

**On the Importance of External Financial Reform  
for Output Fluctuations: Evidence from Developed  
and Emerging Economies**

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(May 2010)

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<sup>2</sup> I wish to thank Mohamed Trabelsi and Mine Cinar for helpful comments and discussions and Gian Maria Milesi-Feretti for sharing his data with me. Any remaining errors are the sole responsibility of the author.

### ***Abstract***

This paper explores empirically the impact of financial liberalization on growth volatility for a sample of 60 developed and emerging countries during the period 1980-2007, using cross-country and dynamic panel data regressions. The main results of the paper are: *first*, cross-sectional regressions show that external financial liberalization does not exert any significant effect on growth volatility in *developed countries*. However, in the case of *emerging countries*, freeing capital account movements is associated with higher output fluctuations. *Second*, for the case of more financially opened (MFO) countries that did not experience banking crises during the period (1990-2007), which corresponds to a surge of capital flows in these countries, relaxing controls on capital account transactions seems to contribute significantly to smooth out fluctuations in GDP growth. *Third*, it is found that in developed countries the dampening effect of capital account openness depend upon the level of institutional and financial development. In other words, only in an environment featured by a good institutional framework, will the link between financial openness and growth fluctuations be readily detectable.

**Keywords:** capital account liberalization, equity market liberalization, international financial integration, growth fluctuations, quality of institutions, dynamic panel data.

## I. Introduction

Studies on the effects of international financial liberalization on economic growth have been relatively abundant. Indeed, capital flows liberalization are believed to play a fundamental role in increasing growth and welfare by improving the global allocation of capital and resources which is likely to enhance specialization and provide opportunities of risk-diversification (Açemoglu and Zilibotti (1997)). Financial liberalization may also bring other benefits by accelerating the financial deepening process (Kaminsky and Schmukler (2001) and Reinhart and Tokathidis (2001)). Moreover, by generating international competition, external financial liberalization may also improve the functioning of domestic financial systems; with beneficial effects on savings and allocation (Klein and Olivei (1999), Levine (2001), Bekaert et al., (2003) and Bonfiglioli and Mendicino (2004)).

However, some recent liberalization experiences, mainly in developing countries, have shown that these reforms are still controversial. The financial crises in Mexico (1994), South East Asia (1997), Russia (1998), Brazil (1999), Turkey (2001) and, to some extent, the Argentinean episode of the late 2001, early 2002, highlighted the potential risks associated with capital flows liberalization. These crises stemming from freeing capital account transactions have been accompanied by high episodes of extreme volatility in output and consumption as well as a sudden loss of access toward financial markets following financial liberalization programs (Kaminsky and Reinhart (1999)). These events led to a widespread debate on the benefits and the costs of external financial reforms, especially, in the case of emerging countries.

Two strands of literature on this issue may be highlighted. The *first* one insists on the pivotal role played by opening capital markets in improving welfare and smoothing economic fluctuations through international risk sharing (Obstfeld (1996), Pallage and Robe (2003)). More specifically, the basic idea advanced by this growing body of literature is that with the reduction in the restrictions on capital account transactions, domestic residents, firms and countries may smooth out growth fluctuations over time by diversifying away country specific risks since they may have resort to international financial markets for risk sharing purposes. Developing countries, in particular, may reap large welfare gains through international risk sharing because of their highly volatile nature of income and consumption dynamics.

Some empirical contributions provide support to the aforementioned theoretical predictions. Bekaert, Harvey, and Lundblad (2006), for instance, examined the impact of equity market liberalization and capital account openness on both output and consumption growth volatility in a large cross-section of countries during the period (1980-2000). They found that equity market liberalization is somewhat associated with a significant decline in both output and consumption

volatility. Kose, Prasad and Terrones (2002) tested the impact of international financial integration on macroeconomic volatility for a large number of developed and developing countries for the period 1960-1997. They concluded that international financial integration does not increase macroeconomic volatility during 1990s, while it increases relatively the volatility of consumption.

The *second* strand of literature, argues that limiting the degree of capital account mobility reduces speculation and helps countries to resist to external shocks without suffering massive crises. According to this view, countries that control and limit capital mobility are less likely to suffer contagion from abroad. In this respect, Stiglitz (2000, 2003) noticed that countries like India and China were able to face out significant currency crises and were not affected by contagion from the East Asian crises as well as crises of the 1990s-early 2000s because they put restrictions on capital mobility. With reference to the recent experiences of financial instability Stiglitz (2000) argued that "*financial and capital market liberalization... was at the core of the problem*", (Pp: 1). He also added regarding to the increased frequency of the financial and economic crises that "*this change is related to financial and capital market liberalization*" (Pp: 6).

According to other authors, however, capital account openness enhances macroeconomic volatility in developing economies because of sudden changes in the direction of capital flows and most of these countries do not have deep financial sectors to cope with the highly volatile capital flows (Aghion, Banerjee and Picketty (1999), Caballero and Krishnamurthy (2001)). Indeed, the literature on crisis experiences of emerging market economies (EMEs) shows that the risks associated to capital account liberalization process arise mainly from inadequate preparedness before liberalization in terms of domestic and external sector policy consolidation, strengthening of prudential regulation, development of financial markets for orderly functioning of these markets (Kawai et al., (2003)).

In other words, capital account liberalization may be a source of financial and economic instability and expose countries to external shocks (Senhadji (1998) and Kose et al. (2002)) if some prerequisites are not in place before or while liberalizing (i.e. resilient domestic financial system, appropriate institutions and macroeconomic policies, etc). Specifically, countries with better developed and efficient financial sectors and good institutional quality may derive some benefit from freeing capital account movements in terms of a better protection for economies against the risks of a capital account crisis and reduced economic fluctuations.

For instance, Bekaert, Harvey and Lundblad (2006) has shown that countries with a relatively more open capital account as well as large government sectors and developed banking sectors experience significant reductions in volatility. Easterly, Islam, and Stiglitz (2000) and O'Donnell (2001) found that a higher level of development of the domestic financial sector and a high degree

of financial integration are associated with lower volatility. Writing in the same spirit, Arteta, Eichengreen and Wyplosz (2001) argued that "*The Asian crisis encouraged the belief that countries benefit from removing controls only when they first strengthen domestic markets and institutions generally*" (Pp:6) and added that "*there is some suggestion that capital account liberalization is more beneficial in more financially and institutionally developed economies*". (Pp: 7). In a similar vein, Dani Rodrik (1999) warned "*Openness to international capital flows can be especially dangerous if the appropriate controls, regulatory apparatus and macroeconomic frameworks are not in place.*" (Pp: 30).

This paper contributes to the empirical literature mentioned above to more thoroughly analyze whether freeing capital account movements reduce a country's vulnerability to external shocks. A crucial question that deserves attention is whether financial liberalization has somehow contributed to reduce growth fluctuations especially in emerging countries and which factors are behind a country's ability to benefit from an open capital account. We test this assumption for a broad set of 60 developed and emerging market economies over the period (1980-2007) while controlling for other potential determinants of growth volatility such as financial development, quality of institutions among others. For this purpose, we adopt cross-country estimations for different periods<sup>3</sup> as well as dynamic panel data approaches. We use two measures of capital account liberalization: *de jure* capital account liberalization –a binary IMF indicator of capital account restrictions- and *de facto* capital account openness – a composite index of the AREAR binary series

The main results of the paper are: *first*, cross-sectional regressions show that external financial liberalization does not exert any significant effect on growth volatility in developed countries. However, in the case of emerging countries, freeing capital account movements is associated with higher output fluctuations. *Second*, for the case of more financially opened (MFO) countries that did not experience banking crises during the period (1990-2007), which corresponds to a surge of capital flows in these countries, relaxing controls on capital account transactions seems to contribute significantly to smooth out fluctuations in GDP growth. *Third*, it is found that in developed countries the dampening effect of capital account openness depend upon the level of institutional and financial development. In other words, only in an environment featured by a good institutional framework, will the link between financial openness and growth fluctuations be readily detectable.

The remainder of the paper is organized as follows. Section 2 describes the measures of capital account openness as well as other data used in this paper. In section 3 we investigate the

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<sup>3</sup> The two periods specified are 1980-1989 and 1990-2007. The beginning of this latter period roughly corresponds to a wave of many financial reforms in the developing world aiming at increasing their integration in the global economy.

relationship between capital mobility and growth volatility using cross-country and dynamic panel data estimations. Section 4 checks the robustness of previous results to changes in financial liberalization measurement. Finally, section 5 concludes and provides some policy implications.

## 2. Data and definitions

The data set includes 60 developed and emerging countries' time series data<sup>4</sup> for the period spanning from 1980 to 2007. All the variables used in the regressions except those relative to the financial liberalization indicators and the institutional environment, were extracted from the World Development Indicators 2008 (WDI 2008)<sup>5</sup>.

### 2.1 Measuring Financial Liberalization

The empirical literature has proposed two different approaches in measuring external financial liberalization which are *de jure versus de facto* definition criterion. The *de jure* measure is defined as a discrete 0-1 variable, while *de facto* measure is defined on a continuous scale. To measure financial liberalization, we use both *de jure* and *de facto* measures. Our benchmark measure of *de jure* capital account openness (henceforth referred to as *KAL*) takes on the value of one (1) when restrictions are non-existent and zero otherwise. Consequently, the (*KAL*) variable tend to be closer to zero, the more pervasive capital controls are. This variable relies on information contained in the classification of the IMF's *Annual Report on Exchange Arrangement and Exchange Restrictions* (AREAER)<sup>6</sup> and Grilli and Milesi-Ferretti databases (1995) and is available on an annual basis which allows identifying clearly and easily when a country had removed all barriers to capital account transactions.

According to Kose et al. (2007) this *de jure* measure is relevant in analyzing the effects of capital account reforms. However, this dichotomous variable of capital controls has been criticized for being uninformative and too coarse<sup>7</sup>. More specifically, some economists (Eichengreen (2001) among others) argue that this simple indicator does not measure the

<sup>4</sup> See a list of countries in the appendix.

<sup>5</sup> See table (14) for a list of all variables used.

<sup>6</sup> In the AREAER series we find four variables ( $k_i, i=1, \dots, 4$ ), where  $k_1$  indicates the existence of multiple exchange rates,  $k_2$  and  $k_3$  provide information on the restrictions on current account and capital account transactions, respectively and  $k_4$  is an indicator of the requirement of the surrender of export proceeds. All these indicators ( $k_1, k_2, k_3$  and  $k_4$ ) provide information on the nature and the extent of the restrictions on external accounts. Since the objective in this paper is to focus on the effect of financial openness – rather than controls – we reversed the values of ( $k_3$ ) in a way that the new obtained variable (*KAL*) takes a value of unity (1) when the restrictions are non-existent and zero otherwise.

<sup>7</sup> According to Kose, Prasad, Rogoff and Wei (2006), the *de jure* measures (i) do not accurately reflect the degree of openness of the capital account because they are partially based on various restrictions associated with foreign exchange transactions that may not necessarily impede capital flows, (ii) do not capture the degree of enforcement of capital controls (or the effectiveness of that enforcement), which can change over time even if the legal restrictions themselves remain unchanged, (iii) do not always reflect the actual degree of integration of an economy into international capital markets.

intensity and effectiveness of enforcement of capital controls. Indeed, some countries with extensive capital controls have known significant private capital outflows, while other ones with open capital accounts have registered few capital inflows or outflows.

Our benchmark measure of *de facto* capital account openness is extracted from Chinn and Ito (2007) database. This index (henceforth, (KAOPEN)) is considered as the first standardized principal component of the AREAR binary series ( $k_1, k_2, k_4$ ) and the share of five year period where controls on capital account are not effective ( $SHARE_{k_3}$ )<sup>8</sup>. The Chinn and Ito's financial openness index (KAOPEN) is considered therefore as a *de jure* measure of regulatory restrictions on capital account transactions. However, in order to take into account the effect of financial openness, Chinn and Ito (2007) proceeded to reverse the values of the binary variables where each one takes the value of unity when restrictions are non-existent and zero otherwise. Consequently, this index takes on higher values the more open the country is to cross-border capital transactions.

We also consider alternative measures of capital account openness. These measures are primarily from Bekaert and Harvey's Chronology of financial reforms and Miniane (2004) database. In sensitivity tests for our empirical results, we will consider a new measure of integration to world financial markets which is extracted from Lane and Milesi-Ferretti's (2006) External Wealth of Nations Database.

## 2.2 Other data

Besides the financial liberalization proxies, other variables, commonly used in the empirical literature on financial liberalization, are also included in the regressions. These variables control for either macroeconomic reforms or financial and institutional development. Three variables control for the effect of macroeconomic reforms. We include the "*fiscal policy*" variable (GOVC) to test whether government plays a risk-reducing role in economies exposed to external risk by providing social insurance<sup>9</sup>, where (GOVC) is calculated as the ratio of government expenditure to GDP. Regarding the stance of "*monetary policy*", we use the standard deviation of inflation (STDINF). We include also an indicator of international trade (OPEN) which is often linked to economic fluctuations. (OPEN) is measured as the ratio of total trade over GDP ( $OPEN = (Exports + Imports)/GDP$ ). It is worth noting that the impact of this variable is ambiguous in the sense that more open economies can afford to be more specialized while output growth volatility may be larger the more open economy (economy with less trade barriers may be exposed to

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<sup>8</sup>  $SHARE_{k_3t}$  is computed as follows:  $SHARE_{k_3,t} = \left( \frac{k_{3,t} + k_{3,t-1} + k_{3,t-2} + k_{3,t-3} + k_{3,t-4}}{5} \right)$ . According to Chinn and Ito (2007)

"the financial openness variable for year  $t$  is a proportion of five years (encompassing year  $t$  and the preceding four years) that the capital account was open" (P.p 5).

