of Variation (S.D./Mean)	Minimum	Maximum
Growth of GDP (G)	5.82	3.36	0.58	-13.12	14.22
INV/Y	28.33	8.74	0.31	11.91	53.83
FPI/Y	0.70	1.46	2.08	-4.75	8.74
FPI$_{equity}$/Y	0.37	1.15	3.13	-4.64	8.79
FPI$_{bond}$/Y	0.41	0.90	2.17	-1.38	5.73
FDebt/Y	1.61	3.14	1.96	-11.10	12.64
Bank Credit as share of GDP (CRDT/Y)	73.34	41.38	0.56	15.71	177.58
Market Capitalisation/Y (MktCap/Y)	48.10	53.06	1.10	0.39	328.88
Growth of Exports ($\hat{X}$)	9.83	10.09	1.03	-31.80	33.47
Growth of Labour Force ($\hat{L}$)	1.97	1.40	0.71	-2.62	8.32
Growth of Schooling ($\hat{H}$)	2.02	1.42	0.70	-0.49	5.48
Real Interest Rate on Loans (RL)	4.78	4.77	1.00	-24.60	17.72
Nominal Deposit Interest Rate (INT$_{dep}$)	7.72	4.84	0.63	1.00	39.07
Real Exchange Rate (RER)	2330.55	5279.24	2.27	1.99	23198.86

2015

Southern Voice on Post-MDG International Development Goals (*Southern Voice*) is a network of 48 think tanks from Africa, Latin America and South Asia, that has identified a unique space and scope for itself to contribute to the post-MDG dialogue. By providing quality data, evidence and analyses that derive from research in the countries of the South, these institutions seek to inform the discussion on the post-2015 framework, goals and targets, and to help give shape to the debate itself. In the process, *Southern Voice* aims to enhance the quality of international development policy analysis, strengthen the global outreach capacity of Southern think tanks, and facilitate professional linkages between these institutions and their respective governments. *Southern Voice* operates as an open platform where concerned institutions and individuals from both South and North interact with the network members. *Southern Voice Occasional Papers* are based on research undertaken by the members of the network as well as inputs received at various platforms of the initiative. *Centre for Policy Dialogue (CPD),* Dhaka works as the Secretariat of the *Southern Voice.*

Southern Voice
2015 On Post-MDG International Development Goals

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