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► **To cite this version:**

Jean-Louis Combes, Tidiane Kinda, Rasmané Ouedraogo, Patrick Plane. Financial flows and economic growth in developing countries. *Economic Modelling*, 2019, 10.1016/j.econmod.2019.02.010. hal-02074268

**HAL Id: hal-02074268**

**<https://hal.science/hal-02074268v1>**

Submitted on 21 Jul 2022

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# Financial Flows and Economic Growth in Developing Countries

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**November 27, 2018**

Financial support from the DFID-ESRC Growth Research Programme, under Grant No. ES/L012022/1, is gratefully acknowledged, as well as the financial support of the French government's, *Programme d'investissements d'avenir*. Previous versions of the paper have benefited from comments by Pierre-Richard Agénor and Kyriakos Neanidis from the University of Manchester and the Centre for Growth and Business Cycle Research, Jaime De Melo from FERDI and the University of Geneva, Patrick and Sylviane Guillaumont from FERDI and the University of Clermont Auvergne and Oliver Morrissey from the University of Nottingham. The authors also wish to thank anonymous referees of the Economic Modelling for their valuable comments. The views expressed here are solely those of the authors and do not represent those of their respective institutions.

# **Financial Flows and Economic Growth in Developing Countries**

## **Abstract**

This paper assesses the impact of financial flows and their composition on the real exchange rate and on economic growth for a sample of low- and middle-income countries over the period of 1980-2012. Financial flows can directly support economic growth by relaxing constraints on domestic resources, but can also indirectly weaken growth through appreciation of the real exchange rate. We use the generalized method of moments (GMM) for dynamic panel. Results show that net financial flows affect economic growth both directly and indirectly: (i) a one percent increase in total financial flows appreciates the real exchange rate by 0.5 percent; (ii) the real exchange rate appreciation effect of remittances is twice the effect of aid and ten times greater than the effect of Foreign Direct Investments; (iii) financial flows stimulate economic growth regardless of the development level. An increase of \$10 per capita financial flows leads to a gain of 0.08 points of annual growth. This gain amounts to 0.15 when we control for the negative impact of the real exchange rate. Instability of market-oriented flows, such as FDI and portfolio investments, exacerbates instability of the economic growth rate.

## **Keywords**

Financial flows; real exchange rate dynamics; economic growth

## **JEL classification**

F3, F4, O4

## 1. Introduction

Development studies have traditionally identified a low level of domestic savings as a major constraint to meeting investment opportunities and supporting high sustainable growth rates. In line with the Harrod-Domar growth model, attracting external financing was therefore considered to be an adequate solution to reaching a high dynamic equilibrium level. (See Chenery and Strout, 1966.) As the “Lucas paradox” has shown, however, the worldwide direction of financial flows conflicts with this expectation (Lucas, 1990; Sebnem et al, 2010; Gourinchas and Jeanne, 2013). One reason has to do with the rate of return of capital that is often low in poor countries with strong implications for the composition and cost of financial flows. There is *a priori* no reason to believe that all financial flows affect every country’s growth performance in the same way. Overseas borrowing may cause external debt repayment problems, while short-term capital inflows may destabilize the productive sector, especially in middle-income recipient countries. Even for countries that receive aid, the literature does not provide robust evidence of a positive impact on growth. Although Official Development Assistance (ODA) helps to provide the basic development goals that condition an efficient allocation of productive resources (Hansen and Tarp, 2001), it may hamper the promotion of the sector of tradable goods by creating price distortions (Burnside and Dollar, 2000; Rajan and Subramanian, 2011).

The objective of this paper is to revisit the impact of financial flows<sup>1</sup> on economic growth in developing countries. First, we hypothesize that financial flows level but also their composition and volatility matter. Some components of financial flows are often procyclical, while other help to smooth adverse economic shocks<sup>2</sup>. Second, we hypothesize an adverse potential indirect effect of financial flows through the channel of the real exchange rate. Financial flows increase the level of domestic expenditure in a similar way to windfall gains from natural resources (Corden and Neary, 1982). Excess demand pressures raise the

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<sup>1</sup> This econometric work is based on the expression of per capita net financial inflows. These flows are composed of the difference between the net incurrence of liabilities and the new acquisition of financial assets. These flows also incorporate public and private unrequited transfers, such as migrant remittances, as well as new disbursements of official development assistance net of potential repayments.

<sup>2</sup> “Most of the critics of capital market liberalization are not as concerned about foreign direct investment as they are about short-term financial flows, which many fear are particularly destabilizing—and not conducive to growth.” (Stiglitz, 2008, page 79). “If total flows, long-term and short-term, have a negligible effect, it suggests that short-term flows may have a negative effect.” (Stiglitz, 2008, page 80).

relative price of non-tradable goods and weaken the competitiveness of the tradable sector. Third, we test whether the influence of financial flows varies according to a country's level of development. Due to their shallow domestic financial markets, low-income countries receive more per capita ODA and fewer portfolio investments than middle-income countries. Fourth, we explore the implications of the exchange rate regime. On the one hand, a fixed exchange rate can bring stability but and on the other hand, it may conflict with competitiveness and the incentive to promote the tradable sector (Rodrik, 2008). The contribution of the paper to the literature is therefore to investigate both direct and indirect channels by which net financial flows affect growth. We assume that impacts are heterogeneous, varying with the composition and volatility of flows, with the development level of the country, and possibly with the exchange rate regime. To our best knowledge, this is the first work that explores these issues in such a systematic way.

Our econometric analysis relies on the dynamic generalized method of moments (GMM) to deal with endogeneity issues. We analyze a large sample of low- and middle-income countries over the period 1980-2012 and find that a one percent increase in total financial flows appreciates the real exchange rate by 0.5 percent. The real appreciation stemming from remittances is twice the effect of aid, and ten times greater than the effect of Foreign Direct Investment (FDI). An increase of \$10 of the per capita financial flow (relative to the average value of this variable) leads to a gain of 0.08 points of annual growth, which amounts to 0.15 when we control for the negative impact of the real exchange rate. Our results also show that the instability of financial flows, particularly market-oriented flows, such as FDIs and portfolio investments, amplifies the fluctuations of GDP growth.

The rest of the paper is organized as follows: Section 2 briefly reviews the existing literature covering both the direct impact of financial flows on growth and the indirect impact through the real exchange rate. Section 3 analyzes descriptive statistics and defines our empirical strategy. Section 4 discusses the main results. Section 5 provides concluding remarks and draws policy implications.

## **2. Financial flows and their components: what are the expected direct and indirect effects?**

### **2.1 Direct effects on growth**

Financial flows and their components affect growth through various channels (De Vita and Kyaw, 2009; Levchenko and Mauro, 2007; Prasad, Rajan, and Subramanian, 2007). Private transfers or remittances have become the second largest type of external financial resources for developing countries, just behind FDI. The cost/benefit analysis of these transfers delivers mixed conclusions regarding their impact on growth (De Mello, 1999). The positive impact generally results from a higher level of permanent domestic consumption and, somewhat rarely, from “building booms”. As Giuliano and Ruiz-Arranz (2009) establish, remittances boost economic growth by providing appropriate alternative means to release financial constraints on domestic investments. Nevertheless, an excessive reliance on remittances can lead to the problem of the “Samaritan’s Dilemma” (Buchanan, 1975) where recipients overconsume, and may generate “perverse incentives”. The growth effect of remittances seems conditional on the quality of the recipient country’s economic policies and institutions (Catrinescu et al., 2009). Moreover, “brain drain”, which is associated with a loss of productive capacity due to the migration of skilled workers, can partially offset the positive effect of remittances.

The growth impact of public flows, in particular ODA, has been discussed at length in the literature. For example, Burnside and Dollar’s 2000 paper has been influential in academic and policy spheres. The authors explore the effect of foreign aid on growth and find a strong positive effect for low-income countries pursuing good policies, but no tangible impact for countries with poor economic governance. Aid effectiveness is therefore conditional on resources flowing to the most efficient countries. More broadly, previous empirical studies do not provide clear conclusions on the growth impact of ODA. Results vary depending on the sample size, as well as the specification of the econometric model and the endogeneity treatment (see Doucouliagos and Paldam, 2008; Murinde, 2012).

Aid flows are often directed to human capital and infrastructure expenditures, which correspond to what Hirschman (1958) called “social overhead capital” (SOC). These expenditures are essential for the development process, but their benefits generally appear only in the long run through the extension of productive capacities. While Rajan and

Subramanian (2008) do not find clear evidence to support a positive and robust growth impact of ODA, Arndt et al. (2010) reach the opposite conclusion using the same approach and data, especially when the effect of aid is extended to social welfare variables (i.e., poverty alleviation, provision of basic health care, and primary education). In a nutshell, the impact of ODA remains ambiguous in the existing literature (see Elbadawi et al., 2012; Guillaumont et al., 2013; Guillaumont and Kpodar, 2015).

