Chapter 11

Trends, Patterns and Dynamics of Capital Inflows in Asia

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CHAPTER 11

Trends, Patterns and Dynamics of Capital Inflows in Asia

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An important dimension in the measurement of the extent of international financial integration is the literature on the trends in and determinants of capital flows. While the literature on this is sizeable, there do not appear to be many contributions that focus on the dynamics of the interactions between the various components of capital flows, viz. foreign direct investment (FDI), portfolio equity, portfolio debt and bank flows. This paper seeks to examine this issue—looking only at the inflows of capital—by asking the following questions: are the respective components of capital flows substitutes or complements? Does one type of capital flow enhance or inhibit the others? Do these notions of substitution and complementarity apply to the effect of the volatility of the components of flows on the level of each flow? The policy implications of this analysis can be viewed in terms of countries' financial liberalization policies. If two types of flows are substitutes then a policy of liberalizing, or indeed restricting, one type of flow might actually crowd out the other. This could well be an unintended consequence of a country's financial liberalization policy.

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1. Introduction and Motivation

While there is a sizeable literature on the trends and determinants of capital flows, there do not appear to be many contributions focussing on the dynamics of the *interactions* between the components of capital flows. This paper seeks to examine this issue by asking the questions: are the respective components of capital flows substitutes or complements? Does one type of capital flow enhance or inhibit the others? We examine both the mean and the volatility of flows to establish whether high volatility in one type of flow might result in a substitution towards another type of flow. This study employs country-level total inflows of foreign direct investment (FDI), portfolio equity, portfolio debt and bank flows for Hong Kong, Indonesia, Japan, Korea, Malaysia, the Philippines and Thailand for the period 2000–09.

The recent literature is devoted mainly to gravity-type models on the determinants of capital flows[2] (for a brief survey of recent studies, see Hattari and Rajan, 2009; and also Rajan and Hattari, 2009), on the effect of capital flows on variables such as GDP growth (see, for example, Edison et al., 2002), or inflation. There is also a literature examining the effect of liberalization policies on flows (see the well-known paper by Montiel and Reinhart, 1999, or, for a recent piece, see Sompornserm, 2010), and the sequence of financial liberalization—particularly asking the question whether FDI should be promoted before, say, portfolio flows (as it is more stable).

There is also a reasonably recent literature on the variations in capital flows and its associated measurement issues. Becker and Noone (2009), Debelle and Galati (2005) and, very recently, Broto et al. (forthcoming) and Neumann et al. (2009) all present analyses containing the volatility of capital flows and what factors might determine it. Recent papers by Alfaro et al. (2004) in particular examine the effect of institutions on capital flow volatility. This paper differs by using the existing literature on the determinants of the level and volatility of capital flows as a baseline specification, and extends it by introducing the interaction of the various components of these flows. This paper is very much exploratory in nature and, as such, rather than employing a single measure, we employ a system-of-equations approach by using a VAR as well as

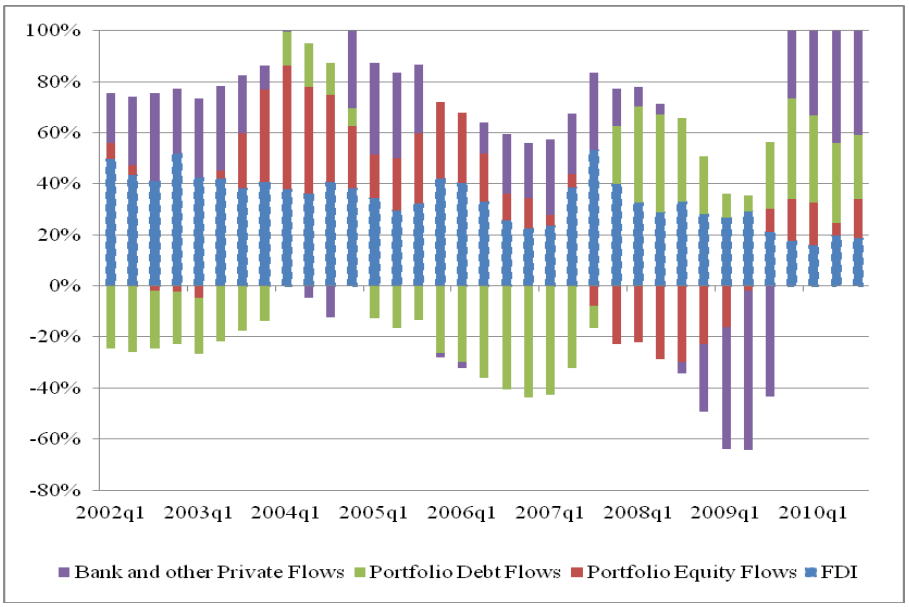
[2] For a cogent review of the traditional determinants of capital flows and some policy consequences, see Calvo et al. (1994).

analyzing a series of single-equation models based on a panel fixed-effects specification.

