Does Foreign Capital Enhance Economic Growth In Emerging Countries: Flow Decomposition Approach?

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ABSTRACT

Unlike trade liberalization, the impact of financial openness on growth is still mitigated. In fact, empirical studies focusing on effects of capital account liberalization are inconclusive, which could be due to the sample chosen, to the liberalization index or to the fact that studies take account of capital inflows as a whole which can mask substantial differences between different flow effects.

Our purpose in this paper is on one hand to re-examine the impact of capital inflows on growth by dividing these inflows into portfolio equity flows, foreign direct investment flows and debt flows and on the other hand to study if the composition of capital inflows has an importance. This work will be done by estimating a standard growth model using dynamic panel data approach.

Our main findings are first, that total capital inflows improve economic growth and so does every kind of flow taken apart; which supports the neoclassical wisdom and second, that capital inflows composition isn't important; which indicates that all inflows are substitutes in the short term.

Keywords: Capital Inflows Composition; FDI; Portfolio Equity Investment; Debt Inflows; Economic Growth; GMM Estimator

1. INTRODUCTION:

By the end of the eighties, the liberalization of the capital account was an unavoidable consequence of economic growth and international trade expansion. It was even a condition of IMF membership, so, several emerging economies decided to open their capital account and to profit from foreign capital inflows supposed to be an important means to finance investment in addition to domestic saving.

These massive capital inflows that totaled 36 Billion dollars in 1991 and reached 315 Billion dollars in 2010 resulted in the second half of the nineties in tremendous crises which posed questions on the ability of these flows to stimulate growth and about their real profitability. The controversial question was whether emerging markets did well or not by opening their capital accounts.

In fact, liberal economists usually advance the positive externalities of foreign capital inflows in term of risk diversification and consumption smoothing (Obstfeld, 1994), in term of managerial and technological knowledge transfer (Grossman and Helpman, 1991) and in term of financial system deepening through greater competition in the banking system and higher liquidity in the equity market (Levine, 2001). However, other economists put the emphasis on the negative consequences such as financial crises (Krugman, 1979) driven by increase in volatility (Stiglitz, 2000) and systemic risk (Rodrik, 1998).

1 Authors own calculation based on IMF statistics with a sample of 38 emerging countries.
On the empirical side, (Quinn, 1997), (Klein and Olivei, 1999) and (Garcia and Santana, 2004) found a positive effect of financial integration on growth; (Edison and al. 2004), (Edwards, 2001) and (O'Donnell, 2001) found no effect, whereas (Reisen and Soto, 2001) and (Arteta and al.2001) found a mixed effect.

This diversity of conclusions could be due to the samples heterogeneity including both developing and developed countries, to the estimation methods employed and to the measure error in quantifying the degree of liberalization of an economy. Moreover, these various results might be explained by capital inflows composition.

This last affirmation is the root of our study which has as hypothesis that the composition of capital flows received by a country is an important determinant of whether the rise in capital flows is beneficial or detrimental.

We anticipate that equity inflows like direct investment and equity portfolio have a positive effect on growth while debt inflows such as bank loans and debt portfolio investment result in a negative effect on growth. We will try to verify this hypothesis through an econometric study where we will use a panel data analysis based on Blundel and Bond (1998) estimator to test a standard growth model. We will first estimate the effects of every kind of flow in percentage of GDP to evaluate the volume effect, then, we will estimate the share of every flow in total capital inflows to examine the composition effect.

Our results are a bit different from our assumptions. We find as anticipated that FDI is beneficial for growth but surprisingly that also debt inflows are good for growth while equity portfolio inflows have no effect. Otherwise we find that the composition of capital inflows is neutral for growth implying the substitutability of funds in the short term.

Our paper is organized as follows: the next section will be devoted to a literature and empirical studies review on the effects of every kind of capital on growth. The third section presents the empirical study and the last one will conclude.

2. CAPITAL INFLOWS COMPOSITION AND GROWTH:

Capital flows are very different, in fact, they don’t flow into the country for the same reasons and in the same way; that’s why we suppose that they will have different effects on growth. So, we need to examine the link between every kind of capital and economic growth.

2.1. FDI And Economic Growth

FDI is defined by the IMF as the purpose for a resident entity to obtain a lasting interest (10% of capital) in a resident entity in another economy and to influence its management decisions.

Neoclassic analysis explained that FDI doesn't influence the long term growth rate but only the level of income, for example an exogenous increase in FDI will increase the amount of per capita capital but only temporarily because decreasing returns will limit growth but recent theories of endogenous growth explain that FDI influences growth with variables like research and development, education and even if returns are decreasing, some externalities such as technology transfers, joint venture, licenses can give the necessary positive feedback to consolidate long term growth.