The impact of FDI mainly depends on the type of activities it finances. FDI in different forms, or in the same form but in different economic environments, is likely to affect economic growth differently (Borenztein *et al*, 1998; Wooster and Diebel, 2010). For instance, in low-income African countries or natural-resource-rich economies where FDI is associated with natural resource extraction, it may hamper the diversification of the manufacturing sector and ultimately hurt growth. On the contrary, FDI concentrated in the manufacturing sector, as is the case in most Asian economies, can enhance growth by leveraging a low-cost skilled labor force. Failure to distinguish between different categories of FDIs has been interpreted by Stiglitz (2008) as a possible explanation for the difficulty in clearly identifying the role FDI plays in the development process. Using meta-regressions for 103 micro and macro studies, Bruno and Campos (2013) show that the number of studies where FDI supports growth is four to five times the number of studies where it does not. In addition, the authors find that the effect of FDI is greater than commonly suggested.

An opening of capital accounts to short-term capital movements can improve market discipline and support the mobilization of external resources. With an opposite view, Stiglitz (2008) argues that this liberalization is dangerous as it is correlated with large economic fluctuations and a strong volatility of resources that are unlikely to be channelled to investments. Because they are sensitive to changes in the external environment, short-term flows can also exacerbate domestic business cycles, including through sudden slowdowns or outflows (Calvo, 1998). Short-term financial flows can therefore act as a transmission channel of external fluctuations to the domestic economy and give rise to crises, not necessarily related to the domestic management of the economy. Ocampo, Spiegel, and Stiglitz (2008) mention that since the early 2000s, there is a widespread consensus that pro-cyclical short-term speculative flows result in a higher volatility of consumption and drive high social costs.

## 2.2 Indirect effects on the real exchange rate

Financial flows may influence growth through the real exchange rate. Starting with the influential works of Edwards (1988) and Williamson (1983, 1994), an extensive strand of the literature has analyzed the specific relationship between financial flows and the long-term equilibrium exchange rate (see Elbadawi, and de Soto, 1994; Coudert and Couharde, 2009). This strand of literature focuses on the so-called “fundamentals” that affect the relative price of tradable to non-tradable goods. This ratio is a proxy for external competitiveness as defined by the cost to produce tradables<sup>3</sup>. For small and open developing economies, some authors argue that maintaining the real exchange rate close to its equilibrium level is a minimum if the diversification process faces costly informational barriers and a poor institutional environment (Elbadawi, Kaltani and Soto, 2012). In line with Rodrik (2008), a depreciated real exchange rate would be the second best solution to compensate for the impact of weak institutions that more specifically penalize growth through the tradable sector. Beyond the relative price impact, the nominal exchange rate associated with financial flows can itself be a direct source of appreciation (Engel, 1999; Hau and Rey 2006; Müller-Plantenberg, 2017a, 2017b). Removing capital controls could lead to surges in financial inflows, driving a loss of competitiveness. Boom-and-bust cycles were common for some middle-income countries, especially in East Asia and Latin America in the eighties and nineties. These episodes motivated a wide body of theoretical and empirical literature (see Calvo, Leiderman and Reinard, 1998; Agénor and Montiel, 1999). Regardless of the preferred channel of transmission, the question is whether the real exchange rate is affected differently depending on the composition of capital inflows (Naceur et al, 2012; Boero, Mavromatis and Taylor, 2015).

As mentioned earlier, remittances act as a buffer to smooth consumption when the recipient economy is suffering from an economic downturn (Chami et al, 2008; Lueth and Ruiz-Arranz, 2007). In such cases, remittances present limited risk of a significant real exchange rate appreciation. Conversely, remittances can relate to investment projects. In

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<sup>3</sup> The law of one price for tradable goods that underlies this hypothesis is likely to be restrictive for some developed economies where innovation and product differentiation provide market power (see Eleftheriou and Müller-Plantenberg, 2018). It is much more acceptable for non-sophisticated standard products of developing countries. In this case, where the price of tradables is exogenous, financial flows push the price of non-tradables upwards and stimulate their production.



these cases, the risk of real exchange rate appreciation is particularly strong if resources are oriented to real estate (construction booms), but more negligible if they are spent on imported durable goods. The empirical results on this topic are indeed mixed (Chami et al., 2008; Izquierdo and Montiel, 2006; Rajan and Subramanian, 2005).

The real exchange rate impact of ODA mainly depends on how resources are used. When the recipient country suffers from supply constraints, financial flows associated with consumption put more pressure on the relative price of domestic goods than financial flows channelled to investments that stimulate imported goods. Cerra et al. (2008) pinpoint the complexity of this issue: foreign aid is expected to appreciate the real exchange rate if it stimulates productivity within the tradable sector, while depreciation is likely to occur if aid is channelled to improve productive capacities in the non-tradable sector. Elbadawi et al. (2012) analyze the nexus between foreign aid, the exchange rate and economic growth for Sub-Saharan African countries. The conventional wisdom is that aid surges may induce disequilibrium in the real exchange rate. Contrary to this hypothesis, the authors show that aid does not necessarily lead to real appreciation of the exchange rate, particularly in relatively well-managed economies. Accordingly, aid-recipients need to spend these financial resources wisely in an institutional context of accountability and transparency.

The impact of FDI on non-tradable prices varies greatly with the specific type of operation the financial flow is associated with. FDI used to import machinery and equipment is less likely to lead to a sustained appreciation of the real exchange rate. Transfers of technology and managerial know-how associated with FDI are also expected to increase productive capacity, putting less pressure on prices (Agénor, 1998; Javorcik, 2004; Kinda, 2010, 2012). However, FDI may also consist of “pure” transfers of domestic assets between residents and non-residents. The one-off revenue resulting from selling public enterprises can be oriented to permanent current expenditures, increasing the price of non-tradables. The limited number of studies that investigate the impact of FDI on the real exchange rate have mixed results (Athukorala and Rajapatirana, 2003; Lartey, 2008; Saborowski, 2009).

Finally, short-term financial flows, such as commercial bank loans and international portfolio investments, are not necessarily associated with an increase of productive capacities. These flows are generally more volatile and tend to involve more financial intermediation than FDI. As such, their impact on the real exchange rate is likely to be more pronounced (Lartey, 2008).

### 3. Empirical methodology and descriptive statistics

#### 3.1 The specification of the models

We first estimate the effect of per capita net financial flows on the real effective exchange rate, and then on growth. Given the potential inertia of the variables, we use a dynamic specification where  $REER_{i,t}$ ,  $GDPGrowth_{i,t}$  and  $TotalFlows_{i,t}$  stand for the real effective exchange rate, the annual economic growth and the total net financial flows for country  $i$  in non-overlapping 5-year periods  $t$ . We use averaged periods to minimize short-term fluctuations.<sup>4</sup> Financial flows and the real effective exchange rate are expressed in log terms.<sup>5</sup>

$$\log(REER_{i,t}) = \omega \log(REER_{i,t-1}) + \tau \log(TotalFlows_{i,t}) + \pi Y'_{i,t} + \vartheta_i + \varphi_t + \sigma_{i,t} \quad (1)$$

$$\log(REER_{i,t}) = b \log(REER_{i,t-1}) + c \log(Aid_{i,t}) + d \log(FDI_{i,t}) + e \log(Remittances_{i,t}) + f \log(Portfolio_{i,t}) + g \log(Otherflows_{i,t}) + h Y'_{i,t} + \vartheta_i + \Phi_{i,t} \quad (2)$$

$$GDPGrowth_{i,t} = \delta GDPGrowth_{i,t-1} + \beta \log(TotalFlows_{i,t}) + \theta X'_{i,t} + v_i + \bar{\omega}_t + \varepsilon_{i,t} \quad (3)$$

$$GDPGrowth_{i,t} = m GDPGrowth_{i,t-1} + \eta \log(Aid_{i,t}) + p \log(FDI_{i,t}) + \lambda \log(Remittances_{i,t}) + \rho \log(Portfolio_{i,t}) + \xi \log(Otherflows_{i,t}) + \rho X'_{i,t} + v_i + \varsigma_{i,t} \quad (4)$$

For a country  $i$ , the REER is defined as follows:

$$\log(REER)_i = \sum_{j=1}^{10} [w_j * \log(e_j * (CPI_i / CPI_j))] \quad (5)$$

where  $e_j$  and  $w_j$  represent, respectively, the nominal bilateral exchange rate and the weight of the  $j$ -th partner in the total bilateral non-oil imports and exports of the country  $i$ . The weighting pattern refers to the ten largest trading partners over the period of 2000–2005.

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<sup>4</sup> The sub-periods are the following: 1980–1984; 1985–1989; 1990–1994; 1995–1999; 2000–2004; 2005–2009; 2010–2012.

<sup>5</sup> A transformation to deal with the negative values related to the financial flows variables is undertaken. With regard to the financial flows  $\log [TotalFlows + \min (TotalFlows)]$  is computed with  $\min(\cdot)$ , the minimum value of the variable on the sample.

An increase in the *REER* indicates a real appreciation in the exchange rate (i.e., a loss of price competitiveness). For each of the 77 low- and middle-income countries (see Appendix 1 for the list of countries), seven observations are available for the periods of 1980–2012.

