



HAL
open science

DOES FINANCIAL GLOBALIZATION STILL SPUR GROWTH IN DEVELOPING COUNTRIES? CONSIDERING EXCHANGE RATE VOLATILITY

Brahim Gaies, Stéphane Goutte, Khaled Guesmi

► **To cite this version:**

Brahim Gaies, Stéphane Goutte, Khaled Guesmi. DOES FINANCIAL GLOBALIZATION STILL SPUR GROWTH IN DEVELOPING COUNTRIES? CONSIDERING EXCHANGE RATE VOLATILITY. 2019. halshs-02175361

HAL Id: halshs-02175361

<https://shs.hal.science/halshs-02175361>

Preprint submitted on 5 Jul 2019

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

DOES FINANCIAL GLOBALIZATION STILL SPUR GROWTH IN DEVELOPING COUNTRIES? CONSIDERING EXCHANGE RATE VOLATILITY

Brahim GAIES

IPAG Lab - IPAG Business School, Paris, France

Stéphane GOUTTE

University of Paris 8, France

Paris School of Business, Paris, France

Khaled GUESMI

IPAG Lab - IPAG Business School, Paris, France

Telfer School of Management, University of Ottawa, Canada

ABSTRACT

This paper analyses the effects of financial globalization on growth in developing countries, focusing on its interaction with exchange rate volatility. Based on dynamic panel data models and the two-step system Generalized Method of Moments (system GMM) estimator, it replicates the method of Gaies et al. (2019a; 2019b) and extends it by exploring a new spillover effect of financial globalization in terms of exchange rate volatility measured by six different indicators. The findings show the positive influence of investment-globalization on growth through the traditional channel of capital accumulation and by reducing the negative impact of exchange rate volatility. These impacts are not ensured by indebtedness-globalization, thereby shedding light on the government's decision in developing countries on foreign capital control policy. These results are robust to changes in the estimator and variables used.

JEL: E44, F21, F36, O42, G15, G18

Keywords: Foreign Investors; Government Policy; Dynamic Panel; Exchange Rate Volatility; Interactions

1. Introduction

The disastrous consequences of the contemporary financial crises, the ascension of Donald Trump to head the White House with his famous slogan “protection will lead to great prosperity and strength”, the wrath of a large part of the populations of developed and developing countries, who accuse globalization of increasing inequalities, unemployment and the plutocracy of banks and multinational companies (Stiglitz, 2017), the rise of populist currents in Europe and the United Kingdom’s departure from the European Union, give rise to a salient question concerning financial globalization (Gaies et al. 2019c). Indeed, after the last global financial crisis of 2007-2011, the friends of yesterday’s financial globalization have, so to speak, become today’s enemies. In 1997, as noted above, the First Deputy Managing Director of the IMF, Stanley Fischer, explicitly called for a change in the Fund’s statutes to push member countries to deregulate external capital flows in the name of financial openness – the central pillar of globalization. But as early as March 2007, Raghuram Rajan, then Chief Economist of the same institution, denounced the risks and paradoxes of the free international movement of capital in an article co-written with the Head of the Financial Studies Division (Eswar Prasad) and the Deputy Director of the Research Department (Arvind Subramanian) (Prasad et al., 2007). In 2013, Robert Shiller was awarded the Nobel Prize alongside Eugene Fama, while his research is opposed to the empirical validity of the Efficient Market Hypothesis. With this award, the liberal financial paradigm is certainly more nuanced than in 1974 and 1976, the “nobelization” dates of Friedrich Hayek and Milton Friedman respectively. Thus, the questioning of the merits of financial globalization and the resulting liberalization policies seems to be scientifically and politically apparent. This may suggest a future march towards the “last breaths” of the process, or even a future “financial deglobalization”. In this context, does financial globalization remain a sound strategy for non-emerging developing countries? Regarding this question, recent empirical studies have focused on the spillover effects of financial globalization in underdeveloped economies, in addition to its traditional direct effects. In this vein, Ahmed (2016) and Trabelsi and Cherif (2017) show that financial development is one of the main spillover benefits of FDI on growth and underline the opportunities that financial globalization could offer for developing countries. Iamsiraroj (2016) also evidences a positive relationship between FDI and human capital quality. More recently, Gaies et al. (2019a) analyze the interaction between financial globalization and financial instability, namely the fluctuations of the financial development in the long term. They identify the increase (decrease) in financial instability as a negative (positive) spillover effect of indebtedness-globalization (investment-globalization). Gaies et al. (2019b) obtained about the same result regarding the impact of FDI on banking crisis and growth in developing countries.