Findlay (1978) explains that FDI increases the rate of technical progress in host countries through the contagion effect. In fact, Roomer (1993) emphasised that foreign investment stimulates growth by the access to better technologies and Markusen and Venables (1999) showed that links with foreign suppliers reduce input costs, increase profits and boost domestic investment which results in a growth increase.

Boersensteins, E and al. (1998) concluded that major effects of FDI result from efficiency gains rather than from higher investment level and explained this gain by the fact that FDI facilitates the transfer and diffusion of managerial and technological know how and ameliorates workers skills thanks to the « learning by doing ». In
addition to these advantages, Feldstein, Razin and Sadka (2000) added that FDI enriches the government with taxes on FDI income.

Sarno and Taylor (1999) vaunt FDI inflows because of their resilience in crisis time so they allow the country to have a steady level of consumption and consequently to support the growth rate in such periods.

Alternatively to these studies, some authors restrict the positive influence of FDI on growth to the existence of some initial conditions like the existence of sound institutions (Olofsdotter (1998)); a certain level of development of the financial market (Alfaro and al. (2003)) or a minimum level of human capital development and country absorption ability (Borensztein and al.(1998)).

To summarize, we can say that FDI direct effect on growth prospects concerns the supply of additional capital that permits to fill the gap between national saving and domestic investment and to allow a higher growth without a decrease of consumption. Besides, multinational firms encourage technical changes and learning directly through new technologies and skills transfer which induce a change in productivity, in industrial structure, in expenses on R and D and on exports composition. Indirect effect of FDI is about the positive influence on financial development through a more dynamic stock market and more stable financial system. In fact, they permit to increase foreign reserves, to reduce foreign debt and to finance current account deficit contributing in this way to create a virtuous circle by improving the foreign perception of the country solvency.

2.2. Equity Portfolio Investment And Growth

Equity portfolio investment designs investments made by a firm in equity securities of another country firm seeking capital gains and not necessarily a lasting interest.

The UNCTAD\(^2\) (1999) explained that equity portfolio investment can bring benefits through the increase of the liquidity of the domestic capital market and through the encouragement of financial intermediaries’ creation which will result in a sound financial infrastructure and will deepen financial intermediation. Moreover, FPI can drive better firm governance since foreign investors are demanding with regard to the information diffusion and transparency.

Jensen and Meckling (1976) explain that portfolio investment inflows by spurring stock market efficiency improve firm control, reduce monitoring cost and lessen investment impediments. In fact, an efficient stock market includes in the share price all the available information about the firm performance which results in a convergence between investor and manager interests hence reducing the monitoring costs and enhancing investment and growth.

Equity portfolio investment, by allowing risk sharing and offering diversification opportunities make investment on innovation possible which permits high growth achievements (King and Levine (1993)). Also, by insuring against liquidity risk, equity portfolio inflows permit investment in more productive but less liquid projects which will increase capital productivity (Greenwood and Jovanovic(1990)).

The increase of asset inflows gives immunity in case of interest changes and reduces the cost of funds through the decrease of the discount rate on future cash flows and the decrease of agency costs resulting from better governance (Stultz (1999a)).

Moreover, Equity portfolio investment inflows are more flexible relative to debts and can release the financial constraints of firms depending on bank loans thanks to the increase in bank balance sheet liquidity (Knill (2005)).

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\(^{2}\) United Nations Conference on Trade and Development
2.3. Debt Inflows And Growth

Debt inflows in our work include, trade credits, short and long term loans and debt securities. As explained by Petersen and Rajan (1996) trade credit is a way for firms unable to access to credit market to be financed through firms having better credit market access. Precisely, it is a sort of loan given by suppliers to their clients allowing them to buy now and to pay later which permits the production process continuity and so increases growth. This kind of credit is an alternative way of finance in countries with less developed financial markets (Fisman and Love (2002)).

De Haas and Van Lelyveld (2004) state that foreign credits can supplement low levels of domestic credit because foreign banks have higher activity level, greater capitalization and an internationally diversified portfolio that permit to foreign loans inflows to continue flowing into the domestic economy even in bad economic conditions.

Moreover, firms’ access to foreign bank credits creates a competition between foreign and domestic banks, and so could lead to a capital cost decrease through a spread fall and to a better banking system efficiency (Claessen and al. (2001)).