Financial flows consolidate foreign direct investment (*FDI*), foreign aid (*aid*), *remittances*, *portfolio* investment, and *other flows*. All financial flows are expressed in current US dollars as a proportion of the population, to control for the heterogeneity of country size. There is no obvious solution for expressing financial flows as ratios. Empirical works assessing the impact of ODA on economic growth tend to report financial flows as a share of GDP, while a number of recent papers focusing on private flows, such as FDI or portfolio investments, report these flows in per capita terms (see Arndt et al. 2015). Following Alfaro et al (2008), financial resources are considered as a share of population. This variable is more normally distributed and less subject to both non-stationarity and endogeneity issues. In addition, because population is more stable, expressing financial flows in per capita terms allows us to capture their real dynamic, rather than GDP fluctuations. This latter point is important as the paper also explores the impact of financial flows on instability.

To compute our variable of *Total Flows Instability*, we separate the long-run component from short-term fluctuations of financial flows. We first regress this variable on its one-period lagged value and a deterministic trend. Second, for each of the non-overlapping five-year sub-periods, the standard deviation of the regression residuals is used as our proxy for instability.<sup>6</sup> The same method is adopted to compute instabilities over the different financial components.

$Y'_{i,t}$  in equations (1) and (2) represents a vector of control variables to explain the REER, including: trade openness (*Trade*) as defined by the ratio of imports plus exports over GDP, the standard *Terms of Trade*, the ratio of *Government Consumption* over GDP and the *Balassa Index*. The latter is defined as the ratio between the country's real per capita GDP and the weighted mean of the same variable for the ten major trading partners considered for the REER. Overall, we control for the usual determinants of the real

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<sup>6</sup> It is worth noting that the results do not change even if we compute the instability of financial flows by the standard deviation of the variable in level or in first difference; or when we generate the instability by the standard deviation of the residual component using the Hodrick–Prescott filter.

exchange rate (e.g., Combes et al., 2012; Devarajan, 1997; Noura et al., 2011)<sup>7</sup>. Trade openness mitigates the rise of domestic prices and real appreciation. The impact of terms of trade is a priori ambiguous. When this variable increases, REER can appreciate if the income effect dominates the substitution effect. Government consumption is expected to fuel the REER as public spending expands the demand of non-tradable goods. The Balassa Index captures the fact that the relative price of non-tradables increases with the development process, reflecting productivity differences across countries and the implication of the catching-up process. If this relative price is abnormally high, the competitiveness of tradables is affected, enhancing an adverse impact on economic growth (Hinkle and Montiel, 1999; Rodrik, 2008).

In equations (3) and (4),  $X'_{i,t}$  stands for the vector of control variables that explain GDP growth. This vector includes the initial level of GDP per capita ( $GDPPC$ ), the variable *Polity2* to capture the degree of democracy, *Natural Rents*, trade openness, and the real effective exchange rate. According to the convergence hypothesis, the higher the level of development, the lower the expected growth rate. Trade openness (Wacziarg and Welch, 2008) and democracy (Acemoglu et al., 2015) are expected to promote economic growth. The impact of natural rents is ambiguous (see Brunnschweiler and Bulte, 2008; Sachs and Warner, 1995). On the one hand, a “Dutch disease” phenomenon can hinder economic growth. On the other hand, the discovery and exploitation of raw materials can extend a country’s endowment. The resulting additional income can contribute to higher domestic investments. For a robustness check, we add additional control variables, which are traditional determinants of growth (*Education*, *Inflation* and public *Debt*).

We include  $\vartheta_i$  and  $v_i$  to control for unobserved time-invariant country-level characteristics that are potentially correlated with government revenue, and  $\varphi_t$  and  $\varpi_t$  for common time-variant shocks that affect all developing countries.<sup>8</sup>  $\sigma_{i,t}$ ,  $\phi_{i,t}$ ,  $\varepsilon_{i,t}$  and  $\zeta_{i,t}$  are idiosyncratic error terms. We estimate each equation separately.<sup>9</sup>

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<sup>7</sup> See Table 1 in Appendix 2 for the definition of the variables and corresponding data sources and Table 2 for descriptive statistics.

<sup>8</sup> In order to reduce the number of instruments, time fixed effects have been omitted in equations (2 and 4) where categories of financial flows appear.

<sup>9</sup> The simultaneous estimation of the two equations is theoretically more efficient than separate estimates, provided that two conditions are met. First, error terms should be cross-correlated. Second, the simultaneous

We prefer Blundell and Bond's (1998) system-GMM estimator for dynamic panels for two reasons. First, the OLS estimator is inconsistent since the lagged dependent variable is introduced with country fixed-effects (Nickell 1981). Second, the GMM estimator controls for the potential endogeneity of the explanatory variables due to any measurement errors, reverse causality, or omission of pertinent variables. In fact, both GDP growth and financial flows can be affected by common shocks. For instance, a discovery of natural resources may attract FDIs while affecting economic growth. Furthermore, deteriorating economic and financial conditions could significantly reduce investor incomes and financial flows, weakening economic growth. With regard to reverse causality, high financial flows may increase investment and boost economic growth, but sustained growth in a recipient country can, on its own, influence investor confidence and attract financial flows.

We combine equations in levels and first differences in a system and estimate them with lagged differences and lagged levels of the explanatory variables as instruments. The system-GMM estimator helps reduce endogeneity issues, given that the lagged values used as instruments for financial flows are not affected by the contemporaneous levels of economic growth. We collapse the matrix of instruments to ensure that the number of instruments does not exceed the number of countries (Roodman, 2009). To deal with the problem of "weak instruments" and to augment the precision of the estimation, we add an external instrument capturing economic growth in developed countries. For the ten largest bilateral donors of each country, we estimate the average donor growth, weighted by the amount of aid that a country receives from those donors (Tavares, 2003). This external instrument may affect the allocation of foreign aid and other financial flows, including FDI and remittances, but does not directly affect economic growth in recipient countries.

In equations 1 and 2 that explain the real exchange rate, the coefficients of the financial flow variables can be interpreted as elasticities. This is not the case in the growth equations (3 and 4) where only marginal effects could be calculated.<sup>10</sup>

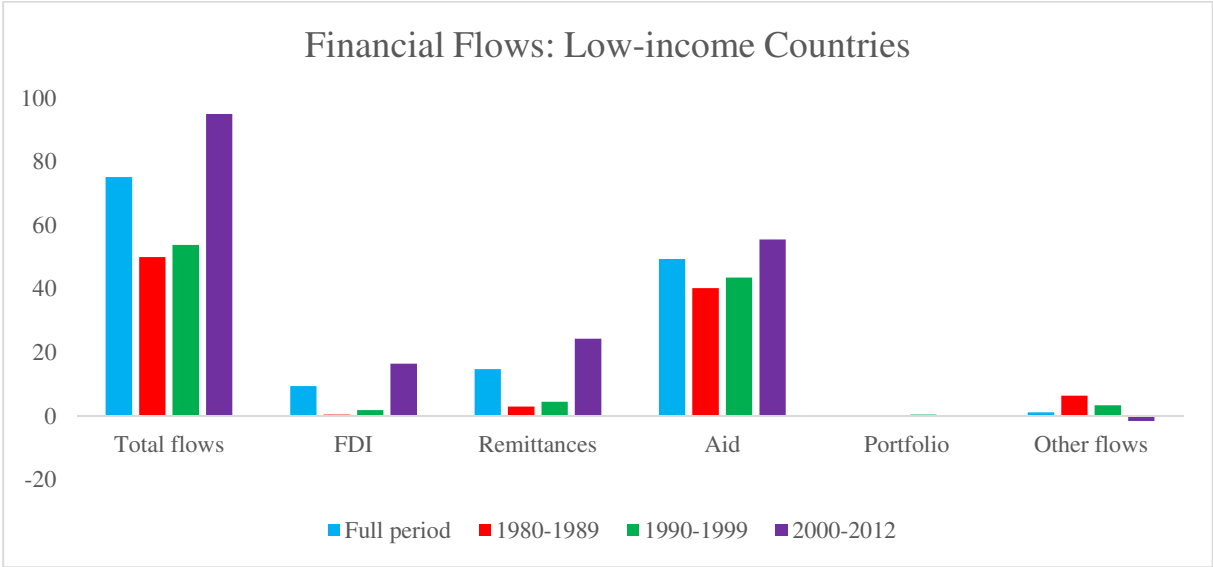
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equations model should be well-specified because any misspecification potentially affects the entire system. This second criterion is particularly difficult to fulfil.