Essentially, as we wish to examine the interaction of the components of capital flow, this study is an investigation of the determinants of the composition of capital flows. While there is a significant policy literature on this, the scholarly literature is not large. Binici et al. (2010), for instance, present an empirical analysis of the role of capital controls on the composition of flows by direction but not necessarily by type. Much of the existing literature is over the empirical regularity that FDI is relatively more stable. For instance, Fernandez-Arias and Hausmann (2001) ask whether the composition of flows (and especially the possession of FDI) matters during crises. This issue is more recently taken up in Sula and Willett (2009). The issue of the relative stability of FDI is presented in Albuquerque (2003). An interesting paper dealing with the interaction of the types of flows is Smith and Valderamma (2009), who argue that the composition of flows is an important factor in that some substitutability exists, that it has a dynamic pattern and that this can be explained with the assistance of a general equilibrium model of a small, open economy.

Empirically, there is an important strand of the policy literature that assesses the stylized facts in relation to the composition of capital flows. In recent times, and with respect to Asian economies, the IMF (2011a) reports that composition is important in tracking the patterns of international capital flows. In recent times, portfolio debt investment inflows are stronger relative to other inflows for Indonesia, Korea and Malaysia, while bank inflows are stronger in Hong Kong. The IMF (2011b) reports that net debt flows were the least persistent (suggesting other determinants might play a stronger role here), FDI net flows are most persistent and FDI and, to a lesser extent, equity net flows are the most stable. Regarding the volatility of net flows, bank flows are the most variable. This can be seen in the net flows presented in Figure 1.

Figure 1. Net Capital Flows by Component



Source: IMF (2011a).

Quite clearly, FDI net flow (the line with the dashed effect) is the most stable component of capital flow. It can also be seen that bank net flows appear relatively less stable and suffered a dip in the period after the commencement of the Global Financial Crisis (GFC). This dip is preceded by similar reductions in the net flows of, first, portfolio debt and, then, portfolio equity investment. We can see that the patterns of each component of flow are not necessarily consistent with any other and that these flows appear to follow a dynamic pattern or sequence. Such a sequence is likely to be difficult to explain with any great precision but we can say that financial integration, as measured through capital flows, could well be subject to the ebbs and flows of the interactions of the types of flows. This is one important motivation for the work that follows.

At its core, this study measures the indirect effect of various determinants of capital flows by investigating directly the interaction between the components of those flows. In other words, if policymakers liberalize (by, say, removing capital controls on) portfolio flows, what effect does this have on FDI? Under this analysis, this would depend on whether they are substitutes or complements. If FDI and portfolio flows are substitutes then a policy of liberalizing portfolio flows will actually crowd out FDI flows. This could well be an unintended consequence of a country's financial

liberalization policy. This is naturally also true of the employment of capital controls. Let us consider an example.

Consider the case of equity versus debt flows; if controls are instituted on equity flows then the effect on debt flows depends crucially on the dynamic interaction between the two. By additionally presenting an analysis of the effect of the volatility of capital flows, we can examine whether the levels of inflows are augmented or diminished by the second moment—both of its own inflow (a mean-variance argument) and of other flows. As such, this study might represent a useful addendum to the literature that assesses the direct effect of liberalization policies on their respective capital flows.

Can we make any statements about what we might expect from the interactions of the components of capital flows? The general landscape of financial integration in developing economies generally and in Asia in particular is that flows increase alongside each other—that the banking system must improve in order to accommodate the consequences of increasing FDI and portfolio flows. This improvement makes banking more efficient and therefore more attractive for foreign funds. The data do not overwhelmingly support this. It could be conjectured from Figure 1 that the pattern that emerges from the graph, where waves of (non-FDI) flows tend to occur in sequence, implies that substitutability is the strongest factor. If this is the case, the components of each flow are decreasing in the other components. We can also form some conjectures regarding the relative stability of the flows—particularly FDI. Does FDI extract any benefit at all from being relatively stable? If so, we can conjecture that an increase in the variability in one (or more) of the other flows will increase the level of FDI flows, and investors choose this component due to its relative stability.

The paper is structured as follows: the following section presents the data and their sources, and details the estimation procedure for the VAR and the Panel LS tests used in this paper. Section 3 presents the results of the estimations and the relevant discussions. Section 4 concludes and presents some policy remarks.