This paper contributes to this recent literature by analyzing not only the direct effect of financial globalization on growth in developing countries, but also its spillover effect by exploring its interaction with exchange rate volatility. Even more so, it enriches and develops three different currents of the literature *i*) on the effect of exchange rate volatility on growth (e.g. De Grauwe, 2005; De Los Rios, 2009; Arratibel et al., 2011); *ii*) on the effect of financial globalization on exchange rate volatility (e.g. McKinnon and Schnabl, 2004; Tille, 2008; Aizenman et al., 2010; Al-Abri, 2013); and *iii*) on the effect of financial globalization on growth (e.g. Broner et al., 2010; Ahmed, 2016; Trabelsi and Cherif, 2017; Gaies et al., 2019a; Gaies et al., 2019b). Using the two-step system Generalized Method of Moments (system GMM) estimator applied to two dynamic panel data models for 72 developing countries observed between 1972 and 2011, we find that exchange rate volatility has a negative and significant impact on growth. On the contrary, financial globalization, and in particular investment-globalization (foreign direct investment and portfolio investment), promotes growth not only directly, but also collaterally by reducing the negative impact of exchange rate volatility. To further test the robustness of the

main results, we conducted four types of tests that confirmed their stability. These are the change in the estimation method, the exchange rate indicators, the independent variable and the control variables.

In the following sections, we set out the basis for our theoretical arguments on the relationship between exchange rate volatility, financial globalization and growth. We then present our data and our estimation method. Next, we discuss the baseline findings and test their robustness. Finally, we draw conclusions and give recommendations for developing countries from our main findings.

2. Theoretical background

As mentioned above, one of the main theoretical contribution of this paper is that it merges and develops three different currents of the literature *i)* on the effect of exchange rate volatility on growth; *ii)* on the effect of financial globalization on exchange rate volatility; and *iii)* on the effect of financial globalization on growth.

i) Exchange rate volatility and growth

Theoretically, proponents of rigid exchange rate regimes have shown that exchange rate volatility reduces economic growth. Indeed, according to Frankel and Rose (2002), exchange rate volatility is associated with increased uncertainty. They add that this uncertainty could contribute to macroeconomic instability and negatively affect foreign trade and production, since it increases transaction costs. In this sense, De Grauwe (2005) stipulates that uncertainty undermines price transparency and the efficiency of their adjustment mechanisms. Aizenman and Hausmann (2000) and De Los Rios (2009) argue that nominal exchange rate stability is necessary in underdeveloped economies to reduce financial risks and crises related to high exchange rate fluctuations and the underdevelopment of the banking sector. Empirically, Arratibel et al. (2011) underline that the studies on the effects of nominal exchange rate volatility on economic growth are relatively rare. To contribute to filling this gap, the authors examine the impact of nominal exchange rate volatility on a set of macroeconomic variables, namely real GDP per capita growth, credit surpluses, foreign direct investment and current account balance of payments, for the member states of the European Union and countries of Central and Eastern Europe. Their study covers the period 1995–2008 and is based on the fixed effects estimator. Arratibel et al. (2011) demonstrate that low nominal exchange rate volatility is associated with higher levels of economic growth, more foreign direct investment, higher current account deficits and larger surpluses of credits. Even before Arratibel et al. (2011), Schnabl (2007; 2008) examined the impact of exchange rate volatility on growth in 41 countries, including member states of the European Union and developing countries between 1994 and 2005. Using the GMM system method, the author shows that nominal exchange rate stability encourages economic growth through foreign trade and foreign capital inflows. The same results are found by De Grauwe and Schnabl (2008) and Schnabl (2009) for countries peripheral to the European Union and East Asian countries.