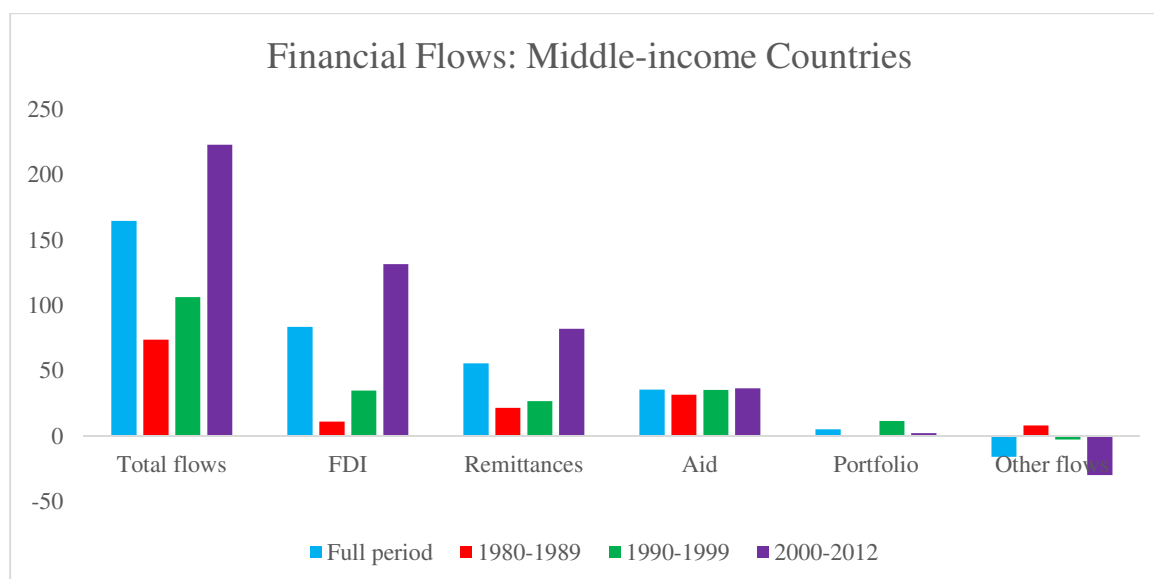
<sup>10</sup> The marginal effect of the financial flows on economic growth is given by the value of the derivative of *GDPGrowth* computed for *TotalFlows\**:  $dGDPGrowth / dTotalFlows = \beta / (TotalFlows* + \min(TotalFlows))$  with  $\beta$  the estimated coefficient, and  $\min(TotalFlows)$  the minimum value of the variable on the sample (\$-170). This functional form captures the decreasing marginal returns on financial flows.

### 3.2 Trends in financial flows

The paper breaks down total financial flows into five broad categories: 1) private unilateral transfers or remittances; 2) official development assistance; 3) foreign direct investments; 4) foreign portfolio investments, which consist in securities and other financial assets passively held by investors in relation with the expectation of earning a return that is adjusted for risks. These financial assets are relatively liquid. Portfolio investments include private and public debt securities, bonds and equity investments. 5) Other financial flows, including liabilities to foreign banks, are the last item that we consider. This subsection presents an overview of the long-term evolution of the volume, as well as the composition of financial flows over the period of 1980–2012. Statistics are provided separately for low- and middle-income countries, LIC and MIC, respectively, for the whole period and for sub-periods<sup>11</sup>.



<sup>11</sup> Table 3 of Appendix 2 provides amounts over the period for the whole sample and a break down according to the per capita income level.



Source: IMF World Economic Outlook.

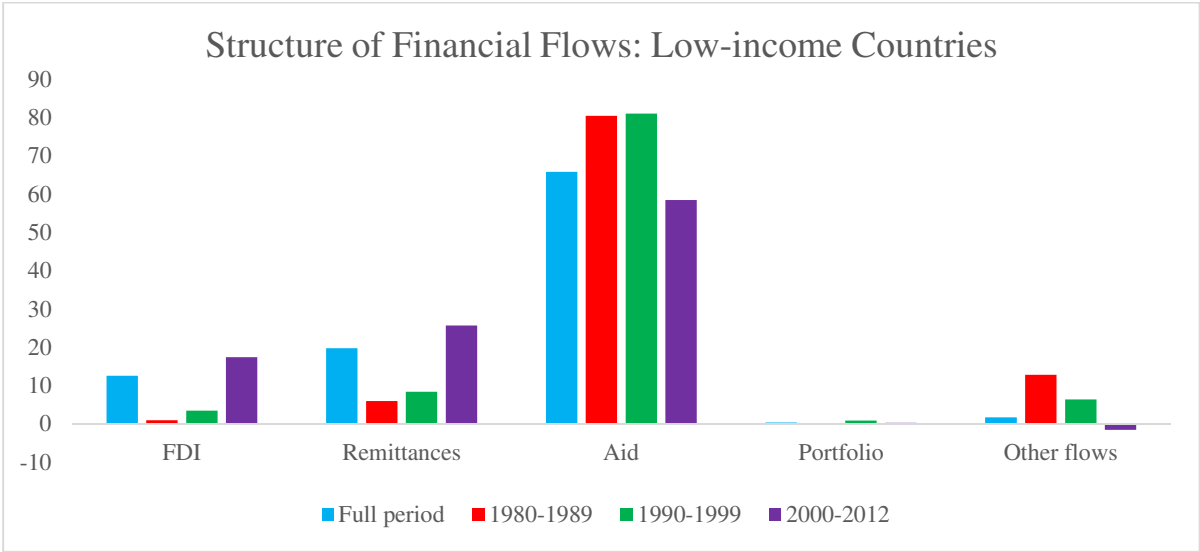
**Figure 1: Per capita total financial flows and their structure (current U.S. dollars).**

Figure 1 shows that per capita financial flows have substantially increased over the last 30 years. They rose from \$65 during the 1980s to \$182 during the 2000s, mainly driven by MICs and FDI flows. Financial flows to MICs increased threefold, from \$74 in the 1980s to \$223 in the 2000s, while financial flows almost doubled in LICs. FDIs represented more than 50 percent of total financial flows for MICs. In these countries, FDI flows were dominated by the purchase or creation of manufacturing firms, with some expected positive upstream and downstream effects on economic growth. By comparison, FDIs represented only 17 percent of financial flows in LICs. Remittances also experienced a strong boost during the same period. Other types of financial flows (cross border bank lending) declined over time, possibly due to past financial crises (Takats, 2010) and financial deepening of domestic markets.

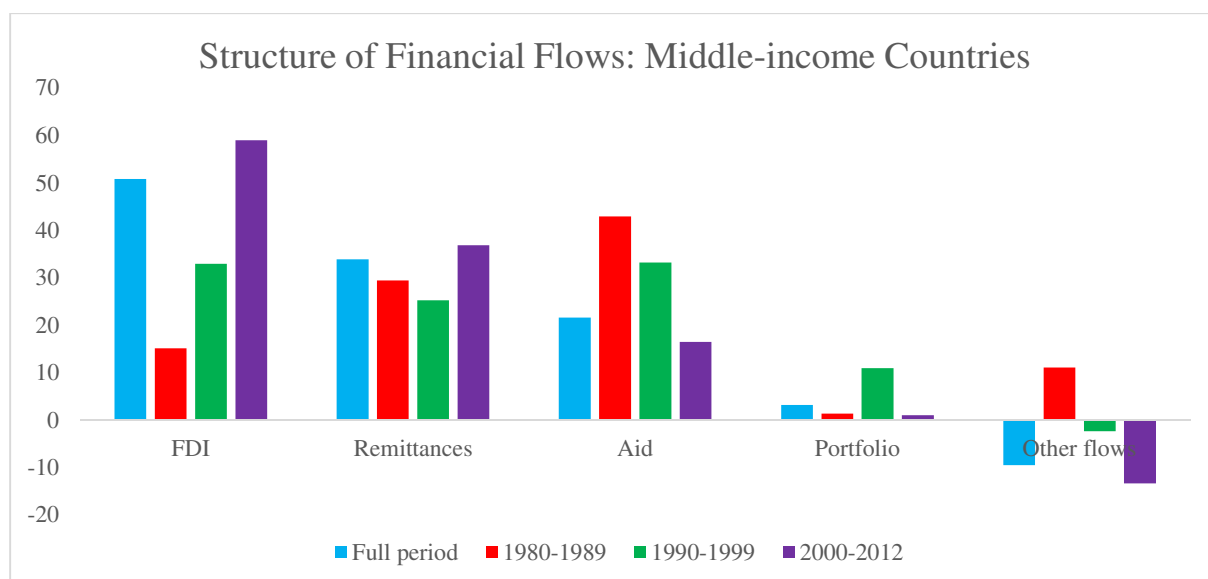
Portfolio investments and other flows prove generally negligible, at least for the low-income countries where informational issues and restrictions on capital movements are daunting obstacles for their extension and more broadly to set up a sound financial system. In these economies, there exists at best an early form of stock exchange market with equities and bonds traded for a small number of firms. The exchange of government bonds is itself limited by the risks attached to the repayment of claims or the reversibility of the financial openness. Reasons that are more technical also contribute to potential statistical underestimations. First, by contrast to FDIs associated to the willingness to control or influence decision-making, portfolio investments are generally procyclical, motivated by

profitable hit-and-run strategies (i.e., high frequency trading) or by the real boom- and- bust cycles of economies. Because of their reversibility, important flows over a period can be compatible with limited net flows. Second, in the balance of payment statistics of the IMF, the distinction between Foreign Direct Investments and portfolio investments is somewhat tricky. Not only is there a potential sensitivity to the threshold, but the real intention of the foreign investor is not always clear (Agénor, 1999). Finally, a limited amount of aggregate flows over a long period and for a large group of countries is compatible with specific per capita country evolutions. For instance, between the 1980s and 2000s, South Africa (\$-2 to \$129) and Brazil (\$-0.8 to \$95) experienced strong increases, while Colombia (\$0.7 to \$-25) and Peru (\$0.7 to \$-17) experienced significant outflows.

