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Empirical Examination of Foreign Capital Flows and Growth Nexus in Emerging Economies

*Bassem Kamar**

I. Introduction

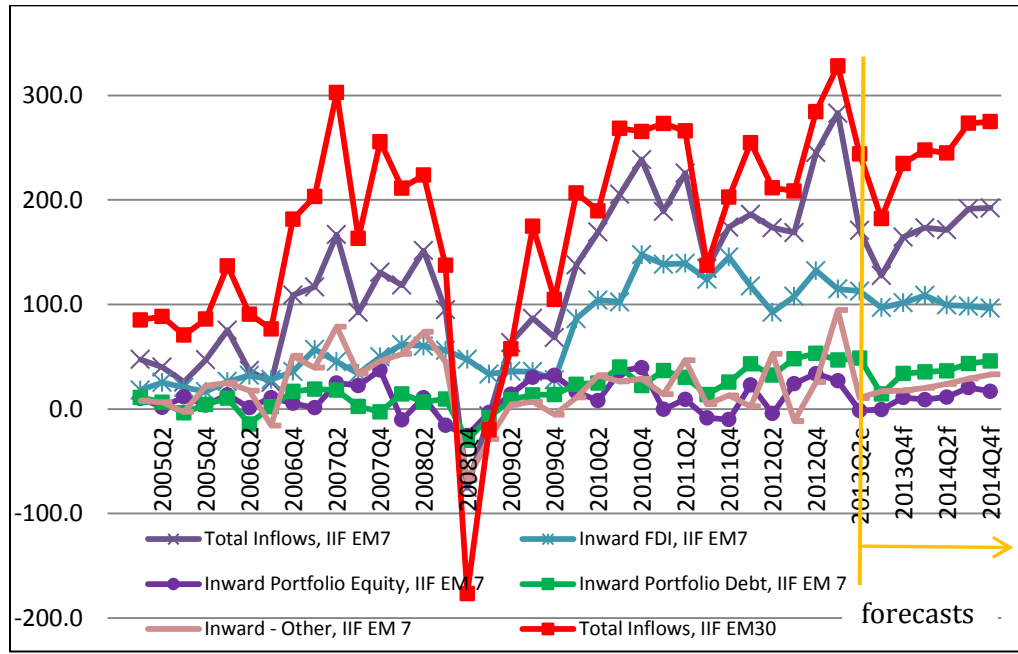
The free movement of capital between nations is supposed to be beneficial to all countries according to most theories of international economics. More specifically, it is expected to generate a more efficient allocation of resources that would increase productivity and economic growth in both recipient and source countries.

As summarized by Reinhart (2005), the recipient country can use the inflows to finance investments and stimulate economic growth. At the same time, the investing country can use it to increase its own welfare too because the capital outflows can smooth out the consumption path and achieve even higher consumption in the long-run by hedging against risk through international diversification.

Some theoretical studies have suggested that the gains from capital openness go beyond simply providing access to foreign capital; it can also come from the decrease of domestic distortions in economic reforms. Further empirical literature on this issue has looked into an extensive set of potential dimensions, such as the depth and development of the financial sector, the competitiveness of the country's products and services, the quality of institutions, the sequence of reforms, and the exact composition of the capital flows.

As the literature review will reveal, there is a very significant amount of papers that have analysed the effects of capital flows on growth. Yet, there is ultimately little consensus on the subject, justifying further investigations. Researchers and policymakers alike have come to recognise that large capital flows can create important policy challenges for emerging market economies (EMEs), and those have recently come to the forefront again with the sudden stop in the midst of the 2007/2008 Global financial crisis.

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Figure 1: Capital Inflows to Emerging Market Economies (US\$ billion)

Source: Institute of International Finance (IIF); "IIF EM 7" = BRIC, Turkey, Mexico and Indonesia, "IIF EM 30" = full IIF sample

Today, capital flows to EMEs remain highly volatile (see Figure 1). According to the latest data provided by the Institute of International Finance (IIF), though flows have picked up after the sharp decline during the global financial crises, they nevertheless remain erratic, responding very sensitively to the deteriorating economic fundamentals in the developing world and to the market expectations regarding the changes in the US monetary policy.

Thus, the purpose of this paper is to analyse the effect of foreign capital flows on economic performance in three ways. First, it analyzes empirically the direct effect of capital account liberalisation on growth; second, it continues to explore the subject by testing one of the indirect effects of capital flows on economic welfare, namely their influence on competitiveness; and finally, it breaks down the issue further by decomposing capital flows into their specific elements – FDI, portfolio investments, aid, debt, remittances and tests their effect on competitiveness.

Against this background, the paper is structured as follows. Following the introduction, Section 11 provided the critical review of the literature. Section 111 exposed the econometric methodology, while Section 1V presented and analysed the empirical results.

II. Literature Review

The theoretical rationale for capital account liberalisation is based primarily on the argument that free capital mobility promotes an efficient global allocation of savings and a better diversification of risk, hence greater economic growth and welfare (Fischer, 1998). The view that free capital mobility enhances economic welfare is appealing to many economists, but there has been surprisingly little empirical evidence to either support or refute conclusively such a view. An opposing view has held that there is a considerable information asymmetry in international financial markets, so that free capital mobility – especially when significant domestic distortions exist – does not necessarily lead to an optimal allocation of resources (Stiglitz, 2000 and 2004).

Within the broader debate over the increasing importance of international capital flows in the world economy, some have alleged that the International Monetary Fund (IMF) has encouraged member countries to liberalise their capital accounts prematurely without ensuring that adequate institutions and prudential regulations were in place (Williamson, 1990). Others argue that rapid liberalisation, with insufficient attention to sequencing and establishing the appropriate preconditions, had been responsible for most of the financial instability and economic distress experienced by many emerging market countries (Desai, 2003; Stiglitz, 2000, 2002 and 2004; Wade, 1998-99; and Wade and Veneroso, 1998).

This paper is based on three complementary studies on the effects of free capital flows. The first study concentrates mainly on the evaluation of the impact of capital openness on economic growth through the use of empirical studies inspired by Quinn (1997), Gourinchas and Jeanne (2002), Edison and Warnock (2003), Prasad et al. (2003), Klein (2005), Henry (2007) and Quinn and Toyoda (2008). The second study intends to assess the impact the capital account liberalisation on the competitiveness of the country using Behavioral Exchange Rate models (Kim et al. (2004)). The third study decomposes the capital flows into their components and tests each individual flow's effect on competitiveness, taking also into account the possible regional effects.

II.1 Capital Account Liberalisation and Economic Growth

Economic theory suggests a number of benefits that may accompany capital account liberalisation. Edwards (2001) suggested that capital account liberalisation had the potential to lower the cost of capital, increase risk sharing, raise financial market liquidity, and improve the efficiency of the financial sector of the economy. These changes introduced by liberalisation could increase

investment, change the type of investments undertaken, increase productivity and accelerate economic growth.

However, early empirical studies were generally not supportive of a link between capital account liberalisation and growth. Alesina, Grilli and Milesi-Ferretti (1994), showed that growth effects of capital account liberalisation were small and insignificant. Considering a larger cross section of 61 countries Grilli and Milesi-Ferretti (1995) found that there was no relation between capital account liberalisation and economic growth.

Rodrik (1998) also cast doubts on the effect of capital account liberalisation on growth. Using a sample of 100 developed and developing countries, he found no significant effect of capital account liberalisation on economic growth over the period 1975 to 1989. Contrary to the above authors, Quinn (1997) identified a positive link between capital account liberalisation and economic growth. He examined the impact of both capital account openness and the change in openness on economic growth in a sample of 64 countries over 1960-1989. Quinn's empirical results showed that capital account liberalisation had a strongly significant effect on the growth of real per capita GDP.