2. Data and Methodology

We orient this study towards an analysis of the recent experience for a sample of Asian countries. This study will in the first instance employ country-level total flows of FDI, portfolio equity, portfolio debt and bank flows for Hong Kong, Indonesia, Japan, Korea, Malaysia, the Philippines and Thailand for the period 2000–09. Quarterly observations of the data are taken from the IMF *International Financial Statistics* database and from the Asian Development Bank database.[3] Specifics pertaining to data are found in the Appendix Table A1. Positive and negative flows (as a percentage of GDP) are employed in constructing the estimates. To ignore the other side of the flow would produce a highly discontinuous data set and would also remove a potentially important source of inquiry. We will analyze the inflow of capital in this instance. In addition to flow data, we also employ inflation, interest rate, exchange rate and output growth data as controls. The modeling approach involves two stages. The first will involve the specification of a basic VAR model. The second will employ a panel fixed-effects specification.

First, given that we intend to examine the interactions of the components of capital flows, system of equations through an unrestricted VAR will be employed.[4] Some pre-testing for the stationarity properties of the data (in panel form) being used revealed that most of the variables are *I(0)* processes, some are weakly *I(0)*—FDI flows mainly—whilst the interest rate data were weakly *I(1)*. Preliminary co-integration tests suggest the existence of some co-integrating relationships, but given the integration properties of most of the data, a VAR specification was selected for analysis. As such, the model to be tested will be based on the following: $AY_t = C + B(L)Y_{t-1} + GX_{t-1} + \xi_t$, (1)

where $Y_t = [FDI_t, PF_t^{EQTY}, PF_t^{DEBT}, BANK_t]'$; the component of capital inflows, X_t, is a vector of control variables and potential determinants of capital inflows; ξ_t is an error term; and A, B, G, (C) are each a matrix (vector) of coefficients. L is the polynomial lag operator.

[3] www.adb.org.

[4] A structural VAR is an option here; however, the unrestricted version is employed to establish some stylized facts around the interactions of the component inflows. For the impulse responses and variance decomposition results that follow, a Cholesky ordering (discussed below) offered sufficient identification of restrictions to suffice for this analysis.

Testing will involve the usual time-series techniques including the assessment of the directionality of the relationships between the capital flows by observing the coefficient values for the effect of lagged flows on current flows as well as impulse response functions. Variance decompositions are also employed. Model identification through coefficient restriction of *A* is performed by Cholesky decomposition. The estimates are quite robust to different orderings. The ordering presented here reflects the possibility that FDI is the slowest to move (that is, shocks to equity, bank and debt flows do not influence FDI contemporaneously). The impulse response functions and variance decompositions presented are calculated over 12 periods.

Lag length selected for all estimates is four quarters. This is (for the most part) the most appropriate model under SBC model selection. The X variables are lagged one period in the model to assist with addressing the issue of endogeneity.

In order to further evaluate the interactive effects of the components of capital flows, we employ a panel fixed-effects model to our data. The modelling strategy will follow an auto-regressive distributed lag (ARDL) approach as follows:

$$FLOWj_{it} = \alpha_0 + \alpha_1 FDI_{it-1} + \alpha_2 DEBT_{it-1} + \alpha_3 EQUITY_{it-1} + \alpha_4 BANK_{it-1} + \alpha_5 Z_{it} + \alpha_6 X_{it-1} + \varepsilon_{it}, \qquad (2)$$

where j = [*FDI, DEBT, EQUITY, BANK*] and, as above, X is a vector of controls. In other words, we will have an equation for each flow to assess the effect on that flow of lagged flows. Lagged dependent variables were used to pick up the time-series characteristics as well as to avoid the problem of endogeneity. Furthermore, we examine any contemporaneous relationships between the flows by including the remaining flows (Z_{it}) as regressors. In order to address the question of the effect of the variability of flows in determining the level of a particular flow, we augment the model as follows:

$$FLOWj_{it} = \alpha_0 + \alpha_1 FDI_{it-1} + \alpha_2 DEBT_{it-1} + \alpha_3 EQUITY_{it-1} + \alpha_4 BANK_{it-1} + \alpha_5 Z_{it} + \alpha_6 X_{it-1} + \beta_1 SD(FDI_{it-1}) + \beta_2 SD(DEBT_{it-1}) + \beta_3 SD(EQUITY_{it-1}) + \beta_4 SD(BANK_{it-1}) + \varepsilon_{it}, \qquad (3)$$

where SD represents the rolling 12 (previous) period standard deviation of each respective flow.[5] The model was estimated with two-way (country, time) fixed effects. All models were estimated with all controls and the statistically insignificant ones were removed.