The structural composition of financial resources has also shifted over time towards a greater role of private flows, such as FDI and remittances, and away from official aid. At the beginning of the 1980s, regardless of the level of development, official aid constituted the bulk of inflows. It accounted for about 40 percent of total financing for MICs and 80 percent for LICs, more than remittances, the second largest category. In relation to the decreasing role of aid, the composition of ODA has also shifted dramatically to comprise a larger proportion of grants than loans. ODA flows are now mostly directed to LICs and more focused on extending human capabilities (i.e., health or education expenditures) than productive investments or hard infrastructure, as was the case in the 1980s.







Source: IMF World Economic Outlook. All figures are in percentage of total financial flows.

**Figure 2: Total financial flows and their structure.**

#### 4. Regression results

Table 1 displays the effect of net financial flows on the real effective exchange rate (REER). The statistical tests do not invalidate the econometric method: the null hypotheses of the *Sargan* and *AR* (2) tests are not rejected. Moreover, the positive coefficient of the lagged dependent variable highlights an inertia effect that legitimates the dynamic panel specification. In these equations, coefficients can be interpreted as elasticities. A one per cent increase in financial flows is associated with an appreciation of the REER by roughly 0.47 per cent (column 1). Although the coefficient decreases somewhat, this result is robust to the introduction of government consumption. Equations 2 and 4 break down total financial flows into their different components. In column 2, FDI (0.03) and aid (0.14) moderately appreciate the real exchange rate, while portfolio investments (1.49) have a stronger impact. Bear in mind that this component is marginal in total financial flows, at least when country group statistics are considered (Figures 1 and 2). Portfolio investments are closely related to a limited number of sub-periods in a narrow range of specific countries, such as Brazil (2010–2014) and Malaysia (1995–1999). The effect of remittances (0.23) is only significant in column 4 where we control for the impact of government consumption. The positive effect of this variable is approximately twice the effect of aid and ten times larger than the impact of FDI. With respect to the vector of control variables,

coefficients of the terms of trade, the Balassa Index and government consumption are all statistically significant with positive signs, while an increase of trade openness is found to reduce the real appreciation of the currency.

**Table 1. Effect of financial flows on the real effective exchange rate (1980-2012)**

	(1)	(2)	(3)	(4)
Log(REER) (-1)	0.332*** (0.0289)	0.321*** (0.0381)	0.261*** (0.0452)	0.291*** (0.0412)
Log(FDI)		0.0267*** (0.00731)		0.0236*** (0.00745)
Log(Remittances)		0.171 (0.115)		0.232** (0.114)
Log(Aid)		0.141** (0.0574)		0.115** (0.0504)
Log(Other flows)		0.00104 (0.0118)		0.0108 (0.00929)
Log(Portfolio)		1.494*** (0.391)		2.036*** (0.316)
Log(Total flows)	0.468*** (0.124)		0.344*** (0.120)	
Trade openness	-0.00448*** (0.000261)	-0.00379*** (0.000891)	-0.00454*** (0.000861)	-0.00387*** (0.00110)
Terms of trade	0.000384** (0.000162)	0.000353 (0.000307)	0.000605** (0.000276)	0.000214 (0.000262)
Balassa index	0.00151*** (0.000461)	0.00135** (0.000524)	0.00122** (0.000491)	0.00153*** (0.000471)

Government consumption			0.0110*** (0.00349)	0.0137*** (0.00369)
Observations	273	271	255	257
Number of countries	64	63	62	62
AR(1)	0.027	0.0307	0.0523	0.0262
AR(2)	0.8957	0.5722	0.9479	0.5845
Sargan	0.1012	0.1459	0.1864	0.1635

Robust standard errors in brackets, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In Table 2, we capture the specificity of low-income countries (LICs) through a multiplicative dummy variable associated with total net financial flows or their components. The influence of total financial flows on the REER is higher in LICs (column 1) where the demand side seems to outperform the supply response, generating a real appreciation of the domestic currency. The elasticity of the REER is about 1.34 percent for LICs (0.34+1.00) compared to 0.34 percent for MICs. When the different categories of financial flows are considered (column 2), the appreciation effect of remittances proves particularly strong in LICs. The limited spectrum of assets within these countries may suggest the presence of construction booms that raise the price of non-tradable goods. A statistically significant influence is not evidenced for aid flows. Alternative specifications (columns 3, and 4) do not reject these results.

Table 2 also displays the specific effect resulting from the exchange rate system. A dummy variable is introduced for countries with a “peg” regime. This variable, which is considered in a multiplicative way with total financial flows (column 5), is obtained from Ilzetki et al. (2010)’s classification. It combines no separate legal tender, pre-announced peg (or currency board arrangement), pre-announced horizontal band (which is narrower than or equal to +/- 2 per cent), or de facto peg. This binary variable does not necessarily coincide with the bipolar view of the two corner regimes. We do not hypothesize that only hard pegs or floating exchange rate systems are viable (see Fischer, 2001; Summers, 2000). By this dichotomous treatment, we only suggest that, on average, arrangements where intentions of a limited flexibility of the exchange rate are clearly expressed produce some comparable outcomes. Moreover, introducing a large variety of regimes is a challenge as there is little difference among some of them. The regression coefficient of this variable is negative and significant, reflecting that “peg regimes” mitigate the appreciation effect that stems from financial inflows. One potential explanation is that pegs benefit from more appropriate controls by monetary authorities who regulate domestic credit and prevent inflation pressures. In developing economies, a good example of this effect can be found in

the franc zone, where the fixed parity of the CFA franc vis-à-vis the euro has been maintained for several decades, implying strong and efficient regulatory control of the money supply.

**Table 2. Effect of financial flows on the real effective exchange rate  
(Low-income countries, 1980-2012)**

	(1)	(2)	(3)	(4)	(5)
Log(REER) (-1)	0.314*** (0.0242)	0.322*** (0.0381)	0.311*** (0.0368)	0.304*** (0.0356)	0.310*** (0.0328)
Log(FDI)		0.0249*** (0.00729)		0.0233** (0.00914)	
Log(Remittances)		0.0970 (0.101)		0.0715 (0.105)	
Log(Aid)		0.118* (0.0622)		0.129* (0.0695)	
Log(Other flows)		-0.000192 (0.0109)		0.0101 (0.00900)	
Log(Portfolio)		1.253*** (0.403)		1.592*** (0.300)	
Log(FDI)*LIC		-0.0176 (0.269)		-0.114 (0.216)	
Log(Other flows)*LIC		0.180 (0.582)		-0.451 (0.886)	
Log(Portfolio)*LIC		-3.489 (3.166)		1.241 (4.793)	
Log(Remittances)*LIC		1.264*** (0.482)		1.061** (0.488)	
Log(Aid)*LIC		-0.122 (0.113)		-0.0869 (0.139)	
Log(Total flows)	0.345** (0.138)		0.155 (0.159)		0.413*** (0.122)
Log(Total flows)*LIC	1.001*** (0.254)		1.230*** (0.294)		
Log(Total flows)*peg regime					-0.0162*** (0.00620)
Trade openness	-0.00444*** (0.000680)	-0.00397*** (0.000887)	-0.00411*** (0.000689)	-0.00348*** (0.000918)	-0.00398*** (0.000805)
Terms of trade	0.000441* (0.000268)	0.000477* (0.000279)	0.000247 (0.000279)	0.000219 (0.000261)	0.000336 (0.000282)
Balassa index	0.00155*** (0.000586)	0.00148*** (0.000469)	0.00134** (0.000549)	0.00192*** (0.000399)	0.00130** (0.000522)
Government consumption			0.0144*** (0.00417)	0.0191*** (0.00355)	
Observations	273	271	255	257	243
Number of countries	64	63	62	62	62
AR(1)	0.028	0.0297	0.0478	0.0242	0.0465
AR(2)	0.8049	0.6502	0.8796	0.6233	0.5733
Sargan	0.1566	0.1259	0.197	0.1926	0.279

Robust standard errors in brackets, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3. Impact of financial flow instability on real exchange rate instability (1980-2012)**