Examining the impact of Quinn's measure of capital account openness on three different measures of economic growth (the average annual growth of real GDP per capita, capital stock per worker, and output per worker), Krol (2001) provided evidence that capital account liberalisation promoted long-run economic growth. Similar to Krol (2001), Edwards (2001) also adopted a Quinn index of capital account liberalisation. Using weighted least squares for 60 countries, he concluded that countries with more open capital account performed better than countries with lower capital account liberalisation.

Analysing the stock market liberalisation in 18 emerging markets, Henry (2003) found that stock market capitalisation decreased the cost of capital, which led to greater investment and increased per worker output, at least in the immediate aftermath of liberalisation. In the light of these divergent findings, scholars considered the possibility that the effects of liberalisation were contingent on the presence or absence of other variables (Quinn and Toyoda, 2008).

Kray (1998) was one of the first studies that examined whether capital account liberalisation influences growth under economic preconditions. He used a variety of measures of capital account openness including Quinn's capital account liberalisation and a measure based on actual net capital flows. He did not find a

significant effect unless these indicators interacted with the average balance of the financial account. Klein and Olivei (1999) show that capital account liberalisation promotes economic growth, but only for advanced industrial nations.

Edwards (2001) supported the view that the growth effects of capital account liberalisation depend on the economic preconditions. Using a sample of about 60 countries, and considering the Quinn index as a measure of capital account liberalisation, he provided evidence that an open capital account positively affected growth only after a country has achieved a certain degree of economic development.

Edwards' methodology was scrutinised in Arteta, Eichengreen and Wyplosz (2001). Their estimations suggested that Edwards' results might be sensitive to a variety of factors, and, therefore, they concluded that there was little evidence that capital account liberalisation had more favourable effects in high income and middle-income countries than in poor developing countries. They also found that there was some evidence that the positive growth effects of liberalisation were stronger in countries with strong institutions, as measured by standard indicators of the rule of law, but only weak evidence that the benefits grew with a country's financial depth and development. Finally, they found that while trade openness had a positive impact on growth, the effect of capital account liberalisation was not contingent on trade openness. Rather, it was contingent on the absence of a large black market premium. In the presence of such imbalances, capital account liberalisation was as likely to hurt as to help.

To the contrary, the study of Edison et al. (2004) supported the evidence of regional heterogeneity on the growth effect of capital account liberalisation. They included three different measures of capital account liberalisation for the period of 1976-1995. Their estimates showed that capital account liberalisation promoted economic growth in middle-income countries. However, this effect was neutral on both rich and poor countries.

Klein (2005) had developed a theoretical model that captured the link between institutional quality and the responsiveness of growth to capital account liberalisation through the effect of institutional quality on the return to savings. This model demonstrated the possibility of an inverted U-shaped relationship between the responsiveness of growth to capital account liberalisation and institutional quality. The empirical results of Klein (2005) were consistent with the theoretical model. Using three empirical specifications (OLS, instrumental variables and the non-linear least squares estimates) for a panel of 71 countries over 1976 to 1996

he found that the effect of capital account openness on growth tended to be significant for about one-quarter of the countries in the sample, and these countries tended to be the ones with better (though not the best) institutions. Klein (2005) opined that there was a strong correlation between institutional quality and per capita income, and the countries that tended to benefit significantly from capital account liberalisation were mostly upper-middle-income countries.

Eichengreen and Leblang (2002) examined the growth effect of capital account liberalisation in the presence of international crisis over different periods. Using two different data sets (a panel of historical data for 21 countries covering the period 1880-1997, and a panel covering 47 countries over the period 1975-1997) they found strong evidence that the impact of capital account liberalisation on growth was more likely to be positive when the domestic financial markets were well developed and regulated, and the operations of the international financial system were smooth and stable. However, it was more likely to be negative when domestic and international markets were subject to crises. They demonstrated that while crises depressed economic growth when the capital account is open, controls neutralised this effect. Controlling for sample selection bias (differences in terms of macroeconomic stability, financial and institutional development), Glick, Guo and Hutchison (2006) provided the opposite conclusion. They found that capital account liberalisation reduced countries' vulnerabilities to currency crisis.

Bekaert, Harvey and Lundblad (2005) had also sustained the view of heterogeneity of the growth effect. They concluded that not all countries experienced the same increment to growth after equity market liberalisations. Their findings showed that the effects of capital account liberalisation on economic growth were enhanced by higher levels of financial development, good institutions, and investor protection.

Quinn and Toyoda (2008) had offered a new dataset that contained more precise de jure measures of capital account openness for a wide sample of countries (94) for up to 50 years (1950 to 1999). Using this new indicator to replicate prior studies in the literature (Grilli and Milesi-Feretti, 1995; Quinn, 1997; Edwards, 2001; Edison et al.; 2004; and Bakaert, Harvey and Luandblad, 2005), they found that part of the conflicting results appeared to have been derived either from measurement errors or from estimations done on differing periods. They found that when this indicator was entered into six different analyses, it had a positive and significant coefficient.

They had also used pooled-time series, cross sectional OLS and system GMM estimators to examine economic growth ratios for 1955-2004 period. Their results showed that capital account liberalisation had a positive association with growth in both developed and emerging market nations. They further provided evidence that equity market liberalisation has an independent effect on economic growth. From interaction terms between capital account liberalisation and other finance or political economy variables, they have not found robust effects on economic growth.

Illustrating the fundamental predictions of the neoclassical growth model about the impact of capital account liberalisation on developing countries, Henry (2006) found that this model did not predict that countries with open capital account would have higher long-run growth rates than countries with closed capital accounts. Yet, Henry and Sasson's (2007) analysis showed that capital account liberalisation had a positive and significant impact on both productivity and real wage growth.

The intended contribution of Bussière and Fratzcher (2008) in this trend of literature was to test the presence of an inter-temporal trade-off between growth and financial liberalisation. Both *de jure*⁵ and *de facto*⁶ measures of capital account liberalisation were adopted for a set of 45 countries over 1980-2002. Using different techniques of estimations (the difference GMM, the country fixed effects and a pooled estimator), they found that countries tend to grow more quickly immediately after liberalisation and slower in the medium term. More specifically, they showed that countries that gain in the initial five-year period after liberalisation were those that experience an investment boom, had large portfolio investment and debt inflows and had larger current account deficits. Bussière and Fratzcher (2008) concluded that the quality of institutions as well as the size and composition of capital inflows were two key determinants that allowed some countries to benefit from financial liberalisation in the medium to long-run.

II.2 Capital Account Liberalisation and the Exchange Rate

Capital flows induced by capital account liberalisation are an important determinant of the possible loss of competitiveness of EMEs. Salter (1959), Swan (1960), Corden (1960) and Dornbusch (1974) paradigm served as the theoretical underpinning to test empirically the incidence of capital flows on the REER in emerging economies. The model explained how a surge in capital flows would

⁵ For *de jure* measure of capital account liberalisation, Bussière and Fratzcher (2008) have used the data from Kaminsky and Schmuckler (2003).

⁶ For *de facto* openness measures the paper of Bussière and Fratzcher (2008) look at different flow variables, four based on FDI and portfolio flows, two proxies related to the size and composition of foreign debt and trade openness.

generate an appreciation of the REER (Corbo and Fisher, 1995). A rise in capital flows increases real wages, which in turn, bring out a rise in domestic demand and hence in prices of non-tradable goods relative to tradable goods that are exogenously priced. Since the REER is generally defined as the value of domestic prices of non-tradable goods relative to prices of tradable goods, a rise in the relative price of non-tradable goods corresponds to a real exchange appreciation (spending effect). This is indicative of the presence of “Dutch Disease” effects (Corden and Neary, 1982), which describe the side effect of natural-resource booms or increases in capital flows on the competitiveness of export-oriented and import-competing sectors.