3. Results and Discussion

This section presents the results for the VAR specification and the fixed-effects model as detailed above. Table 1 presents the coefficients to the lagged variables in the model. As mentioned in Section 1, what we are looking for here are negative values that might be interpreted as possible evidence of substitution or positive values that might be evidence of complementarity. From Table 1, the most notable result is that a shock to lagged bank inflows has a strong positive effect on FDI inflows. This effect is also persistent—a possible indication that it is not simply an auto-regressive effect that diminishes over time. From this table, we can also see that FDI is quite persistent—consistent with the empirical evidence for the Asian region in general. That said, in contrast with the same empirical observations, debt and bank flows as measured here are also quite persistent. Moreover, there is some evidence—albeit quite weak—of a negative influence of lagged FDI on debt inflows.

Table 1. Unrestricted VAR Coefficients for Lagged Terms: Inflows

	BNINGDP	DBINGDP	EQINGDP	FDINGDP
BNINGDP(-1)	0.555410 [8.10112]	0.016228 [0.57546]	–0.018206 [–0.87856]	0.101149 [6.05380]
BNINGDP(-2)	0.170820 [2.19360]	0.051862 [1.61914]	0.115769 [4.91858]	0.076587 [4.03559]
BNINGDP(-3)	–0.309294 [–3.95885]	–0.180105 [–5.60449]	0.009805 [0.41523]	0.061916 [3.25189]
BNINGDP(-4)	0.134328 [1.83356]	0.115356 [3.82810]	–0.001592 [–0.07190]	–0.035155 [–1.96903]

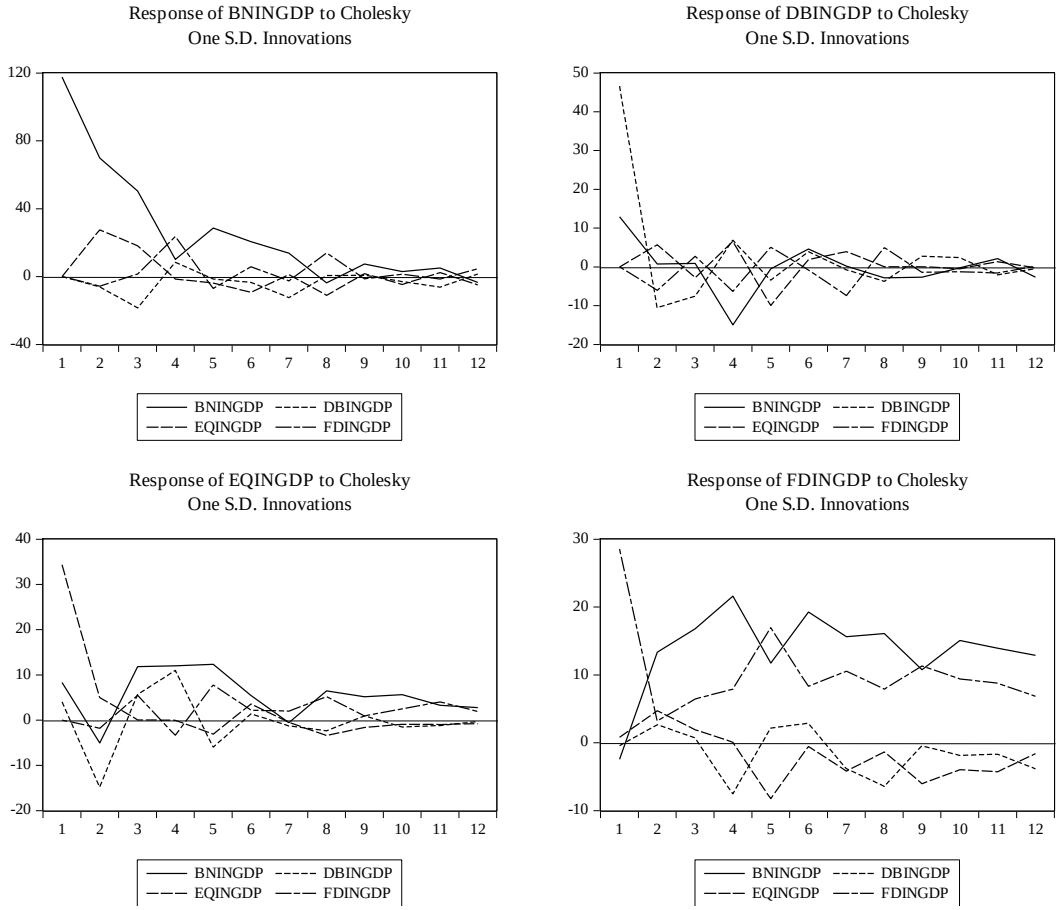
[5] Obviously, a balance is needed between the size of the rolling window and the degrees of freedom remaining for the fixed-effects estimates. Robustness checking was performed with windows of varying sizes for broadly similar results.