	(1)	(2)	(3)	(4)	(5)	(6)
Log(REER instability (-1))	0.412*** (0.0260)	0.362*** (0.0182)	0.392*** (0.0172)	0.371*** (0.0294)	0.365*** (0.0704)	0.350*** (0.0233)
Log(FDI)	0.189*** (0.0331)					
Log(FDI instability)	0.0294*** (0.00801)					
Log(Other flows)		0.0755* (0.0392)				
Log(Other flows instability)		0.0218*** (0.00562)				
Log(Portfolio flows)			1.359** (0.629)			
Log(Portfolio flows instability)			0.0230*** (0.00871)			
Log(Remittances)				0.556*** (0.163)		
Log(Remittances instability)				0.0240*** (0.00556)		
Log(Aid)					0.205** (0.0822)	
Log(Aid instability)					-0.0217 (0.0156)	
Log(Total flows)						0.546*** (0.0829)
Log(Total flows instability)						0.0168** (0.00766)
Trade openness	- 0.00422*** (0.000471)	- 0.00318*** (0.000287)	- 0.00347*** (0.000237)	-0.00405*** (0.00102)	- 0.00355** (0.00142)	-0.00422*** (0.000414)
Terms of trade	0.000410* (0.000232)	0.000491** (0.000218)	0.000368 (0.000260)	0.000923*** (0.000260)	0.000314 (0.000477)	0.000635*** (0.000226)
Balassa index	0.00167*** (0.000430)	0.00131*** (0.000441)	0.00154*** (0.000433)	0.00121** (0.000474)	0.00182* (0.000957)	0.00176*** (0.000283)
Observations	274	275	271	272	279	251
Number of countries	63	64	63	64	64	61
AR(1)	0.0146	0.0228	0.019	0.0207	0.0094	0.0245
AR(2)	0.5712	0.9454	0.6114	0.9749	0.5835	0.8419
Sargan	0.1635	0.0725	0.1343	0.1389	0.0497	0.3336

Robust standard errors in brackets, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In Table 3, we estimate the impact of the instability of financial flows on that of the real exchange rate. In addition to the total financial flows, the results show that their components and instability also influence the REER, except for foreign aid. Compared to other flows, portfolio investments are associated with a greater instability of the real exchange rate.

Table 4 presents regression results on the effect of net financial flows on GDP growth. We interpret the negative sign of the lagged endogenous variable as the consequence of a stop-and-go growth cycle. Trade openness and natural rents promote economic growth while the *Polity2* variable is only significant in columns 1 and 5<sup>12</sup>. Total financial flows positively affect growth (columns 1, 3, 5, and 6). We calculate the marginal effect of per capita financial flows on growth, for the mean value of financial flows (\$70 per capita). An increase of \$10 per capita raises the growth rate of 0.08 point (column 1 and note 9). This is the total effect of financial flows on growth that includes both a positive direct impact and a negative indirect impact through the appreciation of the real exchange rate. By controlling for the real exchange rate impact, the direct positive effect of inflows is distinguished from the total effect. The coefficient of financial flows is expected to be higher when the REER is introduced, since the indirect impact is negative. An appreciation of the REER is associated with lower GDP growth. In column (3), the coefficient of financial flows is roughly twice the coefficient of this variable in column (1). In other words, a \$10 per capita increase results in a 0.15 percentage point increase in the growth rate (direct impact).<sup>13</sup> The marginal effect can be calculated for other values of per capita financial flows. Focusing on the direct impact, when the median (\$31.8) is considered, the gain is 0.18 points of growth while for the first percentile (-\$49.3 dollars) and the 99th percentile (\$689 dollars), these effects are 0.29 and 0.04, respectively. It may also be interesting to test the impact of financial flows on growth, conditional on the level of the real exchange rate. Hence, we introduce an interactive variable between REER and total flows that significantly and negatively affects the growth rate. Accordingly, the higher the real exchange rate, the less favorable the impact of financial flows on growth (Table 4, column 7).

When financial flows are broken down into various components, the most striking result is that aid does not support growth (Table 4, columns 2 and 4). Let us remember that this is a topic where the voluminous existing literature provides no robust evidence. Following Elbadawi *et al* (2012)'s findings for African countries, aid fosters growth with weaker impact in economies suffering from an overvalued domestic currency.<sup>14</sup> Rajan and Subramanian (2011) find evidence of more pessimistic outcomes. For these authors, aid undermines the competitiveness of the

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<sup>12</sup> Both the countries covered and the starting year limit the choice of the data source. The World Governance Indicators (WGI) cover more than 200 countries since 1996. The International Country Risk Guide (ICRG) monitors 140 countries, but only starts in 1984. Thus, we use an alternative institutional variable-executive constraint from Marshall, Gurr and Jagers (2016). This variable refers to the extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectivities. Overall, the results are not different (available upon request).

<sup>13</sup> It is impossible to distinguish between the direct and indirect effects when capital inflows are broken down into components.

<sup>14</sup> It appears that aid impacts positively growth while the interactive variable between aid and the REER is significantly negative (Table 4, column 8).

tradable sector and lowers the growth rate by decreasing the share of exporting manufacturing industries. Controlling for traditional determinants of economic growth does not change the main results. Columns (5) and (6) illustrate that high inflation rates and elevated public debt levels drive lower economic growth.



**Table 4. Effect of capital inflows on the GDP growth rate (1980-2012)**

	(1)	(2)	(3)	(4)	(5)
GDP Growth (-1)	-0.0532** (0.0246)	-0.0706** (0.0339)	-0.0440* (0.0242)	-0.0760** (0.0351)	-0.0057 (0.0263)
Log(FDI)		0.00534*** (0.00136)		0.00465*** (0.00117)	
Log(Remittances)		0.0715** (0.0293)		0.0871*** (0.0302)	
Log(Aid)		-0,0105 (0.00965)		-0,0061 (0.0085)	
Log(Other flows)		0.00413*** (0.000924)		0.00331*** (0.000768)	
Log(Portfolio)		0.165*** (0.0448)		0.195*** (0.0482)	
Log(Total flows)	0.0193*** (0.00727)		0.0365*** (0.00854)		0.0274*** (0.0088)
Log(REER)			-0.0108* (0.00642)	-0.0164*** (0.00401)	
Log(GDPPC)	-0,00303 (0.00591)	-0,00866 (0.00569)	-0,00745 (0.00658)	-0,00599 (0.00543)	0,0053 (0.0097)
Trade openness	0.0409*** (0.00647)	0.0318*** (0.0116)	0.0418*** (0.00685)	0.0266** (0.0114)	0.0403*** (0.0093)
Polity2	0.000989** (0.000479)	0,000514 (0.000418)	0,000689 (0.000484)	0,000279 (0.00041)	0.0008* (0.00047)
Natural rents	0.000407* (0.000209)	0.000843*** (0.000223)	0,000294 (0.000218)	0.000598*** (0.000212)	0.0007** (0.0002)
Education					-0,0146 (0.0108)
Debt					-0,00002 (0.00002)
Inflation					-0.000013*** (0.000001)
Observations	310	311	309	310	310
Number of countries	69	70	69	70	69
AR(1)	0,0221	0,0224	0,0197	0,0204	0,0233
AR(2)	0,2482	0,2727	0,2119	0,263	0,0526
Sargan	0,3474	0,1414	0,3259	0,114	0,0724

Robust standard errors in brackets, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4 (cont). Effect of capital inflows on the GDP growth rate (1980-2012)**

	(6)	(7)	(8)
GDP Growth (-1)	-0.0514**	0.0310	-0.0299
	(0.0231)	(0.0302)	(0.0401)
Log(Remittances)			0.326
			(0.653)
Log(Aid)			0.395***
			(0.126)
Log(Remittances)*Log(REER)			-0.0728
			(0.139)
Log(Aid)*Log(REER)			-0.0830***
			(0.0267)
Log(Total flows)	0.0127*	0.208***	
	(0.0069)	(0.0706)	
Log(Total flows)*Log(REER)		-0.0230**	
		(0.0112)	
Log(REER)	-0.0205***	0,901	0.765
	(0.0060)	(0.557)	(0.838)
Log(GDPPC)	0,0082	0.00371	0.0125
	(0.0094)	(0.00698)	(0.00872)
Trade openness	0.0382***	0.0197	0.0255**
	(0.0074)	(0.0174)	(0.0125)
Polity2	0,0006	0.000519	0.000707
	(0.0004)	(0.000478)	(0.000471)
Natural rents	0.0006**	0.000507	0.000935***
	(0.0002)	(0.000330)	(0.000361)
Education	-0,0136		
	(0.0102)		
Debt	-0.00004***		
	(0.000013)		
Inflation	-0.00001***		
	(0.000003)		
Observations	303	264	260
Number of countries	69	66	66
AR(1)	0,029	0,0451	0,0425
AR(2)	0,0971	0,3863	0,4991
Sargan	0,3474	0,1414	0,3259

Robust standard errors in brackets, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 5. Effect of financial inflows on LIC economic growth (1980-2012)**