3. ECONOMETRIC STUDY:

3.1. The Model

In order to test the hypothesis that capital inflows have an effect on economic growth and that this effect differs with the nature of the capital inflow considered, we propose to decompose these flows and to add them to a set of controlling variables that proved to be relevant in the growth literature. We will use the dynamic panel data methodology to estimate a standard growth equation with a sample of 38 emerging market. The basic equation to test has this form:

\[ \Delta \ln GDP_{i,t} = \alpha \ln GDP_{i,t-1} + \beta_1 \text{ savings}_{i,t} + \beta_2 \text{ gov.exp}_{i,t} + \beta_3 \text{ pop.growth}_{i,t} + \beta_4 \text{ inflation}_{i,t} + \beta_5 \text{ scholarship}_{i,t} + \beta_6 F_{i,t} + \mu_i + \vartheta_{it}. \]

3.1.1. Variable Definition

- \( \Delta \ln GDP_{i,t} \): GDP growth between t-1 and t
- \( \ln GDP_{i,t-1} \): GDP per capita of the year t-1 at the Power Purchase Parity
- \( \text{savings}_{i,t} \): Gross domestic savings (%GDP)
- \( \text{gov.exp}_{i,t} \): General government final consumption expenditure (%GDP)
- \( \text{pop.growth}_{i,t} \): Population growth rate
- \( \text{inflation}_{i,t} \): Inflation, consumer prices(annual%)
- \( F_{i,t} \): Foreign capital inflows kind
- \( \text{scholarity}_{i,t} \): Secondary school enrollment(% gross)
- \( \text{fdi}_{i,t} \): Foreign direct investment inflows (%GDP)
- \( \text{ep}_{i,t} \): Equity portfolio investment inflows(%GDP)
- \( \text{debt}_{i,t} \): Debt inflows(%GDP)
- \( \text{fdic}_{i,t} \): Foreign direct investment inflows (%total capital inflows)
- \( \text{epc}_{i,t} \): Equity portfolio investment inflows(%total capital inflows)
- \( \text{debtc}_{i,t} \): Debt inflows(%total capital inflows)

We anticipate that the lagged per capita GDP will have a negative sign because of the catching up effect and for the domestic saving we wait for a positive sign. Secondary school enrollment rate which catches the level of human capital could be positively correlated with growth. Government expenses reduce growth due to distortions.

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3 Inflows variables are derived from IFS balance of payment statistics.
4 Controlling variables are derived from world Development Indicators.
5 Instead of using investment rate, here we will use its source of finance, we will introduce domestic saving and foreign saving (capital inflows).
induced by taxation so we think that it will have a negative sign, the effect of the inflation rate could have a positive or a negative sign as mentioned in the literature and the population growth rate will go in the opposite way compared to the per capita economic growth rate.

3.1.2. Sample

We decide to choose a sample of 38 countries considered as emerging by the Capital Market Consulting Group (CMCG).

Argentina, Bolivia, Brazil, Bulgaria, Chile, China, Colombia, Costa Rica, Croatia, Czech Republic, Dominican Republic, Ecuador, Egypt, El Salvador, Hungary, India, Indonesia, Jordan, Malaysia, Mexico, Morocco, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Romania, Russian Federation, Slovak Republic, South Africa, Thailand, Tunisia, Turkey, Ukraine, Uruguay, Uruguay, Venezuela, Vietnam.

3.2. Estimation Method

Our model can be written in this form:

$$Y_{it} = \alpha Y_{it-1} + \beta X_{it} + \omega_t + \mu_i + \vartheta_{it}$$

The panel estimation is a better method for capturing the relation between the dependent variable and the explanatory variable within a country; it allows to capture specific regional factors that affect the dependent variable, which are not captured by the explanatory variables, so it permits to reduce problems of the omitted variable bias.

However, the panel estimation can’t eliminate the simultaneity bias which appears when the explanatory variable is simultaneously determined with the dependent variable and this makes the latter correlated with the error term. In our model, a greater product growth could lead to an increase in the capital flow, causing this variable to lose its exogenous character in the model.

The standard manner to solve this problem is to make the estimation using the two-stage method, applying instrumental variables. This estimation doesn’t solve the problem of endogeneity which is a characteristic of economic growth models because of the conditioned convergence hypothesis. This problem occurs when a correlation between the term of error and the explanatory variable exists. Here, the problem exists with the introduction of the lagged dependent variable, which appears on both sides of the growth equation. So, the endogeneity problem can be set by using Generalized Method of Moments (GMM) in dynamic panel data which permit to control for specific individual effects and to overcome the endogeneity bias of variables.