The empirical literature in this area is quite limited, with few works published on the effects of capital account liberalisation on the exchange rate and competitiveness of an economy (for a comprehensive analysis of the impact of capital flows on competitiveness, refer to Bakardzhieva et. al, 2010). Most of the earlier research focused on the nature and processes surrounding capital account liberalisation and its consequences, as already underlined in the previous section.

However, Altar et al. (2005) examined the impact of capital account liberalisation on the exchange rate and competitiveness of the Romanian economy. The variables used were the productivity differential between Romania and the European Union, the proportion of net foreign assets to GDP, and the degree of openness of the Romanian economy. These variables were formulated in a model using the Johansen cointegration technique to determine the long-run equilibrium relation between the selected variables and the exchange rate. The results showed that an increase in productivity of the tradable sector yielded an appreciation of the real effective exchange rate, and a growth in the net foreign assets to GDP of the banking system caused a long-term depreciation of the real effective exchange rate.

Greenidge and Morgan (2008) investigated the economic competitiveness in Barbados, Jamaica, and Trinidad and Tobago by examining the impact of capital account liberalisation on the real effective exchange rate, over the period 1980Q1 to 2007Q4. They estimated a model of the real effective exchange rate, which also included an appropriate measure of capital account liberalisation. The results showed that the direct effects of capital account liberalisation on economic competitiveness varied across the countries. While capital account liberalisation had a positive impact on competitiveness in Tobago and Barbados, in Jamaica a significant and negative impact on competitiveness was observed. The paper found that the paper is that the direct

effects of capital account liberalisation on economic competitiveness varied across the countries and appeared to reflect the pace at which such policies were implemented. Barbados took a very gradual approach to the liberalisation process, Trinidad went a bit faster, while in Jamaica, the pace of liberalisation was very rapid and the domestic financial sector did not prepared for it.

Examining the macroeconomic effects of capital account liberalisation in Korea, Kim and Christian (2004) found that capital account liberalisation substantially changed the nature and composition of capital flows, and appreciated the nominal and real exchange rates. Consumption and investment increased (due to expanded credit availability), which in turn raised the real GDP. The increase in income and the exchange rate appreciation led to deterioration of the current account. These effects were consistent with the predictions of boom-bust cycle models.

Patnaik and Shah (2009) examined structural change in the Chinese and Indian de facto exchange rate regimes, focusing on the period from 1998 to 2007. China and India had both sought control over the exchange rate in order to maintain export competitiveness, manage current account balance, and pursue independent monetary policy. With increasing capital account openness, exchange rate inflexibility had been associated with significant monetary policy distortions. In both countries, the short-term rate expressed in real terms dropped and achieved very low values, in the unprecedented business cycle expansion of the early 2000s. In the Indian case, difficulties of sterilisation led to a modification of the exchange rate regime, moving towards greater flexibility. In China, in contrast, the exchange rate regime did not change.

II.3. Different Capital Flows and the Real Exchange Rate

Studies have tried to assess the impact of certain types of capital flows on the REER as a measure of competitiveness. Some of them distinguish FDI from other capital flows, some have focused on specific foreign exchange flows, such as aid and remittances, and some have interacted capital flows with economic policy variables. Other flows, such as portfolio investments, other investments, and income, have witnessed very limited or no attention.

Theoretically, one can argue that the impact of capital flows on REER depends on the types of expenditure each flow is tied to. While an *a priori* assumption could be that capital flows could lead to REER appreciation; this might actually not be the case if the flows are tied to particular spending in certain countries. The review of the literature reveal several cases in which the impact of different types of capital flows on REER is contradictory.

In one hand, if FDI are used to import new machines and equipment, they might have limited or no effect on REER. On the other hand, if FDI flows are biased towards tradable goods, they might tend to depreciate the REER. Athukorala and Rajapatirana (2003), in a study on the impact of FDI versus other flows, applied to countries in Latin America and South and East Asia and established that non-FDI capital flows led to real exchange rate appreciation (to a far greater degree in Latin America than in East Asia). Lartey (2007) and Elbadawi and Soto (1994) found opposite results on Sub-Saharan Africa and Chile, respectively, where FDI was found to cause REER to appreciate.

Elbadawi and Soto (1994 and 1997) were among the few who studied the impact of portfolio investment and other investments (debt) flows on REER. They disaggregated capital flows into four components: short-term capital flows, long-term capital flows, portfolio investment, and foreign direct investment. They found that short-term capital flows and portfolio investment had no, or only transitory, effect on the equilibrium real exchange rate in Chile, Cote d'Ivoire, Ghana, Mali, and Mexico, but long-term capital flows and foreign direct investment had a significant appreciating effect.

To our knowledge, the analysis of the relation between REER and income flows appearing in the current account had been negligible. Many developing countries, such as the GCC and China, are accumulating reserves and are creating large wealth funds to manage their accumulated surpluses. The return from these wealth-funds' investments abroad appears in the income account of the balance of payments. As current account surpluses in these countries increase, wealth-fund investments grow and the income flows rise. The impact of this rise in income on the REER depended on whether these revenues were tied to local or foreign goods consumption and on how such flows would affect the price of non-tradables. The impact also depended on possible nominal exchange rate appreciation, which could be subject to the existing exchange rate regime and to the sterilisation of exchange rate interventions (in case of fixed regimes).

While the theoretical impact of remittances strongly points towards the appreciation of REER, the empirical results are sometimes contradictory too. In theory, an increase in remittances is equivalent to a (permanent) increase in households' income. If non-tradables are normal goods, this positive income shock would result in extra spending on both tradables and non-tradables. Since most developing countries are price-takers in international markets, a growing demand does not raise prices of tradables. However, since the prices of non-tradables are determined in the domestic economy, they increase owing to

additional demand, the so-called 'spending effect.' There is also a 'resource movement effect' that favours the more profitable non-tradable sector (because of the price increase) at the expense of tradable goods production. It could also be argued that rather than being altruistically motivated, remittances are driven by selfish motivations, including exploitation of investment opportunities. Another possible scenario is that profit-driven private capital flows that co-move with remittances represent the driving force behind the positive relationship between remittances and the real exchange rate (Lartey et al., 2008).

The pressure of remittances on the real exchange rate will be somewhat mitigated if (i) there are productivity gains, particularly in the non-tradable sector that offset the effects of the increasing demand; (ii) governments implement policies that aim at stimulating labour demand by reducing labour costs; and (iii) a large share of the remittances is channeled to the external sector via additional imports so that the price effect on non-tradable goods is limited. Yet, in principle, it seems difficult to justify that these effects are enough to mitigate appreciating pressures (López et al., 2007).

Several empirical papers confirm the presence of a large "spending effect" that causes a rise in relative prices of non-tradables and REER appreciation, producing a Dutch Disease effect. Amuedo-Dorantes and Pozo (2004) and Lopez et al. (2007) found the transfers of workers' remittances led to an appreciation of the REER in the Latin American countries. Lartey et al. (2008) showed that an increased level of remittances in developing countries could lead to REER appreciation. The study also found that the Dutch Disease effect was more acute in the presence of fixed exchange rate regimes. Applying the study to individual countries, Bourdet et al. (2006) on Cap Verde and White et al. (1992) also confirmed these results on Cape Verde and Sri Lanka, respectively.

On another interesting vein, Rajan and Subramanian (2005) established that remittances had no effects on external competitiveness. They argued that remittance flows were mainly directed towards unskilled-labour activities and the tradable sectors, such as manufacturing.