	(1)	(2)	(3)	(4)
GDP growth (-1)	-0.0692** (0.035)	-0.0956** (0.0427)	-0.0713** (0.0328)	-0.102** (0.0408)
Log(FDI)		0.00500*** (0.00139)		0.00430*** (0.00114)
Log(Remittances)		0.0636* (0.0326)		0.0791** (0.0326)
Log(Aid)		-0,0133 (0.0167)		-0,0181 (0.0149)
Log(Other flows)		0.00409*** (0.00109)		0.00328*** (0.000972)
Log(Portfolio)		0.152*** (0.0551)		0.186*** (0.0525)
Log(FDI)*LIC		0,0321 (0.0384)		0,0349 (0.0353)
Log(Other flows)*LIC		-0,0662 (0.186)		0,0164 (0.172)
Log(Portfolio)*LIC		0,221 (0.485)		0,148 (0.427)
Log(Remittances)*LIC		-0,104 (0.0665)		-0.134* (0.0689)
Log(Aid)*LIC		0,00875 (0.0212)		0,0166 (0.0198)
Log(REER)			-0.0117* (0.00633)	-0.0136*** (0.00388)
Log(Total flows)	0.0415*** (0.00839)		0.0601*** (0.011)	
Log(Total flows)*LIC	-0,0346 (0.033)		-0,0451 (0.0326)	
Log(GDPPC)	-0,00859 (0.00548)	-0,00183 (0.00549)	-0.0120** (0.00604)	-0,00119 (0.00534)
Trade openness	0.0446*** (0.00506)	0.0270** (0.0111)	0.0431*** (0.00623)	0.0267** (0.0113)
Polity2	0.000987** (0.000484)	0.000746* (0.000411)	0,000722 (0.000479)	0,000527 (0.000387)
Natural rents	0,000273 (0.000196)	0.000907*** (0.000247)	0,000205 (0.000218)	0.000711*** (0.000242)
Observations	310	311	309	310
Number of countries	69	70	69	70
AR(1)	0,0247	0,0212	0,0244	0,022
AR(2)	0,2779	0,4055	0,2791	0,4356
Sargan	0,4661	0,0758	0,4608	0,0805

Robust standard errors in brackets, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5 tests for the presence of specificities for low-income countries (LICs) in the GDP growth model. Unlike for MICs, the impact of remittances proves negative (column 4). Among

potential explanations is the fact that the increase in income might be used for imported consumer goods rather than to stimulate investments (Chami et al., 2012) or that the indirect effect through the appreciation of the real exchange rate negatively impacts the competitiveness of tradable goods. Furthermore, a high ratio of remittances could lead to reductions in institutional quality, leading to higher corruption, which reduces government effectiveness (Abdih et al., 2012). Chami et al. (2005) have shown that remittances may have adverse effects by reducing incentives for labor market participation. Clemens and McKenzie (2014) also point out the significant noise in the data on remittances, as well as the difficulty in disentangling the impact of remittances to, and migration from, origin countries.

Table 6 focuses on the hypothesis that the impact of total inflows on economic growth may be conditional on the exchange rate regime. Coefficients associated with the interactive variables are not statistically significant, suggesting that the exchange rate regime has no effect.

**Table 6. Effect of financial flows on GDP growth rates and the role of the peg regime (1980-2012)**

	(1)	(2)	(3)
GDP Growth (-1)	-0.0683*	-0.0658	-0.0837*
	(0.0412)	(0.0419)	(0.0442)
Log(Total flows)	0.0334***	0.0390***	0.0452***
	(0.0109)	(0.0129)	(0.0133)
Log(Total flows)*peg regime	0.000559	0.000608	0.000937
	(0.000675)	(0.000703)	(0.000810)
Log(Total flows)*LIC			-0.0581
			(0.0391)
Log(Total flows)*LIC*peg regime			-0.00113
			(0.00144)
Log(REER)		-0.00891	-0.00719
		(0.00723)	(0.00723)
Log(GDPPC)	-0.00303	-0.00350	-0.00385
	(0.00561)	(0.00633)	(0.00641)
Trade openness	0.0406***	0.0362**	0.0366**
	(0.0139)	(0.0146)	(0.0142)
Polity2	0.000583	0.000430	0.000559
	(0.000483)	(0.000475)	(0.000465)
Natural rents	0.000802***	0.000841***	0.000905***
	(0.000299)	(0.000283)	(0.000284)
Observations	278	278	278
Number of countries	66	66	66
Number of instruments	27	28	30
AR(1)	0.0001	0.0001	0.0001
AR(2)	0.4399	0.4888	0.3706
Sargan	0.4895	0.4436	0.4907

Robust standard errors in brackets, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 7. Effect of instability of financial flows on instability of output growth**

	(1)	(2)	(3)	(4)	(5)	(6)
GDP growth instability (-1)	0.0989*	0.120**	0.0460	0.117*	0.0965*	0.115*
	(0.0588)	(0.0607)	(0.0703)	(0.0601)	(0.0585)	(0.0628)
Log(Total flows)	-2.063***					
	(0.770)					
Log(Total flows instability)	-0.0354					
	(0.0408)					
Log(FDI)		-0.456***				
		(0.167)				
Log(FDI instability)		0.0852***				
		(0.0309)				
Log(Other flows)			0.589***			
			(0.150)			
Log(Other flows instability)			0.0540**			
			(0.0222)			
Log(Portfolio flows)				0.450		
				(1.872)		
Log(Portfolio flows instability)				0.0484**		
				(0.0238)		
Log(Remittances)					-0.436	
					(0.882)	
Log(Remittances instability)					0.0190	
					(0.0345)	
Log(Aid)						-0.190
						(0.238)
Log(Aid instability)						0.0973**
						(0.0392)
Log(REER)	-0.219	-0.352*	-0.410**	-0.387**	-0.209	-0.267
	(0.156)	(0.188)	(0.172)	(0.181)	(0.167)	(0.192)
Log(REER instability)	0.172***	0.191***	0.173***	0.185***	0.167***	0.131***
	(0.0410)	(0.0412)	(0.0417)	(0.0474)	(0.0433)	(0.0360)
Log(GDPPC)	0.0420	-0.177	-0.306**	-0.237	-0.135	-0.151
	(0.172)	(0.145)	(0.140)	(0.145)	(0.183)	(0.133)
Trade	0.425*	0.0918	0.429	0.143	0.114	0.0751
	(0.218)	(0.195)	(0.266)	(0.206)	(0.216)	(0.282)
Polity2	-0.0113	-0.0116	-0.00964	-0.0114	-0.00671	-0.0116
	(0.0103)	(0.0101)	(0.00953)	(0.00948)	(0.0107)	(0.00918)
natural rents	-0.000566	-0.00146	-0.00727	-0.00203	-0.00232	-0.00335
	(0.00298)	(0.00489)	(0.00535)	(0.00405)	(0.00436)	(0.00632)
Observations	249	262	262	258	258	261
Number of countries	64	65	65	64	65	65
AR(1)	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2)	0.2651	0.6015	0.0949	0.1196	0.2005	0.038
Sargan	0.3309	0.3959	0.7082	0.5507	0.5565	0.2482

Robust standard errors in brackets, \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table 7 revisits the role of financial flows instability on the instability of GDP growth. The results are mixed. On the one hand, the instability of total financial flows does not affect the instability of the GDP growth (column 1). On the other hand, the instability of the different components of financial flows matters (columns 2,3,4 and 6) except for remittances (column 5), which may indicate that the latter tend to smooth consumption. The ability of a country to dampen the potential negative macroeconomic consequences of instability is likely to depend on institutional factors and macroeconomic policies. Alguacil et al. (2011) showed a strong heterogeneity in the absorptive capacity of FDI inflows in host countries. Furthermore, the instability of the most volatile financial flows (i.e., portfolio investments), which are quite limited for most of the sampled countries, do not affect the instability of the growth rates more than structural long-term flows. Schmukler (2008) notes that the overwhelming majority of the net inflows resulting from bonds, equity and trade-related lending has been concentrated over a limited group of large and generally middle-income countries (Argentina, Brazil, China, India, South Korea, and Mexico). Only four low-income economies benefited from a symbolic proportion of these financial flows (Ghana, Indonesia, Malawi, and Pakistan).

## **5. Conclusion and policy implications**

After a sharp decline during the 1980s, financial resources to developing countries have significantly increased since the end of the 1990s, in line with the globalization of trade and the increasing financial openness of developing economies. A pronounced shift in the composition of financial flows has accompanied these structural changes. While foreign aid remains the prevailing source of financing for low-income countries, the role of ODA is much smaller for middle-income economies, which now mainly depend on FDIs and, to a lesser extent, on remittances. The paper shows that financial flows appreciate the real effective exchange rate. Overall, this effect is more pronounced for LICs, possibly because of the weaknesses of the economic and institutional environment, or the bottlenecks and low supply-side responses. Although the impact of financial flows on growth performance does not differ across country income groups, the indirect impact through the relative price of non-tradables can be one source of the “premature deindustrialization” of the LICs that has been observed elsewhere (Rodrik, 2015).