<sup>9</sup> See Rodrik (1996).

shocks from abroad and at the same time it may be able to smoothly adjust to domestic shocks by exporting them).

It is often argued that opening the capital account allows risk diversification helping to stabilize thereby the economy<sup>10</sup>. On the other hand, opening the capital account can make the country more dependent on the level of financial development, which, in turn, could make it more vulnerable. To investigate that, we introduce in our regressions three measures of "*financial development*" which are the ratio of credit to private sector to GDP<sup>11</sup> (henceforth, (CPY)), the ratio of financial deepening M2 over GDP (M2Y) and the ratio of financial saving over GDP (QMY).

The *first* measure (CPY) is supposed to delimitate with more precision the investment financing activity since it represents the role of the financial system in channelling funds to entrepreneurial activities, while the *second* proxy (M2Y) is a standard measure of financial intermediation activity (Mckinnon (1973), Shaw (1973) and King and Levine (1993) among others). The *last* measure (QMY) takes into account the availability of quasi-liquid liabilities which are more destined to finance capital accumulation since we exclude the money stock M1 which serves more for transactions objectives.

It is also possible that governments implement financial reforms once they feel they have efficient institutions in place to absorb exogenous shocks that may otherwise increase volatility. In other words, the capacity of institutions to develop in order to adjust to new risks inherent to financial reforms is of crucial importance. According to Acemoglu, Aghion and Zilibotti (2002), The quality of an institutional environment is not characterized only by its relevance at a given moment, but also by its capacity to be called into question or adapted as takeoff proceeds or when difficulties arise.

For that, we introduce also some "proxies" of institutional quality (henceforth (*IQ*)) extracted from the International Country Risk Guide (ICRG) database. These measures included in (*IQ*) are: indicators of corruption in government (*CORRUPT*), the Rule of Law (*LAW*) and quality of bureaucracy (*BUREAUC*). The first two variables are scaled 0-6, while the last one ranges in value from 0-4. We use also a broad measure of institutional quality (*INSTQ*) that is the sum of the last ICRG variables and takes on values from 0 to 16.

The corruption considered here is a financial corruption met directly by enterprises "*in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans. Such corruption can make it difficult to conduct business effectively, and in some cases may force the withdrawal or withholding*

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<sup>10</sup> See among others Easterly, Islam and Stiglitz (2000) and Svaleryd and Vlachos (2000).

<sup>11</sup> See for example, King and Levine (1993).

*of an investment*” (ICRG (2007), Pp: 31). According to Wei and Wu (2001), although this kind of corruption does not directly cause the crises, it is likely to increase the likelihood of crises by reversing capital flows. Data range is from 0 to 6 with 0 being highest corruption and 6 lowest corruptions in the political system.

The Rule of Law indicator (LAW) refers to the safety of persons and goods and the possibility to manage conflicts between individuals within society as well as between government and society. More specifically, this measure is from the variable “Law and Order Tradition in ICRG”, where Law is identified as “*the strength and impartiality of the legal system*” and Order as “*an assessment of popular observance of the law*” (ICRG 2007, Pp: 33). Data range is from 0 to 6, with lower scores indicating a tradition which depends on physical force or illegal means to settle claims and higher scores a strong judicial system in terms of a strong court system and provisions for an orderly succession of power.

The last indicator is relative to the Quality of Bureaucracy (BUREAUC) which is considered as “a shock absorber that tends to minimize revisions of policy when governments change”. Therefore, high scale values are given to countries where bureaucracy has “*the strength and the skill to govern without breaks or interruptions in providing public services*”, “*an established mechanism for recruitment and training,*” and “*an autonomy from political pressure*” when governments change. Data range is from 0 to 4, such as lower scores are attributed to countries where a change in government has drastic consequences in terms of daily administrative functions and policy implementation.

Finally, we use an aggregated index (*INSTQUAL*), which is the sum of the last ICRG variables: Corruption in Government, the Rule of Law and Quality of Bureaucracy, with 0 being the lowest quality of institutions and 16 the highest quality. According to Mauro (1995) and others, the aggregate of the three variables may yield a better proxy for institutional quality.

A brief analysis of the data on institutional quality indicators reveals that for developed countries, the proxies are rated in average at maximum scales (5 for Corrupt, 3.75 for Bureauc, 5.53 for Law and 14.29 for the composite index) and they also move closely for the entire period (1980-2007). Nevertheless, for the case of emerging countries, the ratings of these indicators show improvement across the same period. Moreover, it is worth noting that these countries enjoyed higher fluctuations in growth rates (3.77) over the period (1980-2007) than developed ones (1.85).

This evidence suggests that the choice of the aggregated ICRG index (henceforth (*INSTQ*)) or each of three ICRG variables as measures of the quality of institutions does not pose a statistical problem in the case of developed countries, since the high correlations among these variables provide the same information. However, if the sample is composed of emerging countries, the choice of ICRG indicators needs to be taken into account because of the heterogeneity of the

sample with regards to the institutional proxies' scales. In other words, we may find an institutional structure in a given country with high Law and Order scale but with high level of political corruption and weak quality of bureaucracy.

### 3. Empirical Results

To assess the effects of financial liberalization on growth fluctuations, we use cross-sectional and dynamic panel data estimations. The use of cross-sectional regressions is justified by the fact that it follows from traditional growth studies. In a second stage, we carry out dynamic panel data regressions which offer several advantages over purely cross-sectional estimations.

To achieve cross-country estimations on the impact of financial liberalization on growth volatility, we use a sample of 60 *developed* and *emerging market economies*<sup>12</sup> with data averaged over the periods (1980-2007) and (1990-2007), respectively. For the dynamic panel data regressions, we employ the same sample but with averaging the data over each of the six-period composing the whole period (1980-2007).

#### 3.1 Cross-sectional Results

For the cross-country analysis, we estimate the following equation:

$$STDG_{i,t} = \mu_i + \alpha_1 FLIB_{i,t-1} + \alpha_2 X_{i,t} + \alpha_3 IQ_{it-1} + \lambda_t + \varepsilon_{i,t} \quad (1)$$

Where the dependent variable,  $STDG_{i,t}$ , is the standard deviation of real GDP per capita growth rate at time  $t$  for country  $i$ . ( $FLIB_{i,t}$ ) refers to a set of measures of financial liberalization in country  $i$  which are the capital account liberalization ( $KAL$ ) and the capital account openness ( $KAOPEN$ ). The vector of control variables,  $X_{i,t}$ , includes inflation volatility, openness to trade, the ratio of government expenditure to GDP, the logarithm of initial per capita GDP ( $LGDP$ ), the private credit to GDP ( $CPY$ ) and a set of institutional variables included in ( $IQ_{it}$ ).  $\mu_i$  is a country-specific effect,  $\lambda_t$  is time specific effect and  $\varepsilon_{i,t}$  is the error term assumed to be uncorrelated with the regressors and normally distributed with a mean of zero and a variance of  $\sigma_{it}^2$ .

We estimate equation (1) for the whole period (1980-2007). The first panel of tables (1) and (2) presents results from OLS regressions for the whole sample. The associated coefficients of the different proxies of financial liberalization are rather non significant (columns (1)-(4)). This output may be accounted for by either the heterogeneity of the sample in terms of financial openness or the fact that the period does not correspond to the relevant time span of the liberalization policies in many countries. Indeed, most advanced countries liberalized their capital

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<sup>12</sup> See table (13) for a list of these countries.

account over a period about three decades from 1966 to 1995, while many of the emerging market economies opened up their capital account between 1985 and 1995. For that, we divided in a first step the sample into developed and emerging countries.

The results in the second panel of tables (1) and (2) show that in the case of emerging countries, freeing capital account movements is associated with higher output fluctuations. Indeed, the coefficients of KAOPEN in columns (1)-(4) of table (1) are significantly positive at 10% risk level in the growth volatility regressions. This result seems to be not surprising because of the nature of sub-sample emerging economies where many countries have implemented external financial reforms that ended with financial and economics crises. According to Stiglitz (2002), relaxing controls on capital mobility in emerging and transition countries during the last decade is considered as the principal origin of currency crises (Mexico 1994, East Asia 1997, Russia 1998, Brazil 1999, Turkey 2001, and Argentina 2002).

The second step of our empirical approach consists in dividing the sample countries into more and less financially opened economies in order to assess with more precision the effect of capital account liberalization policies on output fluctuations. Indeed, developed countries are considered as more financially opened since most of them have liberalized their capital account over a long period ranging from 1966 to 1995. For instance, the pattern and period of transition in France and Japan took a number of years while it lasted few months in United Kingdom.

Emerging economies seem, however, to be more heterogeneous in terms of degree of financial reform implementation. Particularly, many of these countries (Asian and Latin American economies) opened up their capital account during the 1980s and backtracked later by reintroducing regulation, while others<sup>13</sup> are still maintaining controls. Other emerging countries such as Malaysia, Indonesia and Thailand, unrestricted capital accounts in the 1980s, till the mid-1990s, which has been followed by episodes of huge capital inflows into these countries particularly in the 1990s, the magnitude of which became uncontrollable and destabilizing.

The group of more financially opened (MFO) economies includes those with above-median levels of financial openness measures<sup>14</sup> and less financially opened (LFO) countries are those with below-median levels. The cross-sectional median of financial openness is based on the average level of financial openness measures for each country over the full sample period. The output of the different regressions displayed in tables (3) and (4) indicates that there is no evidence that any of the measures of financial liberalization matters for growth volatility in both sub-groups, while

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<sup>13</sup> These countries are: Bangladesh, Botswana, Brazil, Chile, Colombia, Cote d'ivoire, Egypt, Ghana, India, Jordan, Korea, Morocco, Pakistan, Philippines, Sierra Leone, South Africa, Sri Lanka, Thailand, Tunisia and Turkey.

<sup>14</sup> MFO countries have an average value of KAOPEN that exceeds 0.395 over the period (1980-2007) and LFO have an average value under 0.395. For the KAL measure, the country is considered as MFO, if it has an average value under 0.423.

indicators of quality of institutions are negatively and significantly related to capital account openness measure (*KAOPEN*) only in more financially opened countries.

To test whether the nature of this relationship has changed over time, we carry out the same OLS regressions for the sub-period (1990-2007) -which corresponds to episodes of huge capital inflows- for the group of more financially opened countries. The results displayed in tables (5) and (6) do not indicate any significant effect of capital account liberalization proxies on growth volatility. The absence of a significant effect may be accounted for by differences between countries in undertaking liberalization policies. Specifically, the results may be influenced by the fact that number of emerging countries in the sample had experienced banking crises during the liberalization process.

The second part of tables (5) and (6) provide regressions for MFO countries that did not experience banking crises along the period (1990-2007) and yields some interesting results since the capital account openness measures (*KAOPEN* and *KAL*) turns to be negatively and significantly associated with the standard deviation of GDP per capita growth rate at the 5% and 10% risk levels, respectively. This dampening effect of external financial liberalization on output volatility only in MFO countries without banking crises which are mainly developed ones, may suggest that a successful liberalization of the financial system can not produce its real expected benefits unless the economy has been totally reformed in multidimensional ways covering financial, institutional and political aspects. Moreover, the liberalization might have little or no effect because either foreign investors do not believe that the regulatory and institutional reforms will be long lasting or other market imperfections exist.

The coefficients of additional explanatory variables included in the cross-country regressions (standard deviation of inflation (*STDINF*), openness to trade (*OPEN*)) suggest also some interesting conclusions. For instance, the coefficient of (*STDINF*) is positively and significantly associated with growth fluctuations which mean that, financial volatility could be an important factor affecting output volatility in more financially liberalized countries. Moreover, we found a significant positive relation between output volatility and the trade sector (imports plus exports to GDP). This result may be surprising at first, but it is conceivable that more open economies are more specialized and hence have larger income shocks.

### 3.2 Dynamic Panel Data results

To check the robustness of previous results, we run regressions using the Generalized Method of Moments (GMM) estimator developed for dynamic models of panel data that were introduced by Holtz-Eakin, Newey and Rosen (1990), Arellano and Bond (1991), and Arellano and Bover (1995). Our panel consists of data for 60 *developed* and *emerging countries* and 6-periods over the

period 1980 to 2007. This econometric methodology allows exploring *cross-country* information as well as *time-series* dimension of growth variability inherent to the liberalization process. Indeed, the dynamic panel data approach enables to exploit both the *within* and the *between* information of the data. Moreover, it is also helpful to address the endogeneity of the explanatory variables in lagged-dependent-variable models by using instruments based on lagged values of the explanatory variables, as well as to control for unobserved country-specific effects reducing thereby biases in the estimated coefficients.