The Arellano and Bond (1991) method permits to obtain a more efficient GMM estimator. Under the hypothesis that the explanatory variables $X$ are weakly exogenous and that error terms are not autocorrelated, these moment conditions proposed by Arellano and Bond are applied for the first difference equation.

$$\mathbb{E}(Y_{it-s}, (\vartheta_{it} - \vartheta_{it-1})) = 0 \text{ pour } s \geq 2, t = 3,...,T.$$  

Using these moment conditions Arellano and Bond propose a GMM estimator in two steps: in the first step, error terms are supposed independent and homoscedastic between countries and during time. In a second step, residuals obtained in the first step are used to construct a consistent estimator of the variance-covariance matrix relaxing the hypotheses of independence and homoscedasticity. The two step estimator is so asymptotically more efficient compared to the one step one. We will call the estimator based on these conditions the difference estimator.

Statistically, Arellano (1999) and Blundell and Bond (1998) show that in the case of persistence of the explanatory variables, their lagged variables are weak instruments for equation in first difference which induces
considerable bias in finite samples and its precision is asymptotically weak. To reduce this bias and this lack of precision of the difference estimator, we use an estimator that combines in a system the equation in difference and the equation in level (Arellano and Bover (1995) and (Blundell and Bond, (1998)).

Instruments for the first difference equation will be the same and those for the level equation are lagged differences of the concerned variables, these are appropriate instruments under these additional hypotheses:

\[ E((Y_{t-s} - Y_{t-s-1}), (\mu_i + \theta_{it})) = 0 \text{ pour } s = 1. \]

\[ E((X_{t-s} - X_{t-s-1}), (\mu_i + \theta_{it})) = 0 \text{ pour } s = 1. \]

The set of these four conditions combined with the GMM method permit to estimate the model coefficients efficiently. Having exact estimation depends on the validity of the hypothesis that error terms are not serially correlated and on the validity on the instruments. Two tests are used to verify these conditions: Sargan test of over identifying restrictions to check the instruments validity and a test to verify that the error term is not serially correlated we test if the difference of the error term is second order serially correlated and the inability to reject the null hypotheses of both tests justify the model.

3.3. Estimation Results

Tests results show the overall significance of the model. Almost all variables explaining growth are significant and have the expected sign: the lagged GDP has a negative sign emphasizing the catch up hypothesis that poor countries grow faster than rich ones since their capital productivity is higher. Inflation rate is always negative at 5% level confirming that financing growth by inflation is a worse strategy for economic development. Public expenses have a negative and significant sign at a level of 1% which means that administration expenses don't affect productivity but reduce growth through distortions induced in the economy such as taxation and unproductive expenses. Population growth rate is always negative and significant and human capital index is significantly positive in some regressions showing the importance of the country's absorption capacity in boosting growth. Finally the saving rate is always positive but is significant only in 3 out of 7 regressions.

Concerning capital inflows, our first result (Table 1) is that taken in level, all inflows excepting equity portfolio flows have a beneficial effect on growth. Indeed, total inflows have a positive effect on growth as stipulated in the economic theory because they permit to release the financing constraints and to provide alternative means to finance growth.

We also find that a 1% increase of FDI relative to GDP increases growth by 0.405% while the same rate of debt to GDP increase improves growth by 0.57%. This result can be explained by the fact that even if FDI is able to spur investments, debt flows are still more productive because they support the country's growth strategy and offer funds that can be allocated to specific investments in special sectors.

Equity portfolio inflows have a positive sign but aren't significant perhaps because of their small size relative to GDP so we can conclude that they are the kind of flows the most difficult to attract and that they require a certain level of financial development to have an effect on growth.

Our second important result is that capital inflows composition isn't important for growth achievement. In fact, while estimating inflows composition (Table 2), none of the flows relative to total inflows is significant traducing that in the short run, inflows composition is neutral for growth: having more FDI, equity portfolio inflows or debt in the total inflows doesn't influence growth which leads us to conclude that in the short term what matters is the availability of funds and that inflows are substitutes.
Table 1