We also found a strongly positive and significant impact of financial flows on GDP growth. This result is in accordance with the expected contribution of external resources in filling the saving-investment gap. However, we did not detect a difference with respect to the country

level of development. For an average value of \$70, an increase of \$10 of per capita financial flows leads to a growth gain of 0.15 point when the real exchange appreciation is controlled for (direct impact). Adjusting this increase for the indirect impact due to the real exchange rate appreciation, we still find that greater inflows lead to higher economic growth of 0.08 points (total impact). The elasticity of the REER to total financial flows is about 1.34 percent for LICs, and less than 0.4 percent for MICs. Moreover, the analysis highlights that the instability of financial flows, in particular market-oriented flows (i.e., FDI, portfolio investments), exacerbates the instability of both output and the real exchange rate.

Although the influence of ODA did not prove statistically significant in explaining GDP growth, including for LICs, this does not mean that it has no effect on the long-term well-being of populations. Official aid potentially contributes to an increase in human capabilities and infrastructure and helps the promotion of public goods. The impact of FDIs on growth is more direct. These inflows deserve a break down that is not statistically easy to implement over a large sample and a long period. Indeed, in many cases, LICs benefit from FDI in natural resources with few backward and forward linkages to the local economy. FDIs in MICs are likely to have stronger structural impacts through horizontal and vertical relations within the domestic economy. Therefore, the challenge for LICs is to use FDIs as a lever to promote both raw material processing and greater participation in global value chains.

This paper also sheds light on the effect of portfolio investments, which remain limited in LICs. If regression coefficients have shown significant impacts on GDP growth, they have also displayed some risk of currency overvaluation. The same problem arises with remittances that support domestic consumption and housing investments, and finally stimulate the relative price of non-tradable goods. Developing countries should fully account for the fact that while financial flows are critical to finance development needs and spur economic growth, they can lead to significant REER appreciation. Together, the complex nature of interrelations between variables calls for the governments to find the difficult balance between excessive regulation and unbridled liberalization of some components of financial flows. One of the policy implications of our findings more specifically applies to LICs. While pursuing efforts to improve the quality of public governance and reduce market imperfections, LICs must be very cautious in removing constraints with respect to capital account transactions. This is a point where a consensus has progressively been established (Stiglitz, 2008). Short-term speculative flows drive instability of the real exchange rate that potentially prove detrimental to the poor, the productive sector at large and more particularly to the tradable sector.



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## Appendices

### Appendix 1:

List of countries			
Code	Country	Code	Country
DZA	Algeria	LBN	Lebanon
AGO	Angola	LSO	Lesotho
ARG	Argentina	LBR	Liberia
BGD	Bangladesh	MDG	Madagascar
BEN	Benin	MWI	Malawi
BOL	Bolivia	MYS	Malaysia
BWA	Botswana	MLI	Mali
BRA	Brazil	MRT	Mauritania
BFA	Burkina Faso	MUS	Mauritius
BDI	Burundi	MEX	Mexico
KHM	Cambodia	MOZ	Mozambique
CMR	Cameroon	NAM	Namibia
CAF	Central AfricanRep.	NPL	Nepal
TCD	Chad	NER	Niger
CHN	China.P.R.: Mainland	NGA	Nigeria
COL	Colombia	PAK	Pakistan
COG	Congo. Republic of	PAN	Panama
CRI	Costa Rica	PRY	Paraguay
CIV	Côte d'Ivoire	PER	Peru
DJI	Djibouti	PHL	Philippines
DOM	Dominican Republic	RWA	Rwanda
ECU	Ecuador	SEN	Senegal
EGY	Egypt	SLE	Sierra Leone
SLV	El Salvador	ZAF	South Africa
GAB	Gabon	LKA	Sri Lanka
GMB	Gambia. The	SDN	Sudan
GHA	Ghana	SWZ	Swaziland
GTM	Guatemala	SYR	Syrian Arab Republic
GIN	Guinea	TZA	Tanzania
GNB	Guinea-Bissau	THA	Thailand
HTI	Haiti	TUN	Tunisia
IND	India	UGA	Uganda
IDN	Indonesia	VEN	Venezuela. Rep. Bol.
IRN	Iran. I.R. of	VNM	Vietnam
JAM	Jamaica	YEM	Yemen. Republic of
JOR	Jordan	ZMB	Zambia
KEN	Kenya		
LAO	Lao People's Dem. Rep.		

## Appendix 2:

Table 1. Data sources		
Variables	Definition	Sources
GDP growth	Economic growth	IMF, World Economic Outlook
FDI	Foreign direct investment per capita	IMF, World Economic Outlook
Remittances	Migrant transfers per capita	IMF, World Economic Outlook
Aid	Foreign aid per capita	OECD data sets
Portfolio	Portfolio flows per capita	IMF, World Economic Outlook
Other flows	Non-classified flows per capita	IMF, World Economic Outlook
Trade	Imports plus exports over GDP	World Bank, World Development Indicators (2014)
Natural rents	Natural resource rents over GDP	World Bank, World Development Indicators (2014)
Polity2	Degree of democracy	Polity IV Project
GDPPC	GDP per capita	IMF, World Economic Outlook
Balassa index	Measure the degree of a country competitiveness	CERDI, from IFS of the IMF
REER	Real effective exchange rate	CERDI
Terms of trade	Terms of trade	IMF, World Economic Outlook
Peg regime	Dummy variable that takes the value of 1 if the exchange rate regime is pegged	Ilzetzki et al. (2008)
LIC	Low-income countries. Dummy variable that takes the value of 1 if the country belongs to the group of the IMF low-income group classification	IMF, World Economic Outlook
Government consumption	Government final consumption expenditures	World Bank, World Development indicators (2014)
Total flows instability	Calculated from the standard deviation of the regression residuals of total flows on the lagged variable and a deterministic trend. The same definition is adopted for the different components of capital inflows	IMF, World Economic Outlook
REER instability	Calculated from the standard deviation of the regression residuals of REER on the lagged variable and a deterministic trend.	CERDI-FERDI (OSC) from IFS of IMF
GDP growth instability	Calculated from the standard deviation of the regression residuals of GDP growth on the lagged variable and a deterministic trend.	CERDI, from IFS of IMF



**Table 2. Descriptive statistics**

Variables	Obs	Mean	Std. Dev.	Min	Max
FDI	549	55,9	120,1	-228,8	1178,5
Remittances	550	44,0	111,8	-458,6	829,9
Aid	598	44,0	47,8	-4,2	455,9
Other flows	570	-1,1	139,2	-1618,6	773,7
Portfolio flows	558	0,2	72,3	-1106,9	283,9
Total capital flows	567	66,7	131,7	-479,3	838,5
REER	552	661,4	8380,6	36,0	142482,0
Trade	578	57,0	39,0	9,4	510,9
Terms of trade	529	114,9	49,6	22,1	488,4
Balassa index	451	119,5	37,7	72,2	326,8
GDP per capita	570	1719,8	1805,6	93,4	8420,3
Polity2	562	0,7	6,1	-9,8	10,0
Natural rents	580	11,1	12,5	0,0	70,0
Government consumption	556	14,1	5,9	2,8	40,7
GDP growth	574	3,8	4,2	-42,5	33,3
Education	538	1,8	0,5	1,0	2,9
Debt	558	74,2	72,2	5,0	753,5
Inflation	570	41,1	276,2	-4,5	5354,0
FDI instability	546	23,3	39,5	0,0	270,9
Other flows instability	567	64,3	114,4	0,0	1060,5
Portfolio instability	556	20,0	59,1	0,0	693,8
Remittances instability	546	9,1	16,6	0,0	179,5
Aid instability	596	14,5	30,8	0,1	380,7
GDP Growth instability	527	3,9	4,0	0,2	40,6
Total flows instability	491	16,3	21,6	0,6	167,6
REER instability	533	338,2	5400,5	0,3	117850,7

**Table 3. Net Financial flows per capita, 1980-2012**

		Full period	1980-1989	1990-1999	2000-2012
Total flows	Full sample	136.0	65.7	89.9	182.4
	Low income countries	75.1	50.0	53.8	95.0
	Middle income countries	164.7	74.0	106.3	223.1
FDI	Full sample	59.9	7.5	24.6	95.0
	Low income countries	9.4	0.5	1.9	16.5
	Middle income countries	83.7	11.2	35.0	131.6
Remittances	Full sample	42.7	15.3	19.9	63.8
	Low income countries	14.8	3.0	4.5	24.4
	Middle income countries	55.9	21.8	26.9	82.2
Aid	Full sample	40.0	34.7	37.9	42.7
	Low income countries	49.4	40.3	43.6	55.5
	Middle income countries	35.6	31.8	35.3	36.7
Portfolio	Full sample	3.6	0.7	8.1	1.6
	Low income countries	0.2	-0.1	0.5	0.2
	Middle income countries	5.2	1.0	11.6	2.3
Other flows	Full sample	-10.3	7.6	-0.7	-20.7
	Low income countries	1.2	6.4	3.4	-1.5
	Middle income countries	-15.7	8.2	-2.5	-29.7

Source: IMF's World Economic Outlook