All the data are averaged over 6-time periods to reduce the volatility and to avoid the drawback of having strong cyclical factors in the data. This transformation entails that for 60 countries mostly 6-year periods exists (1980-84, 1985-89, 1990-94, 1995-99, 2000-2004, 2005-2007) composing the period (1980-2007).

We have to note also that to overcome the drawbacks of a dichotomous measure of capital controls, we need to construct variables that express the share of years where countries had liberalized their capital accounts based on the IMF AREAER variables (See Edwards (2001) and Klein and Olivei (2001)). Specifically, a value of the binary proxy that exceeds 0.5 indicates that the capital account is open during the considered sub-period. Nevertheless, according to Edison *et al.* (2002) although this method is being used in many previous related studies, it suffers from the fact that it does not convey any information about the liberalization process of the country (i.e. if the country is on its way to liberalizing or restricting the capital account).

We test whether developed economies have lower fluctuations than emerging ones. We formulate the standard growth model in a dynamic panel data form so that we obtain the following dynamic system (2) and (3):

$$STDG_{i,t} = \alpha STDG_{i,t-1} + \beta FLIB_{i,t} + \delta X_{i,t} + \mu_{i,t} + \lambda_{i,t} + \Delta \varepsilon_{i,t} \quad (2)$$

Where ( $STDG_{i,t}$ ) represent the standard deviation of real per capita GDP growth rate at time  $t$  for country  $i$ , respectively. ( $FLIB_{i,t}$ ) is a set of measures of financial liberalization which are the capital account liberalization ( $KAL$ ) and capital account openness ( $KAOPEN$ ). The model includes a set of independent variables,  $X_{i,t}$  (other than lagged standard deviations of per capita real GDP growth) such as inflation volatility, openness, government expenditure to GDP, credit to private sector to GDP, the logarithm of initial real GDP per capita and time dummy variables<sup>15</sup>.  $\mu_i$  is the country- specific effect,  $\lambda_t$  is the time-specific effect,  $\varepsilon_{i,t}$  is the error term and the subscript  $i$  and  $t$  represent country and time period, respectively.

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<sup>15</sup> Four time dummy variables (tps3, tps4, tps5 and tps6) are introduced in the model because over the 6 periods, the first dummy is not taken into account in the regressions because of the presence of the dependent lagged variable.

To eliminate the country-specific effect, we take first-differences of equation (2):

$$\begin{aligned}
 STDG_{i,t} - STDG_{i,t-1} &= \alpha (STDG_{i,t-1} - STDG_{i,t-2}) + \beta (FLIB_{i,t} - FLIB_{i,t-1}) + \gamma (X_{i,t} - X_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \\
 \Delta STDG_{i,t} &= \alpha \Delta STDG_{i,t-1} + \beta \Delta FLIB_{i,t} + \delta \Delta X_{i,t} + \Delta \mu_{i,t} + \Delta \lambda_{i,t} + \Delta \varepsilon_{i,t}
 \end{aligned} \tag{3}$$

The use of instruments is required to deal, *first*, with the endogeneity of the explanatory variables and *second* with the problem that by construction the new error term,  $(\varepsilon_{i,t} - \varepsilon_{i,t-1})$  is correlated with the lagged dependent variable  $(STDG_{i,t-1} - STDG_{i,t-2})$ . All regressors are considered to be predetermined and the estimated model is validated through a Hansen test of over-identifying restrictions as well as a test of second-order serial correlations of the residuals.

We employ two GMM panel estimators based on the use of lagged observations of the explanatory variables as instruments. In the first GMM panel estimator (i.e. *Difference* estimator) is based on the two conditions that (i) the error terms  $\varepsilon_{it}$  are not serially correlated, and (ii) the explanatory variables,  $X$ , are weakly exogenous (i.e., the explanatory variables are assumed to be uncorrelated with the future realizations of the error term). However, this usual difference estimator is imprecise and presents potential biases. To mitigate these issues we use a new estimator that combines the regression in differences with the regression in levels [Arellano and Bover (1995) and Blundell and Bond (1997)].

Tables (7) and (8) report results from dynamic-panel estimations with de facto and de jure measures of capital account openness. The first panel of table (7) indicates that a 10 percentage points increase in capital account liberalization measure (*KAOPEN*) would be associated with about 0.497 percentage points decrease in output fluctuations over a five-year period (column (1)). The second panel of table (7) shows that for emerging economies, the coefficient of financial openness proxy (*KAOPEN*) is rather positive and significant (column (1)), which means that external financial reforms tends to amplify growth volatility in these countries. Also, it appears from the regressions that the dummy variable (*tps3*) corresponding to the sub-period (1990-1994) is also positively and significantly correlated at the 5% level with GDP per capita fluctuations, while *tps6* is associated with a reduced volatility. This result may evoke the effect of Gulf war 2 on the developed countries.

Regressions in table (8) show that capital account liberalization as measured by the binary IMF measure (*KAL*) has no significant effect on growth volatility in both developed and emerging countries, while the institutional quality proxies seem to reduce GDP growth fluctuations only in developed countries. Such differences in the effects of capital account liberalization on growth volatility between developed and emerging countries may be explained by a number of factors linked to institutional, financial and macroeconomic environments.

As recalled in Wyplosz (1998), liberalization is necessary, but it must first be recognised that there is a proper order. In other words, when the economic structure is featured by low levels of institutional development (higher political corruption, inefficient bureaucracy, poor judicial system), an underdeveloped financial sector and substantial macroeconomic imbalances, external financial reform is likely to yield more fluctuations in income per capita.

In addition, the growth literature has insisted on the importance of these factors as prerequisites to the financial liberalization process. For instance, Wyplosz (2004) pointed out that, weak institutions lead either to bad policies or to fragile financial systems, and most likely to both and when these two factors are interacted they may lead to a disaster. He added that domestic and external financial repression may prevent markets from revealing existing weaknesses. Thus, the idea that the effects of capital account liberalization on growth fluctuations are contingent on a country's stage of financial and institutional development has similarly an intuitive appeal. Studying the impact of the interaction between capital account policy and these intermediate variables is thus a way of inferring its implications for growth volatility.

We investigate this idea in the remaining regressions by interacting the financial liberalization proxies (*KAOPEN* and *KAL*) with the institutional quality indexes (*CORRUPT*, *LAW*, *BUREAUC* and *INSTQ*). We expect that the coefficients of interactive terms to be negative, the more developed are the institutions and the financial sectors. In others words, a good quality of institutions as well as a sound financial system should play an important role in determining the magnitude of the shocks that an economy faces and in helping liberalizing economies smooth shocks.

The estimated equation is the following one:

$$STDG_{i,t} = \alpha STDG_{i,t-1} + \beta_1 FLIB_{i,t} + \beta_2 (FLIB_{i,t} * INSTQ_{i,t}) + \beta_3 (FLIB_{i,t} * FD_{i,t}) + \delta X_{i,t} + \mu_i + \lambda_t + \Delta \epsilon_{i,t} \quad (4)$$

Where ( $STDG_{i,t}$ ) represent the standard deviation of real per capita GDP growth ( $STDG$ )<sub>*i,t*</sub> at time *t* for country *i*, respectively. ( $FLIB_{i,t}$ ) is a set of measures of financial liberalization which are the capital account liberalization (*KAL*) and capital account openness (*KAOPEN*). ( $FLIB_{i,t} * INSTQ_{i,t}$ ) and ( $FLIB_{i,t} * FD_{i,t}$ ) represent the interaction terms between the different measures of financial liberalization and indicators of the quality of institutions and financial development, respectively. ( $X_{i,t}$ ) is a set of independent variables such as inflation volatility, openness to trade, government expenditure to GDP, logarithm of initial GDP per capita and financial development measures.  $\mu_i$  the country- specific effect,  $\lambda_t$  is the time-specific effect,  $\epsilon_{i,t}$  is the error term and the subscript *i* and *t* represent country and time period, respectively.

It has to be noted that despite the fact that data on institutional development variables are rather cross-sectional in nature and does not vary substantially across time, their inclusion as

regressors of growth volatility in dynamic panel data regressions should not pose a problem in analysing the finance and growth volatility nexus. In fact, the focus is essentially to highlight the role of external financial reform on income per capita fluctuations but not the effect of institutional development per se. In other words, the objective is not to investigate the impact of the institutional level of development on growth volatility, but we rather look for the effects of external financial liberalization depending upon the institutional environment. Consequently, time-variance of institutional variables is not crucial in our analysis.

The first panel of tables (7) and (8) displays the different results from dynamic panel data regressions accounting for the proposed interaction terms relative to *developed countries*. Columns (2)-(6) show that the coefficients of interactive terms ( $\beta_2$  and  $\beta_3$ ) are significantly negative, at the 5% risk level. That is, having well-developed financial markets as well as lower corruption in government; strong judicial systems and efficient bureaucracy contribute to lower GDP growth volatility within a process of external financial reform.

The results of similar interactions carried out for *emerging countries* are reported in the second panel of tables (7) and (8). We notice that the amplifying effect of financial liberalization proxy (*KAOPEN*) on output growth volatility over the sample period is better explained by the evolution of institutional indicators rather than financial variable (columns (2)-(6)). The last four columns of table (7) show that 3 out of 4 institutional proxies (*CORRUPT*, *LAW* and *INSTQ*) interacted with capital account openness indicator are significantly associated with higher growth variability at the 10% risk level. No significant effect is detected relating to the *KAL* variable

At a first glance, these results are not surprising since the dampening effect of freeing capital account movements on growth fluctuations is more obvious in developed countries which generally enjoy good political and institutional frameworks and highly-supervised financial institutions allowing them to better smooth shocks within the external financial reform process. However, in the case of emerging countries the amplifying effect may be explained by the heterogeneity of the sample in terms of the sequencing of the liberalization process and the degree of institutional quality. Indeed, most of these countries initiated, but do not completed the process of financial sector liberalization and reform and are featured by weak political and economic institutions<sup>16</sup> over the whole period sample (1980-2007) which can usher in an increasingly fragile financial systems and leave the economy vulnerable to external shocks.

In sum, financial liberalization can help to reduce fluctuations if institutions are strong enough and other fundamentals are favourable and robustly respected, but can hurt if they are not. These findings are consistent with policy recommendations regarding the sequencing of reforms:

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<sup>16</sup> With the exception of Botswana, Chile, Costa Rica, Côte d'ivoire, Israel and South Africa which levels of institutional quality composite index are below the median over the whole period (1980-2007))

countries will avoid deep financial crises and do better in the growth achievements if they postpone opening of the capital account until institutional reforms have been undertaken.

In this context, we consider that the capital account liberalization issue remains rather relevant for *emerging countries* since most of them are continuing to implement financial reforms (i.e. relaxing restrictions on cross-border capital flows) while being still featured by poor quality of institutions and underdeveloped financial systems. In tables (9) and (10), we carry out regressions after restricting the sample to the emerging countries and we test successively two conditions of the environment in which capital account liberalization occurs which are the level of institutional quality and financial depth.

In columns (1) and (3) of table (9), the de facto measure of capital account openness (*KAOPEN*) is found to be significantly associated with an increase in the standard deviation of GDP growth, at 1% risk level while when interacted with institutional quality variables (*CORRUPT*, *LAW*) it turns to be significantly associated with lower fluctuations in output at the 5% risk level. These results with the interaction terms suggest that there are threshold effects in the data. That is, as the level of institutional development increases, the positive impact of financial liberalization on output fluctuations loses strength. Moreover, since  $|\beta_1| > |\beta_2|$ , there is eventually a point at which the quality of institutions is sufficiently high (say  $IQ^*$ ) to allow the marginal impact of capital account openness on growth volatility to change sign. More specifically, it is only beyond a level of political corruption (*CORRUPT\** is equal to 3.066) and law and Order (*LAW\** is equal to 4.199) that the dampening effect of financial openness on GDP growth volatility will be readily detected.

Table (10) displays regressions with interaction terms between financial development indicators (*CPY*, *M2Y* and *QMY*) and financial liberalization proxy (*KAOPEN*). Columns (1) and (3) indicate that financial liberalization has a positive impact on growth volatility when financial development (as measured by the ratio of M2 over GDP and *QMY*) is low, but when the domestic financial system is strong enough, i.e. when  $FD_{i,t} > FD^*$  (i.e. 54.448 and 52.906 respectively), then financial liberalization lowers output fluctuations.

Overall, these results may suggest that the main benefits of capital account liberalization for emerging markets in terms of reduced volatility appear to be indirect and more related to their role in building institutions and strengthening the economy's shock absorbers than to the increased financing provided by capital inflows.

## 4. Robustness Tests

### 4.1. Alternative measures of financial liberalization

We test the robustness of our dynamic panel data results by introducing other measures of financial liberalization. Specifically, we use instead of the benchmark capital account openness indicators (*KAL* and *KAOPEN*), three alternative measures of financial liberalization related to Bekaert and Harvey (2002), Miniane (2004) and Lane and Milesi Ferreti (2006).