On aid flow, an analysis by Rajan and Subramanian (2005) concluded that aid flows had systematic adverse effects on a country's competitiveness, as reflected in a decline in the share of labour intensive and tradable industries in the manufacturing sector. Their evidence suggested that these effects stemmed from the real exchange rate overvaluation caused by aid flows. Also, in a multi-country setting with a panel study of 62 developing countries, Elbadawi (1999) established that a 10 per cent increase in aid flows contributed to a rise of 1 per

cent in the REER. Along the same line, Prati and Tressel (2006) found that foreign aid flows had a negative impact on exports of poor countries as implied by the Dutch Disease theory. Adenauer and Vagassky (1998) also found that aid contributed substantially to real exchange appreciation in the countries of the West African Economic and Monetary Union.

More recently, Arellano et al. (2009) established that higher aid flows were associated with a higher relative price of non-tradables and thus a real appreciation. In a study covering 73 aid-dependent countries, they explained that aid increased the availability of tradables relative to non-tradables, raising the equilibrium price of the latter. At the same time, it pushed up the returns to capital, the factor assumed to be used intensively in non-tradable production, thus increasing the relative cost of producing non-tradables. Yet, they also emphasised that no real appreciation would occur if the capital stock was freely interchangeable between sectors.

Several individual country studies corroborate the theoretical impact of aid. White and Wignaraja (1992) concluded that aid flows had caused REER appreciation in Sri-Lanka. Opoku-Afary et al. (2004) examined the case of Ghana using vector autoregression (VAR) econometric modeling and established no short-run effect, but the impact of aid in the long run was strong and conducive to real exchange appreciation. Bourdet and Falck (2006) opined that aid flows in the Cape Verde Islands caused some REER appreciation with an elasticity of less than 10 per cent.

Gupta et al. (2005) demonstrated that the impact of aid flows on the REER depended on the uses of aid, its contents, and its assumed policy response. If foreign aid was spent on imports, there is no effect on the REER. However, if the aid receipts were sold by the government to the central bank, the impact on REER would depend on how much the central bank would sell of the aid-related foreign exchange in the domestic market, and on how much of this amount of local currency counterpart was spent domestically.

Adam and Bevan (2004) and Nkusu (2004) pointed out that the more elastic the supply responded, the smaller the real exchange appreciation needed, which emphasised the mitigating role of excess output capacity. Atingi-Ego (2005) confirmed the above argument in finding that excess capacity in the non-traded sector of some African countries limited the potential of price increases stemming from aid flows. Additionally, Adam and Bevan (2004) demonstrated that the reaction of the REER to aid flows depended on the variation of the composition of aid expenditures.

IMF (2005) reported on an absence of appreciation of the exchange rate in five African countries, following the surge of aid flows. The study concluded that part of the reason that real appreciation (and consequently, the Dutch disease) was not observed in those cases was precisely because authorities were concerned with competitiveness and restricted aid absorption accordingly.

For a large sample of developing countries, Kang et al. (2007) established that aid flows had a negative effect on exports linked to REER overvaluation for half the sample and a positive impact on growth and exports for the other half of the sample. Fielding (2007) also reached the same mixed results when using a conditional VAR for ten Pacific economies. Elbadawi et al. (2008), using a behavioural real exchange model on a sample of 83 countries between 1970 and 2004, found that although post-conflict countries received larger aid flows, they exhibited moderate REER overvaluation.

Both Falck (1997) and Nyomi (1998) examined the impact of aid flows on the REER in Tanzania. While Falck's used ordinary least squares (OLS) estimation and established a real exchange appreciation, Nyomi's employed error correction model and found that foreign aid generates depreciation in the REER.

The literature review on our three research questions led us to conclude that there is no consensus on the causal relationships between capital flows and growth directly or between capital flows and growth indirectly through competitiveness. Thus, we found that we could add value to the existing knowledge by carrying out an empirical analysis of those relationships based on the methodologies and data samples described in Section 111.

III. Econometric Methodology

This Section empirically, our aim is to investigate the effect of capital flows on economic growth and competitiveness (real effective exchange rate) using a panel data techniques.

III.1 Data and Issues

The first two sets of tests are carried out on a panel comprised of the countries in the MENA region for a period from 1984 to 2008. The last set of tests covers a much broader geographical area with 57 developing countries from Africa, Asia, Latin America, Central and Eastern Europe, the Middle East and the Gulf Cooperation Council over the period 1980-2007.

For the capital openness-growth nexus, Quinn et al. (2008) argued that measurement error in capital account openness indicators, joined with clustering

and collinearity among other independent variables, could lead to inconsistent results, and might contribute to inflated standard errors and biased coefficient estimates. Consequently, we employ alternative indicators of capital account liberalisation. The separate use of two indicators represents an effort to assess the robustness of the results.

A fundamental problem is the choice of indicators that allow for a better characterization of the degree of openness of the capital account. The most popular source data on this subject is the IMF Annual Report on Exchange Arrangement and Exchange Restriction (AREAR). Most authors use a binary variable, IMFB, on the existence /absence of restrictions on the capital account taken from the AREAR data⁷.

The problems with using the IMFB indicator are well known, since there are a variety of ways and grades in which the capital account can be restricted. Besides, because of data limitation, we consider alternative continuous indicators of the capital account openness that include other components of external policies for which data is available in the AREAR database. The first indicator was developed by Chinn and Ito (2006). They created a measure known as KAOPEN based on principal component analysis of three financial current binary indicators in AREAR: multiple exchange rates, current account, and surrender of exports proceeds; and the five-year average of the IMFB (called SHARE, as also in Klein (2003)). This index was available for 181 developed and developing countries for the period 1970-2005. It ranged from -2 in case of most controlled to 2.5 in case of most liberalised. Data for FDI are taken from the IMF's Balance of Payments Statistics database.

III.2 Capital Account Liberalisation and Economic Growth

To assess the relationship between capital account liberalisation and economic growth in a dynamic panel, the study employed the System GMM estimator proposed by Arellano and Bover (1995) and Blundell and Bond (1998). The basic regression takes the form:

$$GROWTH_{it} = \alpha_i + \beta CAL_{it} + \gamma X_{it} + \mu_{it} \quad (1)$$

where:

- GROWTH was our dependent variable, which equals real per capita GDP growth.
- Capital account liberalisation was proxied by IMFB and KAOPEN;

⁷ For a recent survey about the limitations in measurement of capital account openness, see Quinn et al. (2008).

- X represented a matrix of control variables to assess the relationship between economic growth and capital account liberalisation. Other potential growth determinants such as economic, financial, institutional and policy environments were controlled for;
- Initial income (RGDPG) equals the logarithm of real per capita GDP in the initial year of the period under consideration;
- As indicator of financial intermediary, we considered CPS, which equals the logarithm of credit to the private sector by deposit money banks and other financial institutions, as a share of GDP. The second indicator of financial intermediary, LIQ, measured the amount of liquid liabilities of the financial system, including liabilities of banks, central banks and other financial intermediaries.
- Macroeconomic stability was proxied with inflation, which equals the growth rate of consumer price index (INF);
- Trade Openness: The trade openness (TO) is proxied by the share of exports and imports to GDP.
- Government Consumption (GC) variable was collected from the WDI and equal to government wages bills and supplies and services; and
- Data on institutional development (INST) was assembled by the International Country Risk Guide, published by the PRS group. Following Knack and Keefer (1995), three PRS indicators were used to measure the overall institutional environment, namely (i) corruption, (ii) rule of law, and (iii) bureaucratic quality.