Unlike these results, other theoretical and empirical research has shown a positive relationship between exchange rate volatility and growth. Indeed, according to Bayoumi and Eichengreen (1994), countries adjust better to external shocks under flexible exchange rate regimes, which is due to exchange rate volatility. Also, the fluctuation of the nominal exchange rate, according to Eichengreen (1998), reduces the risk of a crisis by restoring the interest rate differential after

the shock to its initial level. Similarly, Chang and Velasco (2000) suggest that if a poorly developed financial system is coupled with a fixed exchange rate regime, where the nominal exchange rate does not fluctuate, the likelihood of a crisis increases. Three years later, in a study conducted on a large sample of 183 developed and developing countries over the period 1974–2000, Levy-Yeyati and Sturzenegger (2003) found that less flexibility in the exchange rate regime was associated with slower growth and higher output instability. Besides, the impact of the exchange rate regime on economic growth is not significant for the sub-group of developed countries in the sample. Edwards and Levy-Yeyati (2005) find similar results in a study on the impact of terms-of-trade shocks on growth, depending on exchange rate regimes. Indeed, for a large sample of 138 developed and developing countries analyzed over the period 1974–2004, the authors demonstrate that nominal exchange rate volatility, measured mainly by the standard deviation, allows a better absorption of the terms-of-trade shocks. As a result, countries with fluctuating exchange rates appear to be growing faster than those with a fixed exchange rate regime. In 2005, Coudert and Dubert confirmed the results of the last two studies. These authors have shown the positive effect on economic growth of floating exchange rate regimes, characterized by a high variance of the nominal exchange rate. The opposite effect has been demonstrated in the case of fixed exchange rate regimes, where the nominal exchange rate is characterized by a low variance. The study is carried out for 10 Asian countries between 1990–2001 and 2001–2004.

Based on this literature, it seems that the volatility of the nominal exchange rate slows GDP growth in emerging and developing countries. In theory, this is due to the low development of their financial systems. In fact, these systems are generally unable to adequately hedge risks arising from uncertainty associated with exchange rate volatility. The result is a decline in investment, production and international trade.

ii) Financial globalization and exchange rate volatility

Is the exchange rate more volatile in a context of free movement of capital? Mundell (1961) was one of the first researchers to study this question. He advocates the application of flexible rather than fixed exchange rate regimes in a context of financial openness. Indeed, Mundell (1961) proves that this choice is required to target internal (growth and price stability) and external (financial and trade openness) macroeconomic objectives. This is how the famous theory of the “triangle of incompatibility” was born. Furthermore, McKinnon (1973) highlights that capital inflows increase nominal exchange rate volatility, at least in the short term, but the author does not define what he means by the short-term nor does he explain the extent to which the government should manage the nominal exchange rate. Accordingly, Tille (2008) shows the importance of the monetary shocks that financial globalization produces in open economies. He proves that these shocks could destabilize the exchange rate and that they are more severe when the international flows involve bonds rather than equities.

In contrast to all these theoretical results, McKinnon and Schnabl (2004) argue that, empirically, financial globalization does not automatically imply an increase in the instability of the nominal exchange rate. The authors explain this relationship by the “fear of floating” in East Asian economies, with the exception of Japan. Indeed, after examining the daily evolution of the nominal exchange rate (against the dollar) in these countries over the period 1990–2002, the researchers found that this rate remained fairly stable even after the crisis of 1997–1998. The explanation for this phenomenon is as follows: out of fear of excessive instability in their currencies – “fear of floating” – East Asian governments have ensured the accumulation of currencies, especially the dollar, to stabilize their exchange rates. Later, Aizenman et al. (2010) revisited Mundell’s “triangle of incompatibility” from an empirical perspective, focusing on Asian countries over the period 1970–2007. The authors find that in a context of financial globalization, East Asian countries maintain the stability of their currencies by holding a level

of foreign-exchange reserves averaging 20% their GDP. In the case of non-Asian emerging countries, the exchange rate is more volatile. More recently, Al-Abri (2013) examined the interactions between financial globalization, exchange rate volatility and terms-of-trade in 53 developing countries exporting primary products over the period 1980–2007. The results confirm the stabilizing effect of financial globalization on the exchange rate by reducing the impact of terms-of-trade shocks on the exchange rate. This stabilizing effect is all the stronger as financial globalization concerns foreign direct investment, as previously highlighted by Cuñado et al. (2006).