Table 1. ***(Continued)***

	BNINGDP	DBINGDP	EQINGDP	FDINGDP
DBINGDP(-1)	–0.204212 [–1.25693]	–0.242541 [–3.62934]	–0.330811 [–6.73654]	0.046436 [1.17278]
DBINGDP(-2)	–0.102862 [–0.58395]	–0.143290 [–1.97765]	0.091751 [1.72328]	0.083938 [1.95530]
DBINGDP(-3)	0.316841 [1.86755]	0.034543 [0.49500]	0.215932 [4.21093]	–0.125038 [–3.02418]
DBINGDP(-4)	–0.459617 [–2.60043]	–0.051372 [–0.70663]	–0.050788 [–0.95070]	0.007333 [0.17023]
EQINGDP(-1)	0.806515 [3.94876]	0.170770 [2.03269]	0.147322 [2.38640]	0.134956 [2.71128]
EQINGDP(-2)	0.021572 [0.11212]	–0.052305 [–0.66091]	0.054173 [0.93153]	–0.074494 [–1.58870]
EQINGDP(-3)	–0.509328 [–2.72723]	0.159409 [2.07516]	–0.148959 [–2.63888]	–0.158382 [–3.47989]
EQINGDP(-4)	0.036508 [0.21936]	–0.144712 [–2.11391]	–0.105873 [–2.10466]	–0.335827 [–8.27975]
FDINGDP(-1)	–0.199776 [–0.92473]	–0.212605 [–2.39253]	–0.063923 [–0.97894]	0.112404 [2.13493]
FDINGDP(-2)	0.193786 [0.98284]	0.083008 [1.02352]	0.134578 [2.25822]	0.251328 [5.23043]
FDINGDP(-3)	0.700376 [3.56580]	–0.215989 [–2.67345]	–0.066519 [–1.12047]	0.215125 [4.49417]
FDINGDP(-4)	–0.753423 [–4.07793]	0.197299 [2.59621]	0.238200 [4.26552]	0.402193 [8.93244]

Figure 2 presents the impulse response functions. These show the effect on the inflows of a shock to each inflow. We would expect some consistency between these and the results presented in Table 1. There are many results embedded in the impulse response functions; we will focus our attention on some pertinent ones.