The *first* measure used is based on official liberalization dates drawn from the chronology of financial reforms<sup>17</sup> presented in Bekaert and Harvey (2002). This measure focuses on the equity market liberalization which is considered as a particular type of capital account liberalization in the sense that it is a decision of financial authorities allowing all forms of capital to move freely inside and outside of the local market. In other words, equity market liberalization corresponds to a decision by a country's government to allow foreign investors to have an access to the domestic security market and gives the opportunity to national investors to transact in foreign equity securities. Our indicator of equity market liberalization (henceforth, (*EML*)) takes a value of one (1) when it becomes possible to foreign portfolio investors to own shares in the domestic equity market of one country and zero otherwise.

The *second* indicator used was constructed by Miniane (2004). This measure of capital account restrictions (henceforth, (*MINIANE*)) is based on detailed country-specific data compiled by the IMF. Since 1996, the Fund's Annual Report on Exchange Rate Arrangements and Exchange Restrictions, has published a very detailed and disaggregated index of capital account restrictions that distinguishes between 13 different categories. This level of disaggregation is a marked improvement over the pre-1996 Annual Report data, which considered only six categories (bilateral payments arrangements, restrictions on current account transaction payments, restrictions on capital account restrictions, import surcharges, advanced deposits on imports, and export proceeds surrendering). Miniane (2004) has extended the more detailed 13-categories index backward to 1983 for 34 countries and shows that this new measure is more accurate than the older less detailed one. We reversed the *MINIANE* values so that higher values of this index refer to lower capital controls.

The last indicator used is constructed by Lane and Milesi Ferreti (2006) using data on international assets positions for 147 countries for the period 1970-2004. This indicator can be considered as a financial counterpart of the trade openness measure (calculated as the ratio of imports plus exports to GDP) and is computed as the sum of total external assets *plus* total

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<sup>17</sup> These liberalization dates presented in Bekaert and Harvey's (2002) chronology generally correspond to those provided by the International Finance Corporation (IFC).

external liabilities as a proportion of GDP. Higher values of this index (henceforth, (*LMF*)) denote a higher degree of capital mobility.

## 4.2. Dynamic panel data results

The first panel of table (11) displays results from GMM regressions using the equity market liberalization indicator (*EML*). The first column of table (11) show that an increase of 10% in the coefficient of de jure capital account openness is associated with much stronger decreases in GDP growth volatility than the de jure capital account openness measure (*KAOPEN*) and this effect is detected only in developed economies. Indeed, in the 22 developed countries sample, the impact of *EML* indicator is (-1.292) compared to (-0.497) for the *KAOPEN* variable. Moreover, it is found that the coefficients of interaction terms of the equity market liberalization measure and the institutional and financial development proxies are statistically significant in all equations at 5% and 10% risk levels respectively only in developed countries, and their signs indicate that, other things being equal, an increase in financial and institutional development reduces fluctuations in GDP per capita growth rates. The time dummy variable (*tps3*) seems to have an amplifying effect on growth variability.

The second panel of Table (11) shows that this measure of de jure capital account openness is not significantly correlated with growth volatility in emerging economies. Part of the reason might be that, for many emerging markets and developing countries, portfolio equity inflows are still quite small relative to FDI and debt flows. Hence, liberalizing this portion of capital inflows by itself may not yield much of an effect on income variability, particularly once we control for the total stock of liabilities. Thus, the strongest result here is again that financial liberalization has a positive effect on growth fluctuations for non-industrial countries.

Table (12) reports the key results using the *MINIANE* indicator of capital account openness. The coefficient of *MINIANE* measure is significantly associated with lower fluctuations in output at 95% level of confidence in developed countries while there is no significant effect in emerging ones. We can notice also that the coefficients of interaction terms (*MINIANE\*CORRUPT* and *MINIANE\*BUREAUC*) are significantly negative which may suggest that the quality of institutional environment allow countries to withstand external shocks and to shape the benefits of freeing capital account transactions in terms of reduced income volatility. This result holds for the developed countries sub-sample.

Regressions using the international financial integration indicator (*LMF*) are reported in table (13). The first panel of this table show that the coefficient of *LMF* is rather negative but non significant in developed countries even when interacted with financial and institutional indicators. Results from the second panel of table (13) indicate a positive and significant correlation between

growth fluctuations and international financial integration in emerging countries. When we introduce interaction terms between LMF's measure and institutional quality indicators, the sign remains positive. The fact that these results hold for three very different indexes of financial liberalization indicate an important degree of robustness

## 5. Conclusion

This paper explores empirically the relationship between external financial liberalization and growth fluctuations in a set of 60 *developed* and *emerging countries* over the period 1980-2007. The basic idea generally advanced by a growing body of theoretical literature is that financial liberalization help to better allocate capital at an international level allowing thereby countries to better share risk. Moreover, freeing cross-border capital transactions may help countries to diversify their production structure by channeling further capital to developing countries which is likely to dampen output volatility. Nevertheless, the failure of some recent liberalization experiences in developing countries (Argentina, Mexico, Turkey, South-east Asian countries) entailed deep and severe financial crises and raised the skepticism about the ability of external financial reforms to reduce output fluctuations.

Cross-sectional regressions have shown no significant effect of external financial liberalization on growth volatility in *developed countries* with different specifications and periods. Nevertheless, in the case of *emerging countries*, freeing capital account movements turns to be associated with higher output fluctuations. However, for the case of *more financially opened* (MFO) countries that did not experience banking crises<sup>18</sup> during the period (1990-2007), which corresponds to a surge of capital flows in these countries, relaxing controls on capital account transactions seems to contribute significantly to smooth out fluctuations in GDP growth.

With dynamic panel data regressions, results highlighted the shock-absorbing role of financial liberalization only in *developed countries* generally featured by stable growth rates and good quality of both macroeconomic framework and institutions. Nevertheless, for *emerging countries* we found that financial liberalization is positively and significantly associated with increased growth volatility. This may suggest that only in an environment featured by a good institutional framework, will the link between financial openness and growth fluctuations be readily detectable. Stiglitz (2000) notes that "*It has become increasingly clear that financial and capital market liberalization—done hurriedly, without first putting into place an effective regulatory framework—was at the core of the problem*". (Pp: 1)

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<sup>18</sup> These countries are: Australia, Austria, Belgium, Canada, Denmark, El Salvador, France, Germany, Greece, Guatemala, Iceland, Ireland, Italy, Jordan, Netherlands, New Zealand, Peru, Portugal, Singapore, Spain, Switzerland, and Trinidad and Tobago.

Results from regressions using interaction terms between external financial liberalization proxies and financial and institutional indicators corroborate our proposition and show that developed countries benefit more from the dampening effect of financial liberalization on economic volatility than emerging economies. What explains this difference in the case of emerging countries is the fact that institutional and financial reforms aimed at increasing transparency and appropriate regulation of markets do not predate liberalization. Particularly, it is only after adopting financial liberalization as a strategy that governments turn their attention to strengthening institutional quality, resulting in the fact that the institutional requirements needed to ensure that liberalization delivers its beneficial effects are put in place only with a delay.

Previous empirical work seeking to assess the impact of freeing capital account transactions on macroeconomic volatility found either a positive or non significant impact of capital account liberalization on growth volatility. The main contribution of this paper is to show that the impact of financial liberalization on output volatility depends on both the level of financial and institutional development.

Volatility increases with financial liberalization for low levels of financial and institutional development, and lower output fluctuations are associated with financial liberalization for high levels of financial and institutional development. From a policy perspective, this result suggests that reforms aiming at strengthening the domestic financial system and improving the quality of economic and political institutions should be a prerequisite to capital account liberalization.

## Appendices

Table (1): Financial Liberalization and Growth volatility: OLS Regressions

Dependent variable: Standard deviation of real GDP growth rate (x 100), 1980-2007

Sample	Variables	Whole sample				Developed countries				Emerging countries			
		1	2	3	4	1	2	3	4	1	2	3	4
[1]	KAOPEN	-0.0517 (-0.28)	-0.087 -0.48	-0.059 -0.27	-0.008 -0.04	-0.084 -0.32	.158 0.35	.107 0.36	-0.076 -0.21	.522* 1.81	.484 1.60	.468* 1.72	.539* 1.88
[2]	LGDP	.009 0.11	.024 0.31	.007 0.09	.017 0.21	-0.049 -0.61	-0.009 -0.10	-0.019 -0.25	-0.054 -0.56	-0.010 -0.14	-0.004 -0.06	-0.025 -0.36	-0.019 -0.26
[3]	GOVC	-0.010 -0.23	.0149 0.38	-0.030 -0.71	-0.001 -0.03	-0.049 -1.38	-0.036 -1.23	-0.038 -1.27	-0.044 -1.30	.010 0.15	.023 0.37	-0.001 -0.02	-0.002 -0.03
[4]	STDINF	.002*** 3.88	.002*** 3.39	.002 3.41	.002 3.50	.078** 2.42	.101*** 3.40	.098*** 3.40	.085** 2.43	.001** 2.53	.001*** 2.80	.001*** 2.91	.001** 2.69
[5]	OPEN	.005** 2.29	.005*** 3.04	.005** 2.15	.005 2.49	.002 0.48	.003 0.76	.003 0.63	.002 0.47	-0.003 -0.81	-0.002 -0.62	-0.005 -1.33	-0.004 -1.03
[6]	CPY	-0.005 -1.25	-0.0003 -0.01	-0.007 -1.60	-0.004 -0.87	.0008 0.16	-0.001 -0.18	-0.0008 -0.14	.0006 0.11	-0.0005 -0.08	.001 0.21	-0.002 -0.39	-0.002 -0.38
[7]	CORRUPT	-.321 -1.57				.260 1.05				.096 0.32			
[8]	BUREAUC		-.735** -2.43				.011 0.02				-.131 -0.35		
[9]	LAW			-.185 -0.87				.071 0.28				.455* 1.92	
[10]	INSTQ				-.157* -1.74				.098 0.72				.116 0.90
[11]	Intercept	4.098*** 3.42	4.068** 3.72	4.114 3.32	4.216 3.54	1.598** 2.77	1.82** 2.35	1.68** 2.20	1.438* 1.88	3.624*** 2.90	3.766 3.05	3.009** 2.47	3.384* 2.73
	Obs.	61	61	61	61	22	22	22	22	39	39	39	39
	R- squared	0.38	0.43	0.37	0.39	0.55	0.45	0.45	0.47	0.24	0.24	0.30	0.26

1/ Robust t statistics in parentheses

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

3/ Values for STDGDP, KAOPEN, LGDP, STDINF, GOVC, OPEN, CPY and institutional indicators (CORRUPT, BUREAUC, LAW and INSTQ) are averages over the 1980-2007 period

Table (2): Financial Liberalization and Growth volatility: OLS Regressions  
 Dependent variable: Standard deviation of real GDP growth rate (x 100), 1980-2007

Sample	Variables	Whole sample				Developed countries				Emerging countries			
		1	2	3	4	1	2	3	4	1	2	3	4
[1]	KAL	-0.296 (-0.48)	-0.493 (-0.84)	-0.339 (-0.51)	-0.232 (-0.36)	-0.492 (-0.91)	-0.521 (-0.78)	-0.398 (-0.68)	-0.499 (-0.84)	1.013 (1.07)	0.806 (0.78)	0.871 (0.95)	1.064 (1.10)
[2]	LGDP	0.006 (0.07)	0.019 (0.25)	-0.059 (-0.27)	0.014 (0.17)	-0.060 (-0.80)	-0.066 (-0.81)	-0.049 (-0.75)	-0.066 (-0.85)	0.002 (0.03)	0.009 (0.25)	-0.015 (-0.20)	-0.004 (-0.06)
[3]	GOVC	-0.012 (-0.27)	0.015 (0.39)	-0.031 (-0.77)	-0.003 (-0.08)	-0.049 (-1.45)	-0.033 (-1.19)	-0.034 (-1.18)	-0.044 (-1.36)	0.008 (0.13)	0.040 (0.37)	-0.006 (-0.11)	-0.004 (-0.06)
[4]	STDINF	0.002*** (3.91)	0.002*** (3.45)	0.002*** (3.51)	0.002*** (3.55)	0.080*** (3.10)	0.091*** (3.88)	0.086*** (3.77)	0.086*** (3.38)	0.001** (2.66)	0.002** (2.76)	0.001*** (2.84)	0.001** (2.68)
[5]	OPEN	0.005** (2.34)	0.006*** (3.20)	0.005** (2.18)	0.005** (2.54)	0.003 (0.67)	0.003 (0.88)	0.003 (0.77)	0.003 (0.69)	-0.001 (-0.26)	0.0001 (0.03)	-0.003 (-0.79)	-0.002 (-0.48)
[6]	CPY	-0.005 (-1.24)	0.0006 (0.15)	-0.007 (-1.54)	-0.003 (-0.77)	0.002 (0.54)	0.003 (0.63)	0.002 (0.51)	0.002 (0.50)	0.001 (0.23)	0.003 (0.52)	-0.001 (-0.20)	-0.0003 (-0.06)
[7]	CORRUPT	-0.311 (-1.55)				0.251 (1.17)				0.044 (0.15)			
[8]	BUREAUC		-0.746** (-2.60)				0.227 (0.67)				-0.247 (-0.60)		
[9]	LAW			-0.174 (-0.94)				0.134 (0.55)				0.483* (2.02)	
[10]	INSTQ				-0.148* (-1.76)				0.095 (0.93)				0.100 (0.73)
[11]	Intercept	4.203*** (3.82)	4.248*** (4.10)	4.232*** (3.88)	4.252 (3.94)	1.736** (2.71)	1.796** (2.55)	1.719* (2.11)	1.584* (2.12)	3.030** (2.17)	3.256** (2.33)	2.394* (1.81)	2.754* (1.97)
	Obs.	60	61	61	61	22	22	22	22	38	38	38	38
	R- squared	0.38	0.43	0.37	0.39	0.52	0.47	0.46	0.49	0.19	0.20	0.25	0.20