III.3 Capital Account Liberalisation and Real Exchange Rate

We examine the impact of capital account liberalisation on competitiveness (measured by the Real Effective Exchange Rate).

First, we define the Real Exchange Rate (RER) as: $\frac{P}{EP^*}$, where:

- P= Domestic price index, expressed by the consumer price index (as it has an important weight of non-exchangeable goods);
- P* = Foreign price index, expressed by the consumer price index of the U.S. (as it has an important weight of exchangeable goods); and
- E= Nominal exchange rate, defined as the average price of dollar in local currency. An increase (decrease) of the RER means a real appreciation (depreciation) of the relevant currency.

We use annual data to construct the real effective exchange rate index for country *i* at period *t*, $TCREFit$, as the nominal exchange rate index multiplied by the relative price of the rest of the world (in U.S. dollars) to the domestic price index,

$$TCRF_{i,t} = \frac{\frac{P_{it}}{P_{i0}}}{\left[\frac{E_{it}}{E_{i0}} \right] \prod_{k=1}^n \left[\frac{P_{kt}^* E_{k0}}{P_{k0}^* E_{kt}} \right]^{w_k}} \quad (2)$$

- E_{it} and P_{it} are nominal exchange rate and consumer price index, respectively, of the country i , in period t ;
- E_{kt} and P_{kt} are nominal exchange rate and consumer price index, respectively, of k - commercial partners, in period t ;
- Price level at time 0 represents the base period of our index numbers; and
- w_k , the weights, are computed as the ratio of the bilateral trade flows of country i to the trade-flows of its main commercial partners.

Explanatory Variables:

- The logarithm of real GDP per capita (RGDPG);
- The logarithm of government consumption (GC);
- The trade openness (TO) as the ratio of total imports and exports on the total domestic expenditure;
- Capital Account Liberalisation (CAL) described above;
- Financial Development Index: LIQ as described above; and
- Currency Crises is a dummy variable equal 1 in time of currency or bank crisis and 0 otherwise (BANKCURR).

Our baseline model has the following specification:

$$y = \alpha_{it} + \beta X_{it} + \gamma CAL_{it} + \delta Z_{it} + \varepsilon_t \quad (3)$$

Where y represents the REER; X_{it} is the vector of control variables; CAL_{it} represents the measures of capital account liberalisation, while Z_{it} represents the matrix of control variables.

III.4 Different Capital Flows and Real Exchange Rate

The linear dynamic panel data equation is specified as follows:

$$LREER_{it} = \alpha + \gamma LREER_{it-1} + \beta FECFLOWS_{it} + \phi X_{it} + \eta_i + \varepsilon_{it} \quad (4)$$

where LREER is the log of the real effective exchange rate of country i in period t , FECFLOWS_{it} is a vector of foreign exchange and capital flows, X_{it} is a vector of contemporaneous control variables, η_i denotes a full set of country effects and ε_{it} is the classic error term, i refers to the country and t refers to time.

The alternative specifications use the following variables instead for FECFLOWS:

- NKF = Net Capital Flows = Balance of goods and services [- (Exports - Imports) / GDP] -
Change in Gross international reserves (including gold) / GDP

- FDI = Foreign Direct investments / GDP
- PORT = Portfolio investments / GDP
- DEBT = Other Investments (from Financial Account) / GDP
- INCOME = Income (from Current Account) / GDP
- AID = Official unrequited transfers (from Current Account) / GDP
- REMIT = Other unrequited transfers (from Current Account) / GDP

The control variables are defined as follows:

- GCON = Public Consumption Expenditure / GDP
- NGDP = Nominal GDP per Capita
- TOT = Price of Exports to Price of Imports (Index 2000=1)
- OPEN = (Imports + Exports) / GDP
- Alternative OPEN = Imports / GDP

III.5 Econometric Framework

The study employed Dynamic Panel System GMM estimator proposed by Arellano and Bover (1995) and Blundell and Bond (1998). The traditional dynamic panel data model is specified as follows:

$$y_{i,t} = \alpha y_{i,t-1} + X_{it}'\beta + \mathcal{G}_i + \varepsilon_{it} \quad (5)$$

where y is the endogenous variable, X represents the set of explanatory variables, other than lagged endogenous variable and including indicators of stock market and bank development, ν is an unobserved country-specific effect, ε is the error term, and the subscripts i and t represent the country and time period, respectively.

Arellano and Bond (1991) proposed to difference equation (5), obtaining:

$$y_{i,t} - y_{i,t-1} = \alpha (y_{i,t-1} - y_{i,t-2}) + (X_{it}' - X_{i,t-1}')\beta + \varepsilon_{it} - \varepsilon_{i,t-1} \quad (6)$$

While differencing eliminates the country-specific effect, it introduced a new bias. By construction, the new error term $\varepsilon_{it} - \varepsilon_{i,t-1}$ was correlated with the lagged dependent variable, $y_{i,t-1} - y_{i,t-2}$. Under the assumptions that (a) the error term, ε , was not serially correlated, and (b) the explanatory variables, X , were weakly exogenous (i.e., the explanatory variables are assumed to be uncorrelated with future realizations of the error term), Arellano and Bond (1991) proposed the following moment conditions.

$$E[y_{i,t-s}(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \quad \text{For } s \geq 2; t = 3, \dots, T \quad (7)$$

$$E[X_{i,t-s}(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \quad \text{For } s \geq 2; t = 3, \dots, T \quad (8)$$

Using conditions (7) and (8), Arellano and Bond (1991) proposed a two-step GMM estimator, commonly called difference GMM. Although asymptotically consistent, Monte Carlo simulations suggested that the difference GMM estimator displayed large finite sample biases and very low precision in the estimation of the autoregressive parameter, especially when it was close to unity (Blundell and Bond, 1998; Alonso-Borrego and Arellano, 1999).

Blundell and Bond (1998) addressed these shortcomings of the difference GMM estimator by introducing a new estimator called system GMM, which was used in this study.

The estimator combined, within a system, the regression in differences (6) and the regression in levels (5), each with its specific set of instruments. For the equation in levels, the country-specific effect was not eliminated but must be controlled for with the use of instrumental variables. The instruments for the regression in differences remained as described above (i.e. lagged endogenous and exogenous variables previous or equal to $t-2$). For the regression in levels, the instruments were the lagged differences of the endogenous and exogenous variables. For these exogenous variables to be considered appropriate instruments, Blundell and Bond (1998) and Arellano and Bover (1995) set the following additional moment conditions:

$$E[(y_{i,t-s} - y_{i,t-s-1})(\vartheta_i - \varepsilon_{i,t})] = 0 \quad \text{for } s = 1 \quad (9)$$

$$E[(X_{i,t-s} - X_{i,t-s-1})(\vartheta_i - \varepsilon_{i,t})] = 0 \quad \text{for } s = 1 \quad (10)$$

Thus, we used the moment conditions presented in equations (III)–(VI) and employed the system panel estimator to generate consistent and efficient parameter estimates.

The consistency of the GMM estimator depended on the validity of the assumption that the error terms do not exhibit serial correlation and on the validity of the instruments. To address these issues we used two specification tests suggested by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998). The first was the Sargan test of over-identifying restrictions, which tested the overall validity of the instruments by analysing the sample analogue of the moment conditions used in the estimation process. The second test examined the hypothesis that the error term ε_{it} was not serially correlated. We tested whether the differenced error term was second-order serially correlated (by construction, the differenced error term is probably first-order serially correlated even if the original error term is not). Failure to reject the null hypotheses of both tests gave support to our model.

IV. Empirical Results

In this section, the results of three empirical tests using panel data techniques were presented.