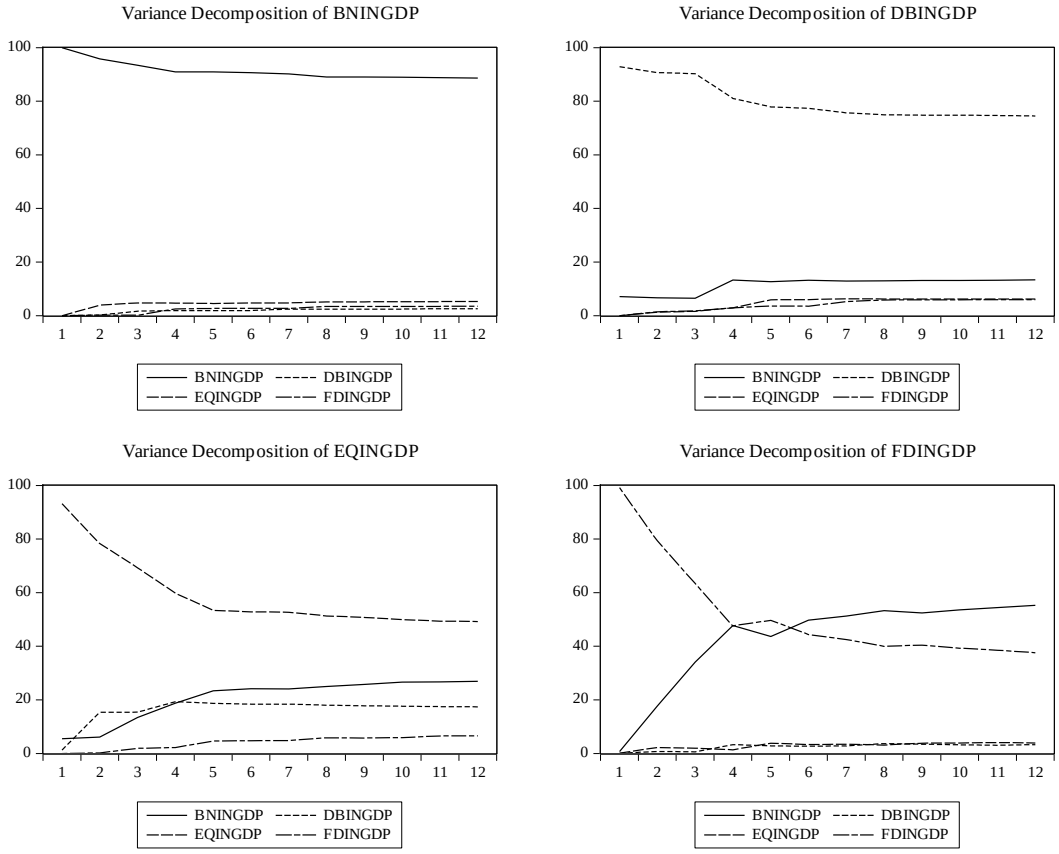
Figure 2. Impulse Responses: Inflows



From Figure 2, bank inflows have a strong initial positive effect on FDI inflows. This effect reverses to being a negative one further along the lag structure. This emerges as quite a strong result and is consistent with what we saw in Table 1. The impulse responses for equity flows show an effect of bank innovations that is positive and sustained. This result does not show up in the VAR estimates.

Figure 3 presents the variance decompositions: the effect on the variance of each flow of an innovation to a given flow. While these offer no information on directionality, they do present evidence of which flows drive the variance of other flows. We would expect that the variance in each flow is determined predominantly by its own innovation and this transpires here for the most part. Interestingly, the strong relationship between bank and FDI flows that was discussed previously with regard to inflows also shows up in the variance decompositions in Figure 3.

Figure 3. Variance Decomposition: Inflows



The stronger results from the variance decomposition seem to correlate with the positive associations from the impulse responses—suggesting that relationships where flows are complements are stronger than where those are substitutes. Interestingly, the effect on the variance of equity of an innovation in bank flows appears here much in the same way as in the impulse responses.

The results from the fixed-effects model are much more explicit about the relationships between the various components of capital flows. The model here augments the VAR analysis by presenting the coefficients to the contemporaneous values of flows. Table 2 presents the results using OLS while Table 3 presents results from two-stage least squares estimation.

Table 2. Panel Least Squares Estimates for Inflows

Dep Var.	FDI	FDI	Bank	Bank	Equity	Equity	Debt	Debt
Constant	29.87	29.31***	242.43	34.45 **	0.08	71.60 **	–88.29**	5.47
FDI			–1.50***	– 0.87***	0.21**	0.67	0.14	0.04
Debt	0.05	0.03	0.55***	0.58***	0.03	0.06		
Equity	0.18 **	0.52***	0.10	0.40**			0.08	0.08
Bank	–0.12 ***	–0.09 ***			0.01	0.06*	0.12***	0.10***
FDI(-1)	–0.08	0.08	–0.56 *	–0.21	0.48***	0.01	–0.22	–0.14*
Debt(-1)	0.08	0.19 ***	0.11	–0.02	–0.42***	–0.31***	–0.27***	–0.19***
Equity(-1)	0.09	0.12 **	0.67***	0.64***	0.16	–0.12**	0.02	0.13*
Bank(-1)	0.15 ***	0.14 ***	0.35***	0.57***	0.02**	–0.08***	–0.07*	–0.06**
SD FDI	–0.42		–4.73***		–0.66*		0.08	
SD Debt	0.29 **		–0.72		–0.56***		–0.79***	
SD Equity	–0.81		–0.17		0.77***		1.19***	
SD Bank	0.24		–0.10		–0.06		1.13***	
Adj R-sq	0.86	0.83	0.57	0.39	0.61	0.51	0.31	0.17
DW	2.26	2.06	2.20	2.24	2.09	1.92	2.23	2.08
Obs	187	263	187	263	187	263	187	263

Note: Significance levels: * 10%; ** 5%; *** 1%.