<table>
<thead>
<tr>
<th>Δ ln GDP_{it}</th>
<th>(1) totf</th>
<th>(2) Debt</th>
<th>(3) FDI</th>
<th>(4) EPF</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln GDP_{it-1}</td>
<td>-0.106***</td>
<td>-0.117***</td>
<td>-0.065**</td>
<td>-0.062**</td>
</tr>
<tr>
<td>Inflation</td>
<td>-4.82e-05**</td>
<td>-2.176 (2.257)</td>
<td>-2.12e-05*</td>
<td>-4.34e-05</td>
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<tr>
<td>Gov.exp</td>
<td>-0.009***</td>
<td>-0.011***</td>
<td>-0.008**</td>
<td>-0.008***</td>
</tr>
<tr>
<td>Savings</td>
<td>0.001 (0.409)</td>
<td>0.002 (1.094)</td>
<td>0.002 (1.525)</td>
<td>0.003** (2.193)</td>
</tr>
<tr>
<td>Pop.growth</td>
<td>-0.014***</td>
<td>0.028** (2.477)</td>
<td>-0.017*** (3.175)</td>
<td>-0.016 (2.930)</td>
</tr>
<tr>
<td>Scholarity</td>
<td>0.002 (1.321)</td>
<td>0.003** (2.432)</td>
<td>0.001 (1.030)</td>
<td>0.001 (0.699)</td>
</tr>
<tr>
<td>Dummy</td>
<td>-0.027** (2.446)</td>
<td>-0.040*** (-2.539)</td>
<td>-0.034** (-2.819)</td>
<td>-0.042** (-2.687)</td>
</tr>
<tr>
<td>totinf</td>
<td>0.00084** (2.407)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debt</td>
<td>0.0057** (3.226)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDI</td>
<td>0.004** (2.636)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPF</td>
<td>0.008 (1.314)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.926*** (4.444)</td>
<td>0.967*** (4.694)</td>
<td>0.589*** (3.733)</td>
<td>0.583*** (3.634)</td>
</tr>
<tr>
<td>Observations</td>
<td>589</td>
<td>621</td>
<td>622</td>
<td>589</td>
</tr>
<tr>
<td>Number of iden</td>
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<td>38</td>
<td>38</td>
<td>38</td>
</tr>
</tbody>
</table>

* t-statistic in parentheses; *** p<0.01; ** p<0.05; * p<0.1

Table 2

<table>
<thead>
<tr>
<th>Δ ln GDP_{it}</th>
<th>(1) Debt</th>
<th>(2) FDIC</th>
<th>(3) EPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln GDP_{it-1}</td>
<td>-0.060** (2.146)</td>
<td>-0.059** (2.044)</td>
<td>-0.052** (2.293)</td>
</tr>
<tr>
<td>Inflation</td>
<td>-4.59e-05** (2.094)</td>
<td>-4.54e-05** (2.068)</td>
<td>-4.62e-05 (2.254)</td>
</tr>
<tr>
<td>Gov.exp</td>
<td>-0.008** (2.553)</td>
<td>-0.008** (2.572)</td>
<td>-0.008*** (2.815)</td>
</tr>
<tr>
<td>Savings</td>
<td>0.002* (1.780)</td>
<td>0.003* (1.759)</td>
<td>0.002 (1.492)</td>
</tr>
<tr>
<td>Pop.growth</td>
<td>-0.019*** (2.990)</td>
<td>-0.019*** (2.967)</td>
<td>-0.017*** (2.864)</td>
</tr>
<tr>
<td>Scholarity</td>
<td>0.001 (0.971)</td>
<td>0.001 (0.862)</td>
<td>0.001 (0.650)</td>
</tr>
<tr>
<td>Dummy</td>
<td>-0.042*** (2.719)</td>
<td>-0.042** (2.671)</td>
<td>-0.046*** (2.966)</td>
</tr>
<tr>
<td>debtc</td>
<td>-3.88e-05 (1.371)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDIC</td>
<td>-3.78e-05 (1.271)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPC</td>
<td>0.003 (0.128)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.557*** (3.470)</td>
<td>0.563*** (3.453)</td>
<td>0.562*** (4.077)</td>
</tr>
<tr>
<td>Observations</td>
<td>589</td>
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<td>589</td>
</tr>
<tr>
<td>Number of iden</td>
<td>38</td>
<td>38</td>
<td>38</td>
</tr>
</tbody>
</table>

* t-statistics in parentheses; *** p<0.01; ** p<0.05; * p<0.1
4. CONCLUSION:

Our study has analyzed the effects of capital account liberalization on economic growth through an empirical evidence which has treated properly econometric problems inherent to the growth theory such as endogeneity and simultaneity bias.

We have led estimations of a convergence equation using the inflow of capital both as a share of GDP to estimate the effect of every kind of flows on growth and as a share of total inflows in order to check the composition effect.

The coefficient associated to the total capital flows is positive and significant, confirming the positive effect of liberalization on growth. This result remains when the analysis considers separately the different types of capital to GDP. However, estimations of the composition effect were non significant showing the neutrality of flows composition and meaning that in the short term all flows are substitutes.

These results, despite their importance, should be completed by a study of financing structure effect using stocks instead of flows to discover if the composition matters in the long term.

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