IV.1 Capital Account Liberalisation

All the econometric results reported the Arellano-Bond test for serial correlation. The values of the test of second order correlation presented no evidence of model misspecification, accepting the null hypothesis of serial correlation in the first-differenced errors of order 2. Besides, system GMM estimators were consistent only if the moment conditions used are valid. Although there was no method to test if the moment conditions were valid, we could test whether the over-identifying moment conditions were valid by implementing the Sargan test (Arellano and Bond, 1991). Table 1 presented strong evidence that the over-identifying restrictions were valid, which confirmed the validity of the instruments, at 5% level of significance.

The finding showed that both measures for capital account liberalisation had a significant positive impact on growth, while banking crisis had a significant negative impact. These results indicate that in the MENA countries, capital account liberalisation strongly contributed to enhancing growth, which was in line with previous research such as Honig (2008) and Quinn et al. (2008). This positive impact could be explained by the fact that the majority of the MENA countries adopted partial capital account liberalisation as explained by Ben Gamra (2009).

While trade openness also had the expected positive impact, both inflation and liquidity had no significant impact on growth. Government consumption had a negative impact on growth, which might be due to its bias towards non-tradable goods. Another explanation could be that government consumption required financing that might lead to the crowding-out of private sector investments. Banking and currency crises also had the expected negative impact on growth in the specifications.

In both equations, all variables kept the same level of significance and almost the same coefficient except the two measures of capital account liberalisation, where the IMFB coefficient showed a stronger positive impact on growth.

From the above results it could be concluded that capital account liberalisation had a positive impact on growth⁸.

⁸ At least in the MENA region.

Table 1: Capital Openness and Economic Growth (System GMM).

Variables	(1)	(2)	(3)
RGDPG(-1)	-0.108***	-0.124**	-0.139**
KAOPEN	0.00578***	0.00533***	
IMFB			0.0184***
BANKCURR	-0.0157**	-0.0243***	-0.0236***
TRADE	0.0190***	0.0177***	0.0176***
INF	0.0164	-0.0251	-0.0416
GC	-0.065***	-0.0739***	-0.0745***
CPS	-0.0025		
LIQ		-0.0142*	-0.0119
Constant	-0.0964**	-0.0423	-0.0620
AR(1) Test	Z1= -2.79 p= 0.05	Z1= -7.9 p= 0.01	Z1=-6.21 p= 0.00
AR(2) Test	Z2=1.17 p=0.24	Z2=1.5 p=0.24	Z2= 1.25 p=0.21
Sargan Test	Chi ² = 9.49p=1	Chi ² = 168.4 p=0.46	Chi ² =129.4

*, **, *** estimated coefficients are respectively significant at 10%, 5% and 1%.

IV.2 Capital Liberalisation and Competitiveness

A number of proxies were used to express competitiveness in the economic literature. This paper used the most recurrent indicator - the real effective exchange rate (REER).

Table 2: Capital Openness and Competitiveness System GMM.

Variables	(1)	(2)
REER(-1)	0.842***(0.045)	0.859*** (0.044)
KAOPEN	0.0321**(0.0148)	
CURRCRISIS	-0.114***(0.029)	-0.132***(0.030)
TRADE	-0.176***(0.056)	-0.138**(0.056)
GC	-0.171**(0.071)	-0.149**(0.074)
GDP	0.132**(0.061)	0.126*(0.077)
LIQ	0.166(0.113)	0.114(0.108)
Constant	-0.569(0.652)	-0.628(0.777)
AR(1) Test	Z ₁ = -4.93 p= 0.00 Z ₂ =-0.51 p=.0.62	Z ₁ = -5.01p= 0.00 Z ₂ =-0.45p=0.66
AR(2)Test Sargan/Hans	Chi ² = 13.3 p=0.21	Chi ² =13.3p=0.35

*, **, *** estimated coefficients are respectively significant at 10%, 5% and 1%.

Table 2 included two equations where the two measures of capital account openness - KAOPEN and IMFB - were included alternatively with the same set of control variables that would theoretically affect competitiveness. These variables included macroeconomic indicators such as trade openness, income, government consumption, liquidity, and a variable, capturing the impact of currency crisis.

Both measures for capital account liberalisation had the expected significant positive impact on competitiveness, which is in line with the Dutch Disease phenomenon and the findings of previous research (see Bakardzhieva et. al, 2010, for a deep analysis of capital flows on competitiveness).

Liquidity seemed to have no significant impact on competitiveness, while currency crisis led to the depreciation of REER and enhanced competitiveness. This is expected as currency crisis usually were characterised by the depreciation of national currency, which in turn depreciated the REER. Both the trade

openness and government consumption had a negative impact on the REER. The negative impact of trade openness joined the general wisdom that trade liberalisation tended to depreciate the REER (Dornbusch, 1974; Edwards, 1994; Khan and Ostry, 1992; Williamson, 1994). The negative impact of government consumption on REER could be due to the fact that in non-industrialised countries, like the ones under investigation in this research, increases in public wages might come from public spending, and government consumption could indirectly depreciate the real exchange rate if the rise in private spending, to the higher wages, fell stronger on tradable than non-tradable goods. Also, an increase in government spending would deteriorate the fiscal balance and is, therefore, liable to put downward pressure on the exchange rate (for a summary of similar findings see Kim and Roubini, 2008, and Kim, 2010).

Finally, income (GDP) had positive impact on REER, harming competitiveness. An increase in income might lead to an increase in consumption, which seemed to be biased toward non-tradable goods and services, leading to REER appreciation.

In both equations, all variables kept the same level of significance except GDP that was only marginally significant in the specification using the IMFB. All variables had almost the same coefficient except the two measures of capital account liberalisation, where the IMFB's coefficient, just like that of GDP growth, showed a strong impact on the appreciation of the REER.

IV.3 Different Capital Flows and Competitiveness

Table 3 reported the results of estimation of equation (4) across various estimators. Columns (1) and (2) showed the results of Within Groups and Pooled OLS estimators, respectively. Column (3) reported results based on system GMM estimates using NKF without the CRISIS variable. Column (4) provided results on system GMM with the CRISIS variable. Column (5) reports results based on system GMM with the different types of flows, including CRISIS.

Table 3: GMM-in System Estimates of the Impact of Capital Flows on REER

Estimator	Pooled OLS	Within Group	Sys1-GMM	Sys2-GMM	Sys3-GMM
Regressors	(1)	(2)	(3)	(4)	(5)
Constant	0.385*** (0.089)	0.719*** (0.114)	0.569 (0.458)	0.104 (0.390)	1.055*** (0.306)
REER(-1)	0.903*** (0.009)	0.855*** (0.012)	0.791*** (0.048)	0.863*** (0.021)	0.870*** (0.023)
LNGDP	0.010*** (0.004)	0.099*** (0.011)	0.132*** (0.031)	0.091*** (0.021)	0.095*** (0.023)
LTOT	0.014 (0.015)	0.005 (0.019)	0.157** (0.075)	0.177*** (0.075)	-0.047 (0.086)
LGCON	-0.011 (0.011)	-0.011 (0.019)	0.157** (0.075)	-0.072* (0.037)	-0.057* (0.035)
LOPEN	0.002 (0.005)	-0.035*** (0.013)	-0.053 (0.035)	-0.048** (0.024)	-0.044* (0.024)-
CRISIS	-0.145*** (0.018)	-0.124*** (0.018)		-0.376*** (0.095)	0.386*** (0.088)
NKF	0.001** (0.000)	0.002** (0.000)	0.006*** (0.002)	0.004*** (0.001)	
FDI					0.001 (0.002)
DEBT					0.001* (0.001)
PORT					0.004*** (0.001)
INCOME					-0.002 (0.002)
AID					0.002 (0.002)
REMIT					0.009*** (0.004)
R ² Adjusted	0.8736				
R ² Within		0.8220			
R ² Between		0.7460			
R ² Overall		0.7975			
m1 (p-value)			0.002	0.010	0.009
m2 (p-value)			0.643	0.655	0.455
Hansen J test (p-value)			0.319	0.305	0.203
Diff.-in-Hansen (p-value)			0.826	0.418	0.822
Observations	1347		1347	1347	1313
Countries	57		57	57	57
Instruments			57	56	57