1/ Robust t statistics in parentheses

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

3/ Values for STDGDP, KAL, LGDP, STDINF, GOVC, OPEN, CPY and institutional indicators (CORRUPT, BUREAUC, LAW and INSTQ) are averages over the 1980-2007 period



Table (4): Financial Liberalization and Growth volatility: OLS Regressions

Sample		More Financially Opened Countries (MFO)				Less Financially Opened Countries (LFO)			
Variables	1	2	3	4	1	2	3	4	
[1] KAL	-.227	-0.78	-.332	-.203	-.993	.790	-1.402	-1.157	
[2] LGDP	-0.24	-0.09	-0.35	-0.22	-0.60	0.48	-0.76	-0.66	
[3] GOVC	-0.07	.005	.003	.001	-0.83	-0.58	-0.90	-0.101	
[4] STDINF	-0.05	0.04	-0.03	0.01	-0.92	-0.62	-0.26	-1.12	
[5] OPEN	-0.80	-0.49	-.088*	-.066	-0.42	-0.29	-0.37	-0.46	
[6] CPY	-1.42	-1.15	-1.88	-1.38	-0.52	-0.38	-1.48	-0.60	
[7] CORRUPT	.001***	.001***	.001**	.001***	.003*	.004*	.003*	.003*	
[8] BUREAUC	3.15	3.19	2.44	3.00	2.00	1.99	1.94	2.00	
[9] LAW	.002	.003**	.002	.003	.031**	.030**	.030***	.031***	
[10] INSTQ	1.35	2.08	1.42	1.60	2.84	2.51	3.03	2.99	
[11] Intercept	-0.08	-0.04	-0.08	-0.06	-0.06	-0.03	-0.09	-0.08	
Obs.	-1.36	-0.67	-1.32	-1.08	-0.57	-0.32	-0.89	-0.76	
R- squared	-.241				.213				
	-1.02				0.76				
		-0.53				.013			
		-1.63				0.03			
			-0.192				.343		
			-0.63				1.49		
				-1.18				.135	
				-1.21				1.22	
	5.644**	5.167***	5.670**	5.553**	2.546**	2.612**	2.231*	2.354**	
	2.75	2.87	2.71	2.80	2.49	2.19	1.94	2.15	
	33	33	33	33	27	27	27	27	
	0.56	0.58	0.56	0.56	0.35	0.34	0.38	0.36	

1/ Robust t statistics in parentheses

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

3/ Values for STDGDP, KAL, LGDP, GOVC, OPEN, CPY and institutional indicators (CORRUPT, BUREAUC, LAW and INSTQ) are averages over the 1980-2007 period

4/ MFO countries have an average value of KAL &gt; median = 0.423 over the period (1980-2007), LFO if &lt; median 0.423

Table (5): Financial Liberalization and Growth volatility: OLS Regressions

		Dependent variable: Standard deviation of real GDP growth rate (x 100), 1990-2007							
Sample		More Financially Opened Countries <sup>(a)</sup>				More Financially Opened Countries without banking crisis <sup>(b)</sup>			
Variables		1	2	3	4	1	2	3	4
[1]	KAOPEN	-.324 <i>-0.54</i>	-.084 <i>-0.15</i>	-.195 <i>-0.32</i>	-.195 <i>-0.33</i>	<b>-1.044**</b> <i>-2.44</i>	<b>-1.011**</b> <i>-2.26</i>	<b>-1.033**</b> <i>-2.19</i>	<b>-.982**</b> <i>-2.11</i>
[2]	LGDP	.018 <i>0.11</i>	.064 <i>0.39</i>	.044 <i>0.25</i>	.041 <i>0.24</i>	.041 <i>0.22</i>	.008 <i>0.05</i>	-.0004 <i>-0.00</i>	.038 <i>0.19</i>
[3]	GOVC	-.009 <i>-0.14</i>	.006 <i>0.16</i>	.007 <i>0.16</i>	.010 <i>0.19</i>	.027 <i>0.65</i>	.019 <i>0.46</i>	.0208 <i>0.45</i>	.029 <i>0.68</i>
[4]	STDINF	.0009 <i>1.48</i>	.0008 <i>1.14</i>	.0008 <i>1.21</i>	.0008 <i>1.33</i>	<b>.001***</b> <i>4.53</i>	<b>.001***</b> <i>3.36</i>	<b>.001***</b> <i>3.47</i>	<b>.001***</b> <i>3.61</i>
[5]	OPEN	<b>.005**</b> <i>2.32</i>	<b>.006***</b> <i>3.31</i>	<b>.005***</b> <i>2.87</i>	<b>.005**</b> <i>2.72</i>	<b>.007***</b> <i>4.73</i>	<b>.007***</b> <i>4.92</i>	<b>.007***</b> <i>4.54</i>	<b>.007***</b> <i>4.85</i>
[6]	CPY	-.005 <i>-0.69</i>	-.002 <i>-0.33</i>	-.003 <i>-0.44</i>	-.003 <i>-0.45</i>	.009 <i>1.33</i>	.006 <i>0.64</i>	.006 <i>0.78</i>	.008 <i>1.15</i>
[7]	CORRUPT	-.231 <i>-0.69</i>				-.275 <i>-0.61</i>			
[8]	BUREAUC		-.6201 <i>-1.26</i>				-.117 <i>-0.30</i>		
[9]	LAW			-.382 <i>-0.91</i>				-.080 <i>-0.20</i>	
[10]	INSTQ				-.151 <i>-1.33</i>				-.089 <i>-0.48</i>
[11]	Intercept	3.9* <i>1.74</i>	3.377 <i>1.62</i>	3.723 <i>1.67</i>	3.745* <i>1.70</i>	2.783** <i>2.70</i>	2.678** <i>2.59</i>	2.774** <i>2.54</i>	2.641** <i>2.52</i>
	Obs.	30	30	30	30	22	22	22	22
	R- squared	0.35	0.37	0.36	0.36	0.61	0.60	0.59	0.60

1/ Robust t statistics in parentheses.

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

3/ Values for STDGDP, KAOPEN, LGDP, STDINF, GOVC, OPEN, CPY and institutional indicators (CORRUPT, BUREAUC, LAW and INSTQ) are averages over the 1990-2007 period.

4/ MFO countries have an average value of KAOPEN > median = 0,625 over the period (1990-2007)

<sup>(a)</sup> These countries are: Australia, Austria, Belgium, Canada, Denmark, El Salvador, Finland, France, Germany, Greece, Guatemala, Iceland, Indonesia, Ireland, Italy, Japan, Jordan, Netherlands, New Zealand, Norway, Peru, Portugal, Singapore, Spain, Sweden, Switzerland, Trinidad and Tobago, United Kingdom, United States and Uruguay.

<sup>(b)</sup> These countries are: Australia, Austria, Belgium, Canada, Denmark, El Salvador, France, Germany, Greece, Guatemala, Iceland, Ireland, Italy, Jordan, Netherlands, New Zealand, Peru, Portugal, Singapore, Spain, Switzerland, and Trinidad and Tobago.

Table (6): Financial Liberalization and Growth volatility: OLS Regressions

Sample		More Financially Opened Countries <sup>(a)</sup>				More Financially Opened Countries without banking crisis <sup>(b)</sup>			
		1	2	3	4	1	2	3	4
[1]	KAL	-1.636	-1.356	-1.444	-1.483	-2.082*	-2.036	-2.287*	-1.922*
		-1.18	-0.96	0.99	-1.03	-1.83	-1.59	-2.07	-1.85
[2]	LGDP	-1.178	-1.166	-1.171	-1.174	.013	.003	.031	.015
		-1.40	-1.41	-1.41	-1.41	0.16	0.06	0.46	0.23
[3]	GOVC	-0.021	-0.001	-0.001	-0.007	-0.025	0.006	0.047	0.047
		-0.51	-0.03	-0.04	-0.16	-0.56	0.16	0.73	0.74
[4]	STDINF	.001***	.001***	.001***	.001***	.001***	.001***	.001***	.001***
		2.90	2.96	2.93	3.02	5.45	4.60	5.08	4.67
[5]	OPEN	.005***	.005***	.005***	.005***	.007**	.007***	.008***	.008***
		3.12	3.51	3.28	3.10	5.05	3.91	4.06	4.44
[6]	CPY	-0.002	.0006	-0.00001	-0.0007	.005	.004	.008	.010
		-0.43	0.11	-0.00	-0.11	0.73	0.36	0.78	0.80
[7]	CORRUPT	.026				-0.291			
		0.11				-0.87			
[8]	BUREAUC		-0.220				-0.320		
			-0.56				-0.50		
[9]	LAW			-1.135				-0.442	
				-0.41				-0.89	
[10]	INSTQ				-0.033				-0.187
					-0.26				-0.95
[11]	Intercept	5.282**	5.092**	5.250**	5.240**	3.437**	3.115**	3.407**	3.247**
		2.58	2.59	2.64	2.61	2.49	2.19	2.67	2.75
	Obs.	31	31	31	31	22	21	21	21
	R- squared	0.42	0.43	0.43	0.42	0.61	0.57	0.57	0.59

1/Robust t statistics in parentheses.

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

3/ V values for STDGDP, KAL, LGDP, STDINF, GOVC, OPEN, CPY and institutional indicators (CORRUPT, BUREAUC, LAW and INSTQ) are averages over the 1990-2007 period.

4/ MFO countries have an average value of KAOPEN &gt; median = 0.555 over the period (1990-2007)

(a) These countries are: Austria, Belgium, Botswana, Canada, Costa Rica, Denmark, Ecuador, Egypt, El Salvador, Finland, France, Germany, Guatemala, Ireland, Italy, Jamaica, Japan, Jordan, Netherlands, New Zealand, Nigeria, Norway, Paraguay, Peru, Portugal, Singapore, Sweden, Switzerland, Trinidad and Tobago, United Kingdom, United States, and Uruguay.

(b) These countries are: Austria, Belgium, Botswana, Canada, Denmark, Egypt, El Salvador, France, Germany, Guatemala, Ireland, Italy, Jordan, Netherlands, New Zealand, Paraguay, Peru, Portugal, Singapore, Switzerland, and Trinidad and Tobago.

Table (7): Financial Liberalization and Growth volatility: Arellano-Bond dynamic panel-data estimation, two-step system GMM results

Dependent variable: Standard deviation of real GDP growth rate (x 100)