Table 3. Panel TSLS Estimates for Inflows

Dep Var.	FDI	FDI	Bank	Bank	Equity	Equity	Debt	Debt
Constant	49.40	33.37***	252.6**	70.49***	–22.73	–13.58**	–128.2***	–9.05
FDI	-	-	–3.26***	–2.27***	0.80***	0.19	0.42	0.63**
Debt	0.17	0.36***	-	-	0.02	0.20	-	-
Equity	0.75***	0.15	1.91	0.10	-	-	0.56	0.36
Bank	–0.22***	–0.26***	1.10**	1.56***	0.14	0.01	0.32***	0.34***
FDI(-1)	0.39**	0.14	–1.07	0.48	0.52***	0.40***	–0.32	–0.41***
Debt(-1)	0.35***	0.13	1.06**	0.32	–0.41***	–0.37***	0.04	–0.09
Equity(-1)	0.04	0.21**	0.35	0.79***	0.04	0.15**	–0.22*	–0.27**
Bank(-1)	0.14***	0.20***	0.54***	0.62***	–0.08	0.01	–0.16**	–0.21***
SD FDI	–0.35	-	–2.64	-	–0.12	-	1.51**	-
SD Debt	0.47**	-	1.31	-	–0.52***	-	–0.23	-
SD Equity	–0.46	-	–1.72	-	0.54	-	0.62	-
SD Bank	0.11	-	–0.22	-	–0.25	-	1.01***	-
Adj R-sq	0.78	0.79	0.33	0.41	0.48	0.52	0.09	0.06
DW	2.42	2.37	2.44	2.33	2.26	1.91	2.09	2.26
Obs	180	180	180	180	180	180	180	180

Note: Significance levels: * 10%; ** 5%; *** 1%. The equations for debt flows use a different set of instruments in these estimations to improve model performance. More information is available from the author upon request.

From these results, we can see that the strong positive relationship between lagged bank and FDI flows found in the VAR estimates also appears here. We do, however, have a small negative effect on contemporaneous bank flows on FDI flows—implying

substitution. We also see a positive effect of the standard deviation of debt flows on FDI—evidence of substitution towards FDI in the face of volatility in bank flows.

There is also a strong negative effect between bank and FDI flows when the causation runs the other way; this effect is not present in the VAR. Bank flows also react positively to equity flows—evidence of some complementarity there. Furthermore, an increase in the volatility of FDI decreases bank flows. This is suggestive of FDI variations possibly causing a move away from bank flows but this effect is not present in the TSLS estimates.

The effects on equity inflows and debt flows are quite mixed. There is something of an effect of lagged (one period) debt on equity flows. This is consistent with the VAR results in Table 1 and the impulse responses in Figure 1. The TSLS estimates also show a strong positive effect of FDI on equity flows. There is a negative relationship between debt flow volatility and equity flows. Finally, as in the empirical literature, in the least squares models, debt flows do not exhibit much persistence.

While not overwhelming, there is some evidence to suggest that the positive relationships are more persuasive when examining the effect of the levels of capital flows (implying complementarity). The results equally suggest, however, that the positives are stronger when assessing the impact of the volatility of flows (implying substitution—especially in the effect on FDI flows).

4. Some Conclusions

In contrast with much of the recent literature on international financial integration through capital flows, this paper has presented an examination of the interactions of the components of capital inflows—namely, FDI, debt inflows, equity inflows and bank inflows. This paper is largely exploratory in nature and seeks to find, through an analysis of the patterns in the data, whether the components of inflows together enhance the extent of financial integration, or if individual flows potentially crowd out other flows.

We saw from the results that there is a possibility that an increase in bank inflows might crowd out FDI flows with a lag. As such, if policymakers employ liberalization policies relating specifically to bank inflows, this might have the effect of promoting FDI flows. These effects could well be an unintended consequence of a country's financial liberalization policy. This is naturally also true of the employment of capital controls. Consider the case of equity versus debt flows, if controls are instituted on equity flows. We note that there was some evidence—not emphatic—of some degree of substitution between debt inflows and equity inflows. As such, this study might represent a useful addendum to the literature that assesses the direct effect of liberalization policies on their respective capital flows.

Some useful results from this paper examine the effect of the volatility of flows. We saw above that the standard deviation of debt inflows potentially resulted in an increase in FDI inflows. Interestingly, any policy designed ostensibly to reduce the variability of debt flows might have the (presumably) unintended consequence of reducing FDI inflows. Conversely, from the results, we can conclude that any policy designed to make FDI (debt) inflows more stable might result in actually enhancing bank (equity) inflows.

We can present some thoughts regarding policy implications to the conclusions mentioned above. Policymakers need to be mindful of the possibility of any crowding out and that crowding out might have significant implications in the design of financial liberalization policies. It would not be implausible to suggest that policies need to contain multiple dimensions such that the "crowded out" flow is also part of the flow that is the original subject of the policy. Furthermore, those flows that are (possibly) complementary might find that the resources that are required to establish and maintain policies of financial liberalization could be reduced.