Notes: Dependent variable was the Real Effective Exchange Rate. Sys-GMM was the two system GMM estimation. Robust standard errors were reported in "()". The two step estimates were Windmeijer corrected. ***, ** and * referred to levels of significance of 1 percent, 5 percent and 10 percent, respectively. LNGDP was considered predetermined and LTOT endogenous. It was assumed that the other regressors were strictly exogenous. The values reported for the Hansen test were the p-values for the null hypothesis of instrument validity. The Diff Hansen reports the p-value for the validity of additional moment restriction required by the system GMM. The values reported for m1 and m2 are the p-values for first and second order autocorrelation disturbances in the first differences equations.

The results were revealing. The estimated coefficients on lagged dependent variable lied between the two bounds and were positive and significant (close to 1), suggesting the high persistency of real exchange rate and hence, the use of a dynamic specification. The specification tests for the three versions of System-GMM indicated that one could reject the null that the error term in first differences exhibited no second-order serial correlation. The null hypothesis of Hansen J could not be rejected in the three estimations, confirming that the instruments used were not correlated with the errors. The Diff.-in-Hansen test for the validity of the additional instruments required by the System-GMM applied to the three versions of the estimation (a coefficient close to, though lower than, one and the results from the differenced Hansen test gave a support to the implementation of the System-GMM methodology).

The results showed that NKF had a positive impact on REER, which means that an increase in NKF will lead to the appreciation of REER and to a loss of competitiveness, confirming the expected Dutch Disease phenomena. The increase in the terms of trade and income also led to the appreciation of the REER, while the increase in openness and government consumption tended to depreciate REER; enhancing competitiveness. The results of the control variables were in line with the literature on REER determinants.

The second regression specification replaced NKF with the different types of flows, namely FDI, portfolio investments, debt, income, aid, and remittances. The results reported in column (2) of Table 3, emphasised that all capital flows except FDI had a significant positive impact on the REER. The coefficients of debt, portfolio investments, income, aid, and remittances were consistent with the coefficient of NKF reported in column (1).

The fact that FDI had no significant impact on the REER confirmed the intuition that while this type of flow might lead to REER appreciation in the short run when the economy received the flows, its impact was diluted over time as part of the flows could start to leave the country in the form of imports of machinery and other capital goods. Also, the increase in production induced by FDI could lead to downward pressure on prices and to REER depreciation. These results were in line with the findings of Athukorala and Rajapatirana (2003).

Table 4 reported the results of the regression estimations using the System-GMM that examined the impact on REER across the six regions of: (i) the aggregated NKF (column 1); and (ii) each type of capital flows (columns 2 to 7). To assess these relations, we created interaction variables between each capital and foreign exchange flow and each of the six regions. The aim was to identify for

each region how each of the flows affected the behaviour of the REER. In each regression specification (2 to 7), we included the interaction variable between each region and the flow we study, the control variables, and all the other flows aggregated.

For portfolio flows (PORT) in column 4 of Table 4, we included an interaction dummy between each region and portfolio investments, taking the value of 1 for each group of countries and 0 for all other countries. Then, we included the previous control variables, and NKF minus PORT to control for the impact of the other capital flows (aggregated) on the REER.

The autocorrelation tests of second orders $m2$ validated the hypothesis of nonautocorrelation of the error terms. The Hansen J statistic indicated that the null hypothesis of non non-linear correlation between the set of instruments and the error terms could not be rejected in any case. The Diff.-in-Hansen null hypothesis, which validated the additional restrictions required by the System-GMM, was not rejected in any of the estimations either.

The results in column 1 of Table 4 confirmed that NKF had a positive and significant impact on REER in all regions, except the CEEC where they suggested no harm on competitiveness. The case of the CEEC is particularly interesting as NKF not only had no significant impact on REER, but it also had a negative sign. The explanation could be that these countries had been receiving massive FDI flows compared with other capital flows, which, as shown earlier, had no effect on the REER appreciation in the long-run. This was another confirmation that FDI did not harm competitiveness. It also revealed that if FDI was large enough in comparison with other capital and foreign exchange flows, it could counter their negative effect on competitiveness.

When analysing the impact of the different types of capital flows on REER in each region using the interaction variables, the results revealed a relatively similar impact across regions, leading to REER appreciation (with a varying magnitude). FDI was the only exception as it seemed to have a non-significant (yet negative) effect on REER in almost all regions.

Table 4: GMM System Estimates of the Impact of Capital Flows on REER by Region⁹

	(NKF)	(FDI)	(DEBT)	(PORT)	(INCOME)	(AID)	(REMIT)
Constant	-0.915 (0.572)	0.104 (0.451)	0.055 (0.451)	0.032 (0.492)	-0.099 (0.492)	-0.033 (0.492)	-0.052 (0.532)
REER(-1)	0.866*** (0.056)	0.879*** (0.055)	0.867*** (0.057)	0.886*** (0.057)	0.872*** (0.055)	0.884*** (0.053)	0.894*** (0.058)
LNGDP	0.099*** (0.030)	0.097*** (0.024)	0.100*** (0.026)	0.092*** (0.024)	0.071*** (0.023)	0.082*** (0.027)	0.090*** (0.025)
LTOT	0.219** (0.099)	0.175** (0.086)	0.211*** (0.074)	0.175* (0.096)	0.204*** (0.098)	0.182** (0.091)	0.160 (0.109)
LGCON	-0.063 (0.046)	-0.086** (0.043)	-0.069* (0.041)	-0.076* (0.042)	-0.046* (0.032)	-0.067* (0.037)	-0.029 (0.034)
LOPEN	-0.058* (0.032)	-0.053** (0.025)	-0.057** (0.029)	-0.051** (0.023)	-0.094** (0.021)	-0.046** (0.023)	-0.044* (0.026)
CRISIS	-0.398*** (0.100)	-0.384*** (0.092)	-0.374*** (0.110)	-0.390*** (0.094)	-0.392*** (0.089)	-0.404*** (0.093)	-0.418*** (0.098)
NKF or Flow - MENA	0.004* (0.002)	0.002 (0.003)	0.005* (0.003)	-0.005* (0.005)	0.007*** (0.007)	0.009 (0.008)	-0.001 (0.003)
NKF or Flow - GCC	0.005 (0.005)	0.003 (0.003)	0.002 (0.006)	0.011* (0.006)	0.015** (0.007)	0.005 (0.008)	0.016** (0.006)
NKF or Flow - L.A.	0.004* (0.002)	(0.011) (0.006)	0.005 (0.004)	0.011* (0.006)	0.002 (0.005)	0.053 (0.045)	(0.017) (0.006)
NKF or Flow - ASIA	-0.001 (0.002)	(0.003) (0.003)	-0.002 (0.002)	0.002 (0.003)	0.003 (0.007)	0.057*** (0.018)	(0.006) (-0.025**)
NKF or Flow - CEEC	0.008** (0.003)	(0.003) (0.005)	0.006*** (0.002)	0.009** (0.005)	-0.002 (0.002)	0.009* (0.005)	(0.011) (0.013)
NKF or Flow - AFRICA	0.009 (0.696 0.281)	0.009 (0.636)	0.010 (0.684 0.239)	0.009 (0.652 0.269)	0.010 (0.695 0.243)	0.010 (0.655 0.198)	0.010 (0.664)
Other-K. flows	0.676 1347	0.323 0.892	0.829 1347	0.789 1347	0.728 1347	0.611 1308	0.216 0.883
m1 (p-value)	57	1347	57	57	57	57	1308
m2 (p-value)	57	57	56	56	56	56	57
Hansen J test (p-value)		57					56
Diff.-in-Hansen (p-value)							
Observations							
Countries							
Instruments							