Overall, most theoretical work argues that financial globalization destabilizes the nominal exchange rate. This is contradicted by some empirical work which mainly refers to the case of Asian countries. These countries have been able to stabilize their currencies in a context of financial openness by accumulating foreign exchange reserves.

iii) Financial globalization and growth

Quinn (1997) is one of the first economists to demonstrate unambiguously a direct and clear positive relationship between financial globalization and economic growth. He examines 64 developed and developing countries over the period 1958-1989 and supports this result for his entire sample. Later, Quinn and Toyoda (2008) corroborate these findings for 94 countries observed between 1955 and 2004 using several indicators of financial and banking liberalization. Similarly, Bekaert et al. (2011) analyze the effects of financial globalization indicated by the capital account and the stock market liberalization in 96 developed and developing countries between 1980 and 2006. They affirm the positive effect of financial globalization in terms of GDP growth and total factor productivity. More recently, Iamsiraroj (2016) shows that there is a positive and direct relationship between FDI and portfolio investment and growth for 124 countries studied during the period 1971–2010. In sum, the empirical findings of these studies are justified by the theory of financial liberalization developed by McKinnon (1973) and Shaw (1973). According to this theory, financial globalization directly increases economic growth through higher capital accumulation in developing countries and higher profitability of the capital invested in developed countries. Unlike these studies, Alesina et al. (1994) prove that financial globalization can neither increase nor decrease growth in 20 OECD countries between 1950 and 1989. This is confirmed by Rodrik (1998) for 100 developed and developing countries during the period 1975–1989. More recently, Joyce (2011) examines 20 emerging countries between 1976 and 2002. He concludes that while investment-globalization reduces the mischiefs of crises, external debts promote their impact. Also, Lane and McQuade (2014) find a strong (weak) correlation between external debt flows (investment flows) and the domestic credit boom in 54 developed and emerging countries between 1993 and 2008.

Furthermore, other literature focuses on the indirect effects – so-called spillover effects – through which financial globalization encourages or discourages GDP growth. In this vein, Mishkin (2009) argues that in the context of financial globalization, liberalization of the domestic financial system addresses the lack of financing which condemns the growth in underdeveloped economies. Chinn and Ito (2007) show that financial globalization contributes to financial development by intensifying competition between local and foreign banks within the domestic financial system, which enhances economic development. They also emphasize the positive effects of foreign investors in terms of liquidity and diversification of financial assets on the stock market. Likewise, according to Bruno and Hauswald (2013), the mere presence of foreign banks on the financial market promotes the “allocative efficiency” of credit, by undermining state intervention that may repress it. Levine (1996) evidences that the participation of foreign investors in the capital of domestic banks helps to improve their governance. Moreover, according to De Haas and van Lelyveld (2004), portfolios held by

foreign banks entering developing countries are characterized by both high capitalization and international diversification, which permits an inter-temporal smoothing of credit in recession. Moreover, according to Neto and Veiga (2013), financial globalization, and more specifically FDI, has not only a positive direct effect on GDP growth, but also an indirect effect by encouraging technological development. Similarly, Okada (2013) found the same direct effect and, in addition, a spillover effect of FDI on economic growth by improving the quality of institutions. Kunieda et al. (2014) consider financial development as the main indirect effect of financial globalization and in particular FDI on growth. This result is confirmed by other studies, such as those of Ahmed (2016) and Trabelsi and Cherif (2017). The findings of Iamsiraroj (2016) support this view and show that FDI has collateral effect on GDP by improving human capital quality. More recently, Gaies et al. (2019a) evidence that in addition to its direct positive impact on GDP, FDI also has a positive spillover benefit on the latter, diminishing the recessionary impact of banking crises. The authors point out that these benefits only apply up to a certain threshold depending on a country's "absorption capacity". Gaies et al. (2019b) examine the effect of financial globalization in general on GDP in 72 developing countries between 1972 and 2011. They note that financial globalization as a whole directly and positively impacts growth, as does one of its components, namely investment-globalization. In contrast, indebtedness-globalization decreases economic growth. In addition to these direct effects, financial globalization as a whole indirectly and positively impacts growth by reducing financial instability's harmful effect on the latter, as does investment-globalization, while indebtedness-globalization increases it. The negative effect of indebtedness-globalization on growth found by this recent empirical study is explained by two theoretical works. Obstfeld (1998) proves that when financial openness is based on indebtedness, it risks harming household well-being. Indeed, with the repayment of debt, the level of capital does not eventually reach a level higher than the autarkic level. Also, paying interest on debt lowers consumption below its level of domestic self-sufficiency. In the same vein, Broner et al. (2010) developed a standard growth model in which a country's lack of capital did not allow the economy to service its foreign debt. The two authors conclude that the repayment of debt in a context of free movement of capital will depend on the ratio of domestic savings to external debt. The weakness of this ratio is a sign of loan default, which can slow down capital inflows and encourage capital flight. Broner et al. (2010) add that this situation is most likely in economies with a weak financial system and weak institutional quality.