Sample	Variables	6-period											
		Developed countries						Emerging countries					
		1	2	3	4	5	6	1	2	3	4	5	6
[1]	L.STDGDP	-0.16 <i>-0.07</i>	-0.062 <i>-0.30</i>	-0.029 <i>-0.14</i>	-0.069 <i>-0.33</i>	-0.058 <i>-0.27</i>	.041 0.33	.023 0.07	.151 <i>0.45</i>	-0.039 <i>-0.26</i>	.057 <i>0.18</i>	.062 <i>0.19</i>	-0.096 <i>-0.87</i>
[2]	KAOPEN	<i>-4.97**</i> <i>-2.82</i>						<i>1.182*</i> <i>1.77</i>					
[3]	LGDP	.327 1.63	.440 0.57	.622 0.73	.585 0.71	.555 0.68	.839 0.84	3.51 0.54	2.362* 1.87	1.179 1.04	4.604 0.84	3.143 0.53	-.026 -0.04
[4]	GOVC	-0.19 <i>-0.25</i>	.262 1.32	.267 <i>1.03</i>	.270 <i>1.28</i>	.265 1.23	.091 <i>0.50</i>	-1.192 <i>-0.63</i>	-1.154 <i>-0.71</i>	.212 <i>1.28</i>	-0.052 <i>-0.22</i>	-0.066 <i>-0.25</i>	.1541 <i>0.78</i>
[5]	STDINF	<i>-1.16**</i> <i>-2.08</i>	-0.042 <i>0.17</i>	.0270 <i>0.28</i>	.028 <i>0.28</i>	.002 0.02	.083 <i>0.86</i>	.0006 <i>0.19</i>	.0001 <i>0.04</i>	<i>.005**</i> <i>2.09</i>	.0001 <i>0.06</i>	.0002 <i>0.06</i>	<i>.002***</i> <i>5.33</i>
[6]	OPEN	-0.001 -0.15	.008 0.35	.012 0.45	.010 0.42	.0096 0.40	-0.009 -0.39	-0.025 <i>-1.22</i>	-0.034* <i>-2.00</i>	-0.011 <i>-0.31</i>	-0.020 <i>-1.01</i>	-0.026 <i>-1.29</i>	.027 <i>0.72</i>
[7]	CPY	-0.0006 <i>-0.13</i>	.0038 <i>1.04</i>	.003 <i>1.11</i>	.003 <i>1.37</i>	.003 <i>1.21</i>	.011* <i>1.80</i>	.066 <i>1.35</i>	.073 <i>1.39</i>	-0.004 <i>-0.24</i>	.068 <i>1.58</i>	.071 <i>1.42</i>	-0.0009 <i>-0.04</i>
[8]	TPS3	<i>.9901**</i> <i>2.17</i>	<i>.698**</i> <i>2.35</i>	<i>.613*</i> <i>1.84</i>	<i>.590</i> <i>1.67</i>	<i>.628*</i> <i>1.82</i>	<i>.982***</i> <i>4.57</i>	-1.201 <i>-0.95</i>	-0.717 <i>-0.94</i>	-0.775 <i>-1.39</i>	-0.742 <i>-0.68</i>	-0.728 <i>-0.69</i>	-0.667 <i>-1.52</i>
[9]	TPS4	-0.038 <i>-0.14</i>	-0.016 <i>-0.04</i>	-0.002 <i>-0.01</i>	.069 <i>0.20</i>	.031 <i>0.08</i>	.280 <i>0.60</i>	-2.360 <i>-1.33</i>	-1.898** <i>-2.04</i>	.032 <i>0.05</i>	-2.104 <i>-1.56</i>	-1.9 <i>-1.30</i>	.099 <i>0.20</i>
[10]	TPS5	.321 0.65	-0.112 <i>-0.18</i>	.054 <i>0.09</i>	.007 <i>0.01</i>	-0.006 <i>-0.01</i>	.794 <i>1.41</i>	-4.092* <i>-1.75</i>	-3.440*** <i>-3.08</i>	-8301 <i>-0.97</i>	-3.944** <i>-2.30</i>	-3.618* <i>-1.87</i>	-809 <i>-1.42</i>
[11]	TPS6	-4.586 <i>-0.88</i>	-1.238* <i>-1.85</i>	-1.134 <i>-1.53</i>	-1.221* <i>-1.83</i>	-1.187* <i>-1.86</i>	-112 <i>-0.17</i>	-5.765 <i>-1.67</i>	-4.722*** <i>-3.30</i>	-2.027* <i>-1.93</i>	-5.732** <i>-2.23</i>	5.140* <i>-1.75</i>	- <i>-3.55</i>
[12]	KAOPEN* CORRUPT		<i>-1.138***</i> <i>-3.30</i>						<i>.366*</i> <i>1.98</i>				
[13]	KAOPEN* BUREAUC			<i>-.167**</i> <i>-2.08</i>						.091 <i>0.92</i>			
[14]	KAOPEN* LAW				<i>-.114***</i> <i>-3.00</i>						<i>.330*</i> <i>1.93</i>		
[15]	KAOPEN* INSTQ					<i>-.045**</i> <i>-2.85</i>						<i>.119*</i> <i>1.86</i>	
[16]	KAOPEN* CPY						<i>-.007*</i> <i>-2.05</i>						-0.001 <i>-0.25</i>
[17]	Intercept	-6.758	-8.067	-10.581	-10.022	-9.514	-8.808	-29.458	-27.989	-11.009	-43.169	27.989	-0.033
	Obs.	22	22	22	22	22	22	38	38	38	38	38	38
	Number of countries	107	107	107	107	107	107	184	184	184	184	184	184
	Hansen test (p-value)	0.548	0.354	0.301	0.378	0.378	0.845	0.776	0.645	0.311	0.881	0.758	0.100
	Arellano-Bond test for AR(2) in first differences	0.103	0.480	0.408	0.382	0.382	0.366	0.497	0.520	0.979	0.381	0.435	0.772

1/ Robust t statistics in parentheses,

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%,

3/ Values for STDGDP, KAOPEN, LGDP, STDINF, OPEN, GOVC, CPY are averages over 6-year periods (80-84, 85-90, 91-95, 96-2000, 2001-2004, 2005-2007) composing the period 1980-2007

Table (8): Financial Liberalization and Growth volatility: Arellano-Bond dynamic panel-data estimation, two-step system GMM results

Dependent variable: Standard deviation of real GDP growth rate (x 100)

Sample	Variables	6-period											
		Developed countries						Emerging countries					
		1	2	3	4	5	6	1	2	3	4	5	6
[1]	L.STDGDP	.056 <i>0.19</i>	-.069 <i>-0.23</i>	.017 <i>0.04</i>	-.024 <i>-0.07</i>	-.031 <i>-0.09</i>	.082 <i>0.69</i>	-.122 <i>-0.93</i>	-.113 <i>-0.81</i>	-.127 <i>-0.71</i>	-.108 <i>-0.54</i>	-.232 <i>-1.19</i>	-.115 <i>-0.91</i>
[2]	KAL	-.831 <i>-1.38</i>						.815 <i>0.50</i>					
[3]	LGDP	.364 <i>0.91</i>	.415 <i>0.85</i>	.430 <i>0.87</i>	.364 <i>0.71</i>	.394 <i>0.78</i>	-.192 <i>-0.83</i>	2.371 <i>0.65</i>	3.090 <i>0.48</i>	3.090 <i>0.53</i>	3.020 <i>0.68</i>	1.889 <i>0.18</i>	2.008 <i>0.43</i>
[4]	GOVC	.237 <i>1.01</i>	.218 <i>1.18</i>	.247 <i>1.07</i>	.216 <i>1.05</i>	.230 <i>1.12</i>	-.121 <i>-0.85</i>	-.045 <i>-0.28</i>	-.015 <i>-0.06</i>	-.004 <i>-0.02</i>	-.002 <i>-0.00</i>	.151 <i>0.42</i>	-.028 <i>-0.18</i>
[5]	STDINF	-.061 <i>-0.60</i>	-.103 <i>-0.97</i>	-.091 <i>-0.72</i>	-.090 <i>-0.82</i>	-.093 <i>-0.85</i>	.078 <i>0.88</i>	<b>.001***</b> <i>3.23</i>	<b>.001***</b> <i>1.81</i>	<b>.001**</b> <i>2.37</i>	<b>.001*</b> <i>1.96</i>	.003 <i>1.52</i>	<b>.001*</b> <i>1.99</i>
[6]	OPEN	.024 <i>0.44</i>	.036 <i>0.58</i>	.048 <i>0.63</i>	.032 <i>0.49</i>	.038 <i>0.56</i>	-.001 <i>-0.29</i>	.005 <i>0.20</i>	.005 <i>0.19</i>	.003 <i>0.09</i>	.003 <i>0.06</i>	.020 <i>0.29</i>	.001 <i>0.03</i>
[7]	CPY	.002 <i>0.36</i>	.005 <i>0.54</i>	.003 <i>0.35</i>	.004 <i>0.48</i>	.004 <i>0.49</i>	.001 <i>0.44</i>	.010 <i>0.23</i>	.011 <i>0.23</i>	.016 <i>0.22</i>	.016 <i>0.21</i>	.014 <i>0.30</i>	.0152 <i>0.15</i>
[8]	TPS3	.794 <i>1.48</i>	.566 <i>0.95</i>	.576 <i>0.65</i>	.675 <i>0.98</i>	.611 <i>0.86</i>	<b>.934***</b> <i>3.81</i>	<b>-1.060*</b> <i>-1.81</i>	<b>-1.102*</b> <i>-1.96</i>	<b>-1.102**</b> <i>-2.37</i>	<b>-1.067</b> <i>-1.43</i>	<b>-1.278*</b> <i>-1.74</i>	<b>-1.050*</b> <i>-1.89</i>
[9]	TPS4	-.511 <i>-0.59</i>	-.825 <i>-0.81</i>	-.986 <i>-0.70</i>	-.613 <i>-0.53</i>	-.774 <i>-0.65</i>	-.279 <i>-1.15</i>	-.898 <i>-0.75</i>	-1.105 <i>-0.69</i>	-1.146 <i>-0.80</i>	-1.148 <i>-1.27</i>	-1.069 <i>-0.48</i>	-.789 <i>-1.13</i>
[10]	TPS5	-.415 <i>-0.27</i>	-1.096 <i>-0.68</i>	-1.124 <i>-0.48</i>	-.764 <i>-0.41</i>	-.982 <i>-0.51</i>	.292 <i>0.62</i>	-1.660 <i>-1.15</i>	-1.865 <i>-0.92</i>	-1.994 <i>-1.08</i>	-1.983 <i>-1.48</i>	-2.212 <i>-0.88</i>	-1.525* <i>-1.85</i>
[11]	TPS6	-1.710 <i>-0.92</i>	-2.577 <i>-1.31</i>	-2.541 <i>-0.97</i>	-2.302 <i>-1.02</i>	-2.513 <i>-1.11</i>	-.377 <i>-0.92</i>	<b>-3.556**</b> <i>-2.11</i>	<b>-3.766</b> <i>-1.67</i>	<b>-3.925**</b> <i>-2.04</i>	<b>-3.820**</b> <i>-2.49</i>	<b>-3.906</b> <i>-1.21</i>	<b>-3.213*</b> <i>-1.98</i>
[12]	KAL* CORRUPT		<b>-.226**</b> <i>-2.47</i>						.339 <i>0.52</i>				
[13]	KAL* BUREAUC			-.221 <i>-1.00</i>						.456 <i>0.41</i>			
[14]	KAL*LAW				<b>-.210**</b> <i>-2.15</i>						.250 <i>0.27</i>		
[15]	KAL* INSTQ					<b>-.078*</b> <i>-1.91</i>						.053	
[16]	KAL*CPY						-.001 <i>-0.22</i>						.007 <i>0.13</i>
[17]	Intercept	-8.323 <i>-1.02</i>	-8.744 <i>-0.98</i>	-10.508 <i>-1.07</i>	-8.016 <i>-0.88</i>	-9.008 <i>-0.96</i>	5.522 <i>1.28</i>	-20.474 <i>-0.55</i>	-28.119 <i>-0.42</i>	-28.123 <i>-0.46</i>	-27.357 <i>-0.57</i>	-18.825 <i>-0.18</i>	-16.849 <i>-0.67</i>
	Obs.	109	109	109	109	109	109	184	184	184	184	184	184
	Number of countries	22	22	22	22	22	22	38	38	38	38	38	38
	Hansen test (p-value)	0.685	0.974	0.968	0.989	0.986	0.640	0.547	0.449	0.466	0.370	0.998	0.490
	Arellano-Bond test for AR(2) in first differences	0.477	0.463	0.158	0.376	0.317	0.804	0.195	0.222	0.239	0.240	0.150	0.244

1/ Robust t statistics in parentheses

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

3/ Values for STDGDP, KAL, LGDP, STDINF, OPEN, GOVC, CPY are averages over 6-year periods (80-84, 85-90, 91-95, 96-2000, 2001-2004, 2005-2007) composing the period 1980-2007.

Table (9): Financial Liberalization and Growth volatility: Arellano-Bond dynamic panel-data estimation, two-step system GMM results

Dependent variable: Standard deviation of real GDP growth rate (x 100)

Sample Periods Variables	6-period Emerging countries			
	1	2	3	4
	[1] L.STDGDP	-0.322 <i>-1.14</i>	.1737 <i>0.63</i>	-.601 <i>-1.31</i>
[2] KAOPEN	<b>11.002***</b> <i>2.99</i>	3.144 <i>0.66</i>	<b>12.225*</b> <i>1.71</i>	5.447 <i>1.21</i>
[3] KAOPEN*CORRUPT <sup>19</sup>	<b>-3.588**</b> <i>-2.67</i>			
[4] KAOPEN*BUREAUC		-1.294 <i>-0.71</i>		
[5] KAOPEN*LAW <sup>20</sup>			<b>-2.91**</b> <i>-2.72</i>	
[6] KAOPEN*INSTQ				-.601 <i>-1.10</i>
[7] LGDP	3.007 <i>0.70</i>	-1.749 <i>-1.60</i>	1.701 <i>0.18</i>	.5289 <i>0.67</i>
[8] GOVC	.209 <i>0.33</i>	-.521 <i>-0.76</i>	.146 <i>0.28</i>	.231 <i>0.69</i>
[9] STDINF	.011 <i>1.37</i>	.0003 <i>0.08</i>	.0008 <i>0.22</i>	.009* <i>1.75</i>
[10] OPEN	.047 <i>0.34</i>	-.040 <i>-1.82</i>	.274 <i>1.65</i>	.027 <i>0.59</i>
[11] CPY	.044 <i>0.68</i>	.098 <i>1.55</i>	.238 <i>1.10</i>	-0.22 <i>-1.402</i>
[12] TPS3	-1.974 <i>-1.62</i>	-1.094 <i>-0.56</i>	-6.282 <i>-1.03</i>	-1.51 <i>-4.69</i>
[13] TPS4	-.551 <i>-0.38</i>	-1.176 <i>-0.77</i>	-12.885 <i>-1.31</i>	-0.40 <i>-1.135</i>
[14] TPS5	-1.920 <i>-0.87</i>	-1.342 <i>-1.34</i>	-16.284 <i>-1.44</i>	-0.80* <i>-2.715</i>
[15] TPS6	-4.518 <i>-1.34</i>	<b>-2.076**</b> <i>-2.04</i>	<b>-22.296*</b> <i>-1.76</i>	-1.82 <i>-6.380</i>
[16] Intercept	-34.292 <i>-0.67</i>	26.623 <i>1.12</i>	-31.823 <i>-0.37</i>	-6.380 <i>-0.82</i>
Obs.	38	38	38	38
Number of countries	184	184	184	184
Hansen test (p-value)	0.718	0.345	0.705	0.250
Arellano-Bond test for AR(2) in first differences	0.465	0.729	0.346	0.816

1/ Robust t statistics in parentheses

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

3/ Values for STDGDP, KAOPEN, LGDP, STDINF, OPEN, GOVC, CPY are averages over 6-year periods (80-84, 85-90, 91-95, 96-2000, 2001-2004, 2005-2007) composing the period 1980-2007.