In general there is some evidence to suggest that the positive relationships are more persuasive when examining the effect of the levels of capital flows. This is consistent with the basic idea that capital flows evolve together as part of an increasingly financially integrated landscape. The results equally suggest, however, that the positives are stronger when assessing the impact of the volatility of flows. This suggests that the relative instability of flows remains an important factor in the overall extent of financial integration in the region.

References

Albuquerque, R. (2003). "The Composition of International Capital Flows: Risk Sharing Through Foreign Direct Investment." *Journal of International Economics* 61: 353–83.

Alfaro, L., S. Kalmli-Ozcan, and V. Volosovych (2004). "Volatility of Capital Flows: Bad Policies or Bad Institutions." Mimeo.

Becker, C., and C. Noone (2009). "Volatility and Persistence of Capital Flows." *BIS Working Paper* 42.

Binici, M., M. Hutchison, and M. Schindler (2010). "Controlling Capital? Legal Restrictions and the Asset Composition of international Financial Flows." *Journal of International Money and Finance* 29: 666–84.

Broto, C., J. Diaz-Cassou, and A. Ece (forthcoming). "Measuring and Explaining the Volatility of Capital Flows to Emerging Countries." *Journal of Banking and Finance*.

Calvo, G.A., L. Leiderman, and C.M. Reinhart (1994). "The Capital Inflows Problem: Concepts and Issues." *Contemporary Economic Policy* 12, no. 3: 54–66.

Cavoli, T., and R.S. Rajan (2007). "Exploring the Case for Monetary Integration Between Mainland China and Hong Kong." *China and the World Economy* 15, no. 4: 17–34.

Cavoli, T., and R.S. Rajan (2009). *Exchange Rate Regimes and Macroeconomic Management in Asia*. Hong Kong: Hong Kong University Press.

Debelle, D., and G. Galati (2005). "Current Account Adjustment and Capital Flows." *BIS Working Paper* 169.

Edison, H., R. Levine, L. Ricci, and T. Slok (2002). "International Financial Integration and Economic Growth." *Journal of International Money and Finance* 21: 749–76.

Fernandez-Arias, E., and R. Hausmann (2001). "Is Foreign Direct Investment a Safer Form of Financing?" *Emerging Markets Review* 2: 34–49.

Hattari, R., and R.S. Rajan (2009). "Understanding FDI Flows in Developing Asia." *Asia-Pacific Economic Literature* 23: 73–93.

Hattari, R., and R.S. Rajan (2010). "How Different are FDI and FPI Flows?: Does Distance Alter the Composition of Capital Flows?" Mimeo.

International Monetary Fund (IMF) (2011a). *Regional Economic Outlook, Asia and the Pacific.* Washington, DC: International Monetary Fund. (April).

International Monetary Fund (IMF) (2011b). *World Economic Outlook*. Washington, DC: International Monetary Fund. (April).

Montiel, P., and C. Reinhart (1999). "Do Capital Controls and Macroeconomic Policies Influence the Volume and Composition of Capital Flows? Evidence from the 1990s." *Journal of International Money and Finance* 18: 619–35.

Neumann, R.M., R. Penl, and A. Tanku (2009). "Volatility of Capital Flows and Financial Liberalization: Do Specific Flows Respond Differently?" *International Review of Economics and Finance*.

Rajan, R.S., and R. Hattari (2009). "What Explains Intra-Asian FDI Flows?: Do Distance and Trade Matter?" *Economics Bulletin* 29: 122–8.

Sompornserm, T. (2010). "Financial Liberalisation and International Capital Flows." Mimeo. Smith, K.A. and D. Valderamma. (2009). The composition of capital inflows when emerging market firms face financing constraints. Journal of Development Economics 89 Pp 223–34

Sula, O., and T.D. Willett (2009). "The Reversibility of Different Types of Capital Flows to Emerging Markets." *Emerging Markets Review* 10: 296–310.

Appendix

Table A1. Data and Sources

Data	Source
FDI direct investment abroad	*IFS* line 78BDD
FDI direct investment in	*IFS* line 78BED
Portfolio equity assets	*IFS* line 78BKD
Portfolio debt assets	*IFS* line 78BLD
Portfolio equity liability	*IFS* line 78BMD
Portfolio debt liability	*IFS* line 78BND
Bank assets	*IFS* line 78BQD
Bank liability	*IFS* line 78BUD
GDP (for calculating flow/GDP)	*IFS* line 99b (except for Japan: line 99bc)
Inflation year-on-year growth in consumer prices	*www.adb.org*
Time deposit rate	*IFS* line 60l
Exchange rate per US$	*IFS* line rf
Year-on-year growth in GDP (control variable)	*www.adb.org*