In sum, this literature shows the lack of consensus on the effect of financial globalization on growth. However, recent studies show that it is easier to prove a positive and significant effect on growth of investment-globalization rather than of indebtedness-globalization in developing countries.

3. Data

In order to enrich recent panel data analysis on the spillover effects of financial globalization, especially Neto and Veiga (2013), Ahmed (2016), Trabelsi and Cherif (2017) and Gaies et al. (2019a; 2019b), we consider an unbalanced panel of 72 developing countries covering the period 1972–2011¹. The data is transformed into eight 5-year average non-overlapping sub-periods (1972–1976, 1977–1981..., 2002–2006 and 2007–2011). It is constructed under the constraint of the availability of observation by country and sub-period. Indeed, concerning the years after 2011 and before 1972, there are too much missing observations, especially for the African and East Asian countries that are included in our sample. In view of this deficiency and in order to avoid the problem of biased estimates due to strongly unbalanced data across

¹ For the list of sample countries, data description, statistics and correlations (Tables A, B and C), see appendix.

countries, we have delimited the study period between 1972 and 2011. In addition, the transformation of the data into 5-year sub-periods permits to smooth short-term variations in the growth level due to business cycle fluctuations, which highlights the long-term trend of economic growth (Temple, 1999). Moreover, economic growth is indicated by the growth rate of real GDP per capita (GDPPC). It is explained by three variables of financial globalization, as well as several exchange rate volatility indicators. The control variables are selected in accordance with standard studies on the phenomenon of economic growth – as they have been proven robust, namely by Sala-I-Martin et al. (2004).

i) *Financial globalization variables*

The indicators of financial globalization are extracted from the External Wealth of Nations Dataset (EWN, last extended in 2014). Thus, as recommended by Kose et al. (2009) and Baltagi et al. (2009), and as done by Gaies et al. (2019a), we opted for these *de facto* measures of financial globalization because they reflect the reality of this phenomenon more accurately and induce less endogeneity problems than the *de jure* measures. INV-GLOB is the indicator of investment-globalization. It is the growth rate of total stocks of external foreign direct investment (FDI) and portfolio equity, assets and liabilities. We add up FDI and portfolio equities, since they represent ownership titles and not debt securities, which is the case for external debt. DEB-GLOB represents the indebtedness-globalization. It is the growth rate of total stocks of external debt, assets and liabilities. GLOB corresponds to the sum of INV-GLOB and DEB-GLOB and is the indicator of financial globalization.

ii) *Nominal exchange rate volatility variables*

The indicators of nominal exchange rate volatility are SD-EXCH, ADR-EXCH, AD-EXCH, SDR-EXCH, SCOR-EXCH and STAB-EXCH.²

SD-EXCH and AD-EXCH represent the five-year average standard deviation and the five-year average absolute deviation of the annual nominal exchange rate logarithmic growth from the IMF database. ADR-EXCH and SDR-EXCH are respectively the five-year average absolute deviation and the five-year standard deviation of the residual ε_t resulting from the following regression:

$$x_t = a + bx_{t-1} + ct + \varepsilon_t$$

Where x is the logarithmic growth of the annual nominal exchange rate from the IMF database. It is calculated on the basis of the monthly bilateral nominal exchange rate from the IMF database, a is a constant and t is the time. This regression is estimated separately for each country in the sample.