<sup>19</sup> Threshold 3,066

<sup>20</sup> Threshold 4,199

Table (10): Financial Liberalization and Growth volatility: Arellano-Bond dynamic panel-data estimation, two-step system GMM results

Dependent variable: Standard deviation of real GDP growth rate (x 100)

Sample Periods Variables	6-period		
	Emerging countries		
	1	2	3
[1] L.STDGDP	<i>-4.25**</i> <i>(-2.30)</i>	<i>-1.07</i> <i>(-0.93)</i>	<i>-1.86</i> <i>(-0.72)</i>
[2] KAOPEN	<i>3.923**</i> <i>2.11</i>	<i>1.579**</i> <i>(2.10)</i>	<i>3.386**</i> <i>(2.11)</i>
[3] KAOPEN*CPY	<i>-0.55</i> <i>-1.67</i>		
[4] KAOPEN*M2Y <sup>21</sup>		<i>-0.029**</i> <i>-2.28</i>	
[5] KAOPEN*QMY <sup>22</sup>			<i>-0.064*</i> <i>-2.01</i>
[6] LGDP	<i>-1.201</i> <i>-0.38</i>	<i>-0.236</i> <i>-0.61</i>	<i>-0.597</i> <i>-0.19</i>
[7] GOVC	<i>-0.466</i> <i>-0.63</i>	<i>-0.056</i> <i>-0.63</i>	<i>-0.754</i> <i>-0.56</i>
[8] STDINF	<i>.011</i> <i>1.49</i>	<i>.004**</i> <i>2.20</i>	<i>.006</i> <i>1.10</i>
[9] OPEN	<i>.009</i> <i>0.76</i>	<i>-0.009</i> <i>-0.80</i>	<i>-0.080</i> <i>-1.28</i>
[10] CPY	<i>.100</i> <i>1.64</i>		
[11] M2Y		<i>.039*</i> <i>1.88</i>	
[12] QMY			<i>.202**</i> <i>2.15</i>
[13] TPS3	<i>-2.850*</i> <i>-1.82</i>	<i>-1.217**</i> <i>-2.63</i>	<i>-2.542</i> <i>-1.34</i>
[14] TPS4	<i>-2.914</i> <i>-1.35</i>	<i>-0.701</i> <i>-1.06</i>	<i>-1.772</i> <i>-1.27</i>
[15] TPS5	<i>-3.853</i> <i>-1.35</i>	<i>-1.390</i> <i>-1.60</i>	<i>-2.919</i> <i>-1.69</i>
[16] TPS6	<i>-5.790*</i> <i>-1.81</i>	<i>-2.687***</i> <i>-3.10</i>	<i>-4.151**</i> <i>-2.02</i>
[17] Intercept	<i>20.069</i> <i>0.70</i>	<i>5.853</i> <i>1.28</i>	<i>20.762</i> <i>1.03</i>
Obs.	38	38	38
Number of countries	184	184	184
Hansen test (p-value)	0.750	0.375	0.959
Arellano-Bond test for AR(2) in first differences	0.743	0.543	0.900

1/ Robust t statistics in parentheses

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

3/ Values for STDGDP, KAOPEN, LGDP, STDINF, OPEN, GOVC, CPY, M2Y and QMY are averages over 6-year periods (80-84, 85-90, 91-95, 96-2000, 2001-2004, 2005-2007) composing the period 1980-2007.

<sup>21</sup> Threshold 54,448

<sup>22</sup> Threshold 52,906

Table (11): Financial Liberalization and Growth volatility: Arellano-Bond dynamic panel-data estimation, two-step system GMM results

Dependent variable: Standard deviation of real GDP growth rate (x 100)

Sample	Periods	4-period											
		Developed countries						Emerging countries					
		1	2	3	4	5	6	1	2	3	4	5	6
[1]	L.STDGDP	.075 <i>0.26</i>	.107 <i>0.40</i>	.041 <i>0.17</i>	.089 <i>0.32</i>	.083 <i>-0.30</i>	.044 <i>0.15</i>	-.165 <i>-0.98</i>	-.148 <i>-0.74</i>	-.148 <i>-0.94</i>	-.150 <i>-0.92</i>	-.147 <i>-0.87</i>	-.162 <i>-1.12</i>
[2]	EML	<b>-1.292**</b> <i>-2.36</i>						.200 <i>-0.19</i>					
[3]	LGDP	.235 <i>0.90</i>	.169 <i>0.44</i>	.264 <i>1.16</i>	.220 <i>0.77</i>	.210 <i>0.70</i>	.289 <i>1.04</i>	.430 <i>0.80</i>	.465 <i>0.81</i>	.695 <i>0.77</i>	.359 <i>0.51</i>	.498 <i>0.69</i>	.481 <i>1.00</i>
[4]	GOVC	-.117 <i>-0.70</i>	-.118 <i>-0.67</i>	-.079 <i>-0.55</i>	-.120 <i>-0.78</i>	-.107 <i>-0.65</i>	-.117 <i>-0.65</i>	-.010 <i>-0.07</i>	.025 <i>0.17</i>	.021 <i>0.17</i>	.069 <i>0.58</i>	.049 <i>0.36</i>	-.014 <i>-0.12</i>
[5]	STDINF	-.004 <i>-0.02</i>	-.060 <i>-0.27</i>	.0004 <i>0.00</i>	-.010 <i>-0.05</i>	-.022 <i>-0.11</i>	.0017 <i>0.01</i>	.002*** <i>4.57</i>	.002*** <i>4.61</i>	.002*** <i>4.10</i>	.002*** <i>4.22</i>	.002*** <i>4.28</i>	.002*** <i>5.03</i>
[6]	OPEN	.002 <i>0.22</i>	-.004 <i>-0.44</i>	.003 <i>0.45</i>	.001 <i>0.13</i>	.0002 <i>0.03</i>	.002 <i>0.25</i>	.0009 <i>0.04</i>	-.0003 <i>-0.02</i>	-.004 <i>-0.20</i>	.004 <i>0.17</i>	.00007 <i>0.00</i>	-.001 <i>-0.08</i>
[7]	CPY	-.0001 <i>-0.01</i>	-.1187 <i>-0.67</i>	-.0008 <i>-0.09</i>	.0009 <i>0.10</i>	.0001 <i>0.02</i>	.022 <i>1.17</i>	.006 <i>0.35</i>	.006 <i>0.38</i>	.014 <i>0.79</i>	.008 <i>0.34</i>	.009 <i>0.49</i>	.022 <i>0.98</i>
[8]	TPS2	-.199 <i>-0.58</i>	-.069 <i>-0.16</i>	-.184 <i>-0.54</i>	-.154 <i>-0.42</i>	-.134 <i>-0.35</i>	-.239 <i>-0.72</i>	.884 <i>0.84</i>	.460 <i>0.34</i>	.290 <i>0.16</i>	.480 <i>0.26</i>	.388 <i>0.21</i>	.258 <i>0.29</i>
[9]	TPS3	<b>.826*</b> <i>2.08</i>	<b>1.001*</b> <i>2.05</i>	<b>.794**</b> <i>2.09</i>	<b>.880***</b> <i>2.24</i>	<b>.897**</b> <i>2.16</i>	<b>.751**</b> <i>1.90</i>	-.026 <i>-0.03</i>	-.153 <i>-0.27</i>	-.172 <i>-0.20</i>	.016 <i>0.02</i>	-.069 <i>-0.10</i>	-.283 <i>-0.82</i>
[12]	TPS4	-.409 <i>-1.37</i>	-.364 <i>-1.26</i>	-.361 <i>-1.38</i>	-.360 <i>-1.14</i>	-.359 <i>-1.21</i>	-.397 <i>-1.27</i>	.695 <i>1.20</i>	.551 <i>0.77</i>	<b>.816*</b> <i>1.78</i>	.766 <i>1.36</i>	.718 <i>1.21</i>	<b>.759*</b> <i>1.71</i>
[13]	EML*CORRUPT		<b>-.237*</b> <i>-1.94</i>						-.046 <i>-0.08</i>				
[14]	EML*BUREAUC			<b>-.323**</b> <i>-2.55</i>						-.287 <i>-0.30</i>			
[15]	EML*LAW				<b>-.192**</b> <i>-2.16</i>						-.103 <i>-0.17</i>		
[16]	EML*INSTQ					<b>-.080**</b> <i>-2.20</i>						-.041 <i>-0.16</i>	
[17]	EML*CPY						<b>-.024*</b> <i>-1.84</i>						-.015 <i>-0.83</i>
[18]	Intercept	2.282 <i>0.52</i>	3.283 <i>0.68</i>	1.112 <i>0.31</i>	2.192 <i>0.55</i>	2.275 <i>0.55</i>	.504 <i>0.11</i>	-2.080 <i>-0.50</i>	-2.501 <i>-0.50</i>	-4.468 <i>-0.60</i>	-2.338 <i>-0.43</i>	-3.193 <i>-0.54</i>	-2.215 <i>-0.53</i>
	Obs.	87	87	87	87	87	87	147	147	147	147	147	147
	Number of countries	22	22	22	22	22	22	38	38	38	38	38	38
	Hansen test (p-value)	0.864	0.922	0.911	0.940	0.959	0.801	0.362	0.385	0.369	0.434	0.386	0.376
	Arellano-Bond test for AR(2) in first differences	0.354	0.370	0.403	0.336	0.355	0.336	0.454	0.260	0.326	0.338	0.285	0.424

1/ Robust t statistics in parentheses.

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

3/ Values for STDGDP, EML, LGDP, STDINF, OPEN, GOVC, CPY are averages over 4-year periods (80-84, 85-90, 91-95, 96-2000) composing the period 1980-2000.

Table (12): Financial Liberalization and Growth volatility: Arellano-Bond dynamic panel-data estimation, two-step system GMM results  
 Dependent variable: Standard deviation of real GDP growth rate (x 100)

Sample	4-period												
	Periods	Developed countries <sup>(a)</sup>						Emerging countries <sup>(b)</sup>					
		Variables	1	2	3	4	5	6	1	2	3	4	5
[1]	L.STDGDP	.077 0.81	-.263 -1.57	<b>-.353**</b> -2.46	-.261 -1.33	<b>-.301*</b> -1.78	-.209 -1.13	-.334 -0.43	-.489 0.02	-.243 -0.51	-.336 -0.42	-.360 -0.40	-.319 -1.05
[2]	MINIANE	<b>-2.268**</b> -2.44						-1.295 -0.14					
[3]	LGDP	-.307 -0.44	.057 0.15	.191 0.69	.080 0.13	.091 0.26	.122 0.12	-.782 -1.03	.528 0.02	2.078 0.62	-.753 -0.94	-.846 -1.02	-1.644 -0.65
[4]	GOVC	.203 1.06	-.055 -0.19	-.037 -0.18	-.185 -0.60	-.052 -0.16	-.298 -1.37	-1.709 -0.61	-.698 -0.42	-.672 -0.58	-.050 -0.05	-.097 0.09	-.007 -0.03
[5]	STDINF	-.235 -1.09	-.023 -0.19	-.062 -0.58	.079 0.40	-.023 -0.16	.104 0.36	.018 0.29	-.002 -0.07	-.002 -0.19	.001 0.20	.003 0.27	.002 0.65
[6]	OPEN	.048* 1.84	.009 0.53	.007 0.40	.0003 0.01	.007 0.32	.001 0.03	-.032 -0.21	.007 0.03	-.011 -0.28	.001 0.02	.006 0.10	.042 0.73
[7]	CPY	.002 0.25	-.007 -1.08	-.003 -0.58	-.004 -1.04	-.004 -0.76	.0003 0.02	-.227 -0.67	-.035 -0.22	-.025 -0.29	.012 0.19	.006 0.08	0.13
[8]	TPS3	<b>1.260***</b> 5.62	<b>.972***</b> 4.69	<b>.771***</b> 4.92	<b>.797***</b> 3.13	<b>.881***</b> 4.00	<b>.775**</b> 2.38	-1.225 -0.38	-1.080 -0.58	-1.131 -0.84	-.719 -0.56	-.680 -0.53	-.961 -1.57
[9]	TPS4	-.118 -0.79	-.058 -0.22	-.077 -0.30	-.215 -0.61	-.069 -0.20	-.365* -1.95	3.216 0.36	.497 0.11	.701 0.55	.696 0.51	.892 0.48	.976 2.72
[12]	MIN*CORRUPT		<b>-.442*</b> -1.76						3.712 0.69				
[13]	MIN*BUREAUC			<b>-.562**</b> -2.20						-.498 -0.12		-.564	
[14]	MIN*LAW				-.172 -0.57							-.021	
[15]	MIN*INSTQ					-.140 -1.22						.273 0.02	
[16]	MIN*CPY						-.006 -0.25						-.211 -0.70
[17]	Intercept	-1.347 -0.22	3.648 0.68	1.818 0.46	5.443 0.90	3.121 0.54	6.464 0.76	11.671 0.86	8.753 0.03	-9.105 -0.37	11.951 0.85	11.02 0.71	19.617 0.98
	Obs.	19	19	19	19	19	19	13	13	13	13	13	13
	Number of countries	76	76	76	76	76	76	47	47	47	47	47	47
	Hansen test (p-value)	0.924	0.789	0.898	0.689	0.800	0.585	0.358	0.129	0.285	0.380	0.389	0.918
	Arellano-Bond test for AR(2) in first differences	0.938	0.628	0.332	0.686	0.595	0.505	0.498	0.980	0.930	0.580	0.555	0.383

1/ Robust t statistics in parentheses.