⁹ This table presented the results of GMM system estimation for a sample of 57 countries over the period from 1980 to 2007. The dependent variable was the Log Real Effective Exchange Rate. Seven specifications were estimated: one assessing the aggregated impact of NKF on REER in each region (column 2) and the others assessing the impact of each type of capital flow in interaction with each region. Sys-GMM was the two system GMM estimation. Robust standard errors were reported in "()". The two step estimates were Windmeijer corrected. ***, ** and * referred to levels of significance of 1 percent, 5 percent and 10 percent, respectively. LNGDP is considered predetermined and LTOT endogeneous. It was assumed that the other regressors were strictly exogenous. The values reported for the Hansen test were the p-values for the null hypothesis of instrument validity. The Diff Hansen reported the p-value for the validity of additional moment restriction required by the system GMM. The values reported for m1 and m2 were the p-values for first and second order autocorrelation disturbances in the first differences equations.

The impact of FDI on REER (column 2) is negative and non-significant in the Latin America, South and East Asia, the CEEC, and the MENA, and non-significant with a positive sign in the GCC. These results confirmed that FDI did not lead to an appreciation of the REER; rather it led to depreciation and an improvement of competitiveness (Athukorala and Rajapatirana, 2003). Only Africa was showing a significant positive impact of FDI on the REER¹⁰, leading to a loss of competitiveness, which corroborated the findings of Lartey (2007).

Debt had a significant positive impact with similar coefficients in all regions except for the CEEC where the coefficient was again negative and non-significant. The results for the CEEC were consistent with those for the overall impact of NKF on REER and with those for the impact of FDI. An explanation could be that DEBT was oriented toward financing productive investments that had a similar impact as that of FDI, requiring importing machinery and intermediate goods, leading to an outflow of the capital received. It is worth noting that the CEEC DEBT flows had been steadily increasing and were the closest to FDI in size. The results of the regression including portfolio investments (column 4 of Table 2) showed a positive and significant impact of portfolio investments on the REER in South and East Asia, the Latin America, the GCC, and the CEEC¹¹. Portfolio investments had no significant impact in Africa, perhaps due to the relatively low portfolio investments in this region.

In South and East Asia and the Latin America, capital markets were more developed compared with the other regions, and they attracted international investors willing to diversify their portfolios. The result was mainly a capital inflow that might not necessarily be translated into an increase of production or of imports of machinery and intermediate goods. In addition, these two regions witnessed capital outflows, accompanied or followed by massive nominal exchange rate depreciation, leading to REER depreciation. Therefore, portfolio flows would most probably have a positive relation with the REER.

Surprisingly, the impact of portfolio investments was significant but negative in the MENA countries. This might be because the MENA capital markets were underdeveloped and that most of the portfolio investments to the region were driven by the privatisation of public enterprises. Portfolio investment flows were used to modernise the privatised firms through buying new imported machinery, increasing production, and importing intermediate goods. This behaviour was

¹⁰ According to Saborowski (2009) this result could possibly be due to the lack of financial sector development.

¹¹ At the 10 percent significance level for the CEECs.

The results for income showed no impact on the REER in all regions except the Latin America and MENA. Income flows consisted mainly of the net revenue on investments abroad (both direct and portfolio) and interest paid on public debt. In the cases of Africa, the CEEC, and South and East Asia, the income outflows were relatively low, which explained their non-significance. In Latin America and the MENA, it was the decline in interest payments and consequently in capital outflows that contributed to the appreciation of the REER, consistent with the overall impact of NKF.

The impact of aid was positive and significant in the CEEC, the GCC, South and East Asia, and Africa. Its impact was not significant in the MENA and the Latin America, which could be explained if aid was spent on imports (Gupta et al., 2005) or if its absorption was very low and it was accumulated in reserves. In this case, there was no need for a real exchange rate appreciation to mediate a fall in net exports and thereby absorb the aid (IMF, 2005). Africa had been receiving massive aid flows and the literature had demonstrated that aid contributed to the appreciation of the REER in this region. The case of the GCC was less obvious as this region had seen mainly aid outflows to other countries. This might have played a role in depreciating the REER, consistent with the positive sign for the relation we had in the study.

Finally, remittances revealed disparate results. It was generally expected that an increase in remittance receipts would result in an appreciation of the economy's equilibrium real exchange rate (Chami et al, 2008). This expected positive and significant impact was obtained in the cases of the GCC, South and East Asia, and Africa, and a positive and non-significant impact in the MENA. Yet the results pointed to a negative and non-significant impact in the Latin America, and negative and significant impact in the CEEC. These diverging results reflected that remittances could have different impacts, depending on their nature and magnitude. As suggested by Rajan and Subramanian (2005) a non-significant impact could result from remittances being directed mainly towards unskilled-labour activities and tradable sectors. A deeper analysis of the particular impact of remittances on REER across regions could elucidate how the nature and size of the remittances could affect competitiveness differently.

V. Conclusion

The analysis of results confirmed that capital flows could contribute to growth directly. The study showed that the suspected indirect positive effects were also present, materializing namely through the competitiveness channel. This was in line with the Dutch Disease phenomenon and the findings of previous studies. The results led to the important conclusion that the impact of capital and foreign exchange flows on

competitiveness depended not only on the type of inflow, but also on the type of inflow receiving country. While most of the results confirmed the findings of previous studies, the disparity of the results across regions called for further investigations. Several factors could explain this disparity: the shocks and crises that each region faced; the policies implemented by the different governments; the level of development of the economy and its institutions; and the degree of financial market sophistication among others.

When disaggregating the capital and foreign exchange flows into foreign direct investments, portfolio investments, debt, income, aid, and remittances, the paper found that, for the entire sample, income had the strongest impact on REER appreciation, followed by remittances, aid, portfolio investments, and debt. Here again, the results were in line with the literature on the determinants of competitiveness. Importantly, FDI was the only variable that had no significant impact on competitiveness.

The cross-regional comparison of the impact of each of these six flows on REER revealed disparate results. Portfolio investments, debt, aid, and income showed close results, pointing toward an appreciation of the REER, except for the case of the MENA where portfolio investments had a negative sign. The fact that the MENA capital markets were underdeveloped and that portfolio investments were encouraged by the privatisation of public enterprises could reveal a behaviour similar to that of FDI. Remittances reveal disparate results, probably owing to the diversity of their nature and size across regions.

The results for FDI were highly revealing as they clearly pointed towards no positive impact on REER appreciation in any region, except in Africa. These results could be very useful for policy makers in their aim to reconcile the dilemma of attracting capital and foreign exchange flows to finance current account deficits and enhance investments, while maintaining competitiveness to enhance exports and economic growth.

This is not to suggest though that FDI has to be encouraged by all means and at the expense of all other inflows. Some countries give FDI a huge subsidy compared with domestic investments. This might not be optimal as it skews investment towards particular types rather than being neutral with respect to policy reforms. Rather, we are of the opinion that if other flows seriously jeopardize competitiveness, the authorities could stimulate FDI to counterbalance these negative effects on the REER and even achieve improving competitiveness.

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