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

3/ Values for STDGDP, MIN, LGDP, STDINF, OPEN, GOVC, CPY and institutional indicators (CORRUPT, BUREAUC, LAW and INSTQ) are averages over 4-year periods (83-84, 85-89, 90-94, 95-1999).

<sup>(a)</sup> Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.

<sup>(b)</sup> Argentina, Brazil, Chile, Colombia, Ecuador, India, Korea, Malaysia, Mexico, Philippines, Singapore, South Africa, Turkey.

Table (13): Financial Liberalization and Growth volatility: Arellano-Bond dynamic panel-data estimation, two-step system GMM results  
 Dependent variable: Standard deviation of real GDP growth rate (x 100)

Sample	Variables	5-period											
		Developed countries <sup>(a)</sup>						Emerging countries <sup>(b)</sup>					
		1	2	3	4	5	6	1	2	3	4	5	6
[1]	L.STDGDP	.074 <i>0.39</i>	-.0008 <i>-0.00</i>	-.018 <i>-0.15</i>	-.012 <i>-0.10</i>	-.018 <i>-0.17</i>	-.033 <i>-0.18</i>	0.093 <i>0.34</i>	.110 <i>0.44</i>	.1328 <i>-1.16</i>	.068 <i>0.29</i>	.106 <i>0.45</i>	.011 <i>0.05</i>
[2]	LMF	-.0002 <i>-0.21</i>						<b>0.027*</b> <i>1.76</i>					
[3]	LGDP	<b>.434*</b> <i>1.90</i>	.516 <i>1.39</i>	.532 <i>1.36</i>	.536 <i>1.35</i>	.545 <i>1.34</i>	<b>.636*</b> <i>2.05</i>	-.845 <i>-0.79</i>	-.987 <i>-1.20</i>	-1.148 <i>-1.16</i>	-.835 <i>-0.86</i>	-.996 <i>-1.04</i>	-.897 <i>-0.81</i>
[4]	GOVC	-.037 <i>-0.23</i>	.020 <i>0.16</i>	.050 <i>0.36</i>	.046 <i>0.33</i>	.0173 <i>0.13</i>	-.047 <i>-0.44</i>	0.917 <i>1.65</i>	<b>.870*</b> <i>1.72</i>	<b>.967**</b> <i>2.04</i>	.881 <i>1.57</i>	<b>.921*</b> <i>1.87</i>	.847 <i>1.51</i>
[5]	STDINF	.062 <i>0.36</i>	.086 <i>0.58</i>	.089 <i>0.65</i>	.082 <i>0.57</i>	.058 <i>0.39</i>	.068 <i>0.60</i>	<b>.003**</b> <i>2.47</i>	<b>.003***</b> <i>3.20</i>	<b>.003**</b> <i>2.59</i>	<b>.003***</b> <i>3.06</i>	<b>.003***</b> <i>3.11</i>	<b>.003***</b> <i>3.05</i>
[6]	OPEN	.009 <i>0.50</i>	.017 <i>1.43</i>	.016 <i>1.60</i>	.016 <i>1.60</i>	.019 <i>1.51</i>	.014 <i>1.45</i>	-0.069 <i>-1.54</i>	-.068 <i>-1.48</i>	<b>-.064*</b> <i>-1.96</i>	-.054 <i>-1.49</i>	<b>-.063*</b> <i>-1.80</i>	-.040 <i>-1.18</i>
[7]	CPY	-.003 <i>-0.54</i>	-.010 <i>-0.69</i>	-.007 <i>-1.27</i>	-.006 <i>-1.06</i>	-.005 <i>-0.83</i>	-.007 <i>-1.08</i>	.067 <i>0.91</i>	.072 <i>0.88</i>	.079 <i>0.99</i>	.051 <i>0.68</i>	.066 <i>0.87</i>	.037 <i>0.49</i>
[8]	TPS3	<b>.853***</b> <i>3.52</i>	<b>.753**</b> <i>2.69</i>	<b>.747***</b> <i>4.33</i>	<b>.757***</b> <i>4.43</i>	<b>.733***</b> <i>3.34</i>	<b>.637**</b> <i>2.08</i>	1.331 <i>0.87</i>	1.25 <i>0.85</i>	1.474 <i>1.13</i>	1.01 <i>0.73</i>	1.262 <i>0.95</i>	1.032 <i>0.69</i>
[9]	TPS4	-.378 <i>1.38</i>	-.299 <i>-0.70</i>	-.379 <i>-1.40</i>	-.388 <i>-1.39</i>	-.426 <i>-1.17</i>	-.502* <i>-1.77</i>	1.855 <i>1.35</i>	1.665 <i>1.45</i>	1.591 <i>1.66</i>	1.271 <i>1.30</i>	1.521 <i>1.64</i>	1.412 <i>1.21</i>
[10]	TPS5	.078 <i>0.14</i>	.305 <i>0.34</i>	.094 <i>0.33</i>	.066 <i>0.22</i>	.048 <i>0.12</i>	-.074 <i>-0.18</i>	1.855 <i>0.61</i>	1.171 <i>0.90</i>	.799 <i>0.78</i>	.626 <i>0.67</i>	.877 <i>0.89</i>	.549 <i>0.53</i>
[11]	LMF*CORRUPT		-.0002 <i>-0.99</i>						<b>.005*</b> <i>1.72</i>				
[12]	LMF*BUREAUC			-.0001 <i>-0.97</i>						<b>.005*</b> <i>1.97</i>			
[13]	LMF*LAW				-.0001 <i>-0.94</i>						<b>.003*</b> <i>1.78</i>		
[14]	LMF*INSTQ					-.000 <i>-1.09</i>						<b>.001**</b> <i>2.05</i>	
[15]	LMF*CPY						-1.62e-06 <i>-0.37</i>						.0001 <i>1.44</i>
[16]	Intercept	-2.906 <i>-0.57</i>	-4.575 <i>-0.91</i>	-5.521 <i>-0.95</i>	-5.559 <i>-0.96</i>	-5.198 <i>-1.01</i>	-4.708 <i>-1.07</i>	-3.333 <i>-0.35</i>	-.624 <i>-0.08</i>	-.593 <i>-0.07</i>	-1.436 <i>-1.18</i>	-.936 <i>-0.12</i>	-.019 <i>-0.00</i>
	Obs.	88	88	88	88	88	88	38	38	38	38	38	38
	Number of countries	22	22	22	22	22	22	147	147	147	147	147	147
	Hansen test (p-value)	0.325	0.432	0.603	0.617	0.569	0.442	0.725	0.676	0.697	0.685	0.696	0.602
	Arellano-Bond test for AR(2) in first differences	0.750	0.502	0.577	0.598	0.521	0.423	0.665	0.749	0.604	0.671	0.650	0.735

1/ Robust t statistics in parentheses.

2/ \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

3/ Values for STDGDP, LMF, LGDP, STDINF, OPEN, GOVC, CPY and institutional indicators (CORRUPT, BUREAUC, LAW and INSTQ) are averages over 4-year periods (80-84, 85-89, 90-94, 95-1999, 2000-2004).

<sup>(a)</sup> Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.

<sup>(b)</sup> Argentina, Brazil, Chile, Colombia, Ecuador, India, Korea, Malaysia, Mexico, Philippines, Singapore, South Africa, Turkey.

*Table (14): Countries Included in Sample*

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**Developed Countries (22)**

Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Iceland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States

**Emerging Countries (38)**

Argentina, Bangladesh, Botswana, Brazil, Chile, Colombia, Costa Rica, Cote d'Ivoire, Ecuador, Egypt, El Salvador, Ghana, Guatemala, Honduras, India, Indonesia, Israel, Jamaica, Jordan, Kenya, Korea Rep, Malaysia, Mexico, Morocco, Nigeria, Pakistan, Paraguay, Peru, Philippines, Singapore, South Africa, Sri Lanka, Thailand, Trinidad & Tobago, Tunisia, Turkey, Uruguay, Venezuela

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Table (14): Definitions and Sources of Data

Variable	Definition	Source
STDGDP	Within-period standard deviation of annual change in Ln (Real GDP per capita)	World Bank, World Development Indicators database (WDI)
OPEN	Sum of real exports and imports as share of real GDP)	WDI (2007)
LGDP	Initial GDP Logarithm of real per capita gross domestic product in 1980, 1985, 1990, 1995, or 2000 for the subsequent five years. Available for all countries.	WDI (2007)
STDINF	Inflation rate as measured by the standard deviation of the annual growth rate of the gross domestic product implicit deflator	WDI (2007)
CPY	Credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable that establish a claim for repayment	WDI (2007)
GOVC	Government consumption divided by gross domestic product. General government final consumption expenditure includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditure on national defence and security, but excludes government military expenditures that are part of government capital formation.	WDI (2007)
INSTQ	The sum of the International Country Risk Guide (ICRG) Political Risk (ICRGP) subcomponents: Corruption, Law and Order, and Bureaucratic Quality. An increase in the index means better institutions.	ICRG (2007)
CORRUPT	ICRGP quality of institutions sub-component. This is a measure of corruption within the political system. Such corruption distorts the economic and financial environment, reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability, and introduces an inherent instability into the political process. The most common form of corruption met directly by business is financial corruption in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans. Although the PRS measure takes such corruption into account, it is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, "favor-for-favors," secret party funding, and suspiciously close ties between politics and business. In PRS's view these sorts of corruption pose risk to foreign business, potentially leading to popular discontent, unrealistic and inefficient controls on the state economy, and encourage the development of the black market. This measure is scaled from 0 to 6 with lower scores for higher levels of corruption.	ICRG (2007)
LAW	ICRGP quality of institutions sub-component. PRS assesses Law and Order separately, with each sub-component comprising zero to three points. The Law sub-component is an assessment of the strength and impartiality of the legal system, while the Order sub-component is an assessment of popular observance of the law. Thus, a country can enjoy a high rating (3.0) in terms of its judicial system, but a low rating (1.0) if the law is ignored for a political aim. Higher scale of this indicator indicates a strong judicial system.	ICRG (2007)
BUREAUC	ICRGP quality of institutions sub-component. The institutional strength and quality of the bureaucracy is another shock absorber that tends to minimize revisions of policy when governments change. Therefore, high points are given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services. In these low-risk countries, the bureaucracy tends to be somewhat autonomous from political pressure and to have an established mechanism for recruitment and training. Countries that lack the cushioning effect of a strong bureaucracy receive low points because a change in government tends to be traumatic in terms of policy formulation and day-to-day administrative functions.	ICRG (2007)

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KAL	<p>Capital account liberalization (KAL) is a measure of financial liberalization based on Grilli and Milesi-Ferretti (1995) and Beckaert, Harvey and Lundblad (2005). The variable equals one if a country's capital account was open for the majority of the 5-year period and zero otherwise.</p>	<p>Grilli and Milesi-Ferretti (1995) and ICRG (2007)</p>
KAOPEN	<p>(KAOPEN) is an index for capital “openness which is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF’s Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Up to 1996, the dummy variables reflected the four major categories on the restrictions on external accounts. These variables are: (k1) which is a variable indicating the presence of multiple exchange rates; (k2) which is a variable indicating restrictions on current account transactions, (k3) a variable indicating restrictions on capital account transactions; and (k4) a variable indicating the requirement of the surrender of export proceeds. This index takes on higher values the more open the country is to cross-border capital transactions.</p>	<p>Chinn and Ito (2007)</p>
EML	<p>The official equity market liberalization indicator (EML) is based on Bekaert and Harvey's (2002) detailed chronology of important financial, economic, and political events in many developing countries. The variable takes the value of one when it is possible for foreign portfolio investors to own the equity of a particular country and zero otherwise.</p>	<p>Beckaert, Harvey and Lundblad (2006)</p>

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