- SCOR-EXCH is the measure of the *de facto* exchange rate volatility (Z-score) proposed by Ghosh et al. (2003):

$$\text{SCOR-EXCH} = \sqrt{\mu_t^2 + \sigma_t^2}$$

μ and σ are respectively the five-year average arithmetic standard deviation of the nominal exchange rate.

- STAB-EXCH is the five-year arithmetic average of the exchange rate stability measure (ERS) constructed by Aizenman et al. (2008). This is the annual standard deviation

² The indicators ADR-EXCH and SD-EXCH are used for the baseline estimates. The other ones are applied in the robustness tests.

(*stdev*) of the growth rate of the monthly nominal exchange rate (*exch_rate*), normalized and calculated as an index. When its value is close to 1, the exchange rate tends towards stability. On the contrary, when ERS is close to 0, the exchange rate tends towards instability.

$$ERS = \frac{0.01}{0.01 + stdev(\Delta(\log(exch_rate)))}$$

Furthermore, three remarks should be made on these indicators. First, we followed the methodology of Aghion et al. (2009) and Aizenman et al. (2010) to indicate nominal exchange rate volatility by calculating the standard deviation of the five-year exchange rate. Second, the “Z-score” and the exchange rate stability (ERS) indicators are used in several studies, such as De Grauwe and Schnabl (2008), Arratibel et al. (2011), Aizenman et al. (2016) and Gaies et al. (2018). Finally, the calculation of the average absolute deviation, as well as of the average absolute deviation of the residual of a regression based on a linear deterministic trend are recommended by Cariolle and Goujon (2015) to measure macroeconomic volatility.

iii) Control variables

The control variables used in the baseline estimates are the following:

- L.GDPPC: lagged real GDP per capita (World Development Indicators).
- EDU: ratio of total secondary enrollment, regardless of age, and the population of the age group that officially corresponds to that level of education (WDI).
- GOV: ratio of government spending as a share of GDP (WDI).
- CRISIS: dummy banking crisis (Systemic Banking Crises Database, IMF).
- PRIV: domestic credits to private sector as a percentage of GDP in logarithm (Financial Structure Database).

We add the following control variables in the robustness tests:

- POPG: population growth (WDI).
- EXP: export to GDP (WDI).
- POLI: political rights index (Freedom House).
- LIQG: liabilities (M3) to GDP in log-difference (Financial Structure Database).

4. Estimation method

As mentioned above, we replicate the method used by Gaies et al. (2019a) and enrich this work by examining a new spillover effect of financial globalization in terms of exchange rate volatility. To do this, we estimate the following two models:

Model 1: Financial globalization, nominal exchange rate volatility and economic growth: direct effect

$$\Delta Y_{it} = \alpha_0 + \gamma Y_{it-1} + \alpha_1 FING_{it} + \alpha_2 EXCH_{it} + \beta' X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

Where, $\gamma = (\alpha'_1 - 1)$ and $\Delta Y_{it} = Y_{it} - Y_{it-1}$

$$Y_{it} - Y_{it-1} = \alpha_0 + (\alpha'_1 - 1) Y_{it-1} + \alpha_1 FING_{it} + \alpha_2 EXCH_{it} + \beta' X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1')$$

Hence, $\gamma = (\alpha'_{1-1}) < 1$ according to the hypothesis of conditional convergence among countries

Model 2: Financial globalization, nominal exchange rate volatility and economic growth: spillover effect

$$\Delta Y_{it} = \alpha_0 + \gamma Y_{it-1} + \alpha_1 FING_{it} + \alpha_2 (FING_{it} \times EXCH_{it}) + \beta' X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

ΔY_{it} is the growth rate of real GDP per capita (GDPPCG); Y_{it-1} is the lagged real GDP per capita (L.GDPPC); $FING_{it}$ regroups the indicators of financial globalization (GLOB or INV-GLOB or DEB-GLOB); $EXCH_{it}$ incorporates the indicators of nominal exchange rate volatility (SD-EXCH, ADR-EXCH, AD-EXCH, SDR-EXCH, SCOR-EXCH or STAB-EXCH); $FING_{it} \times EXCH_{it}$ is an interaction term between financial globalization measures and nominal exchange rate volatility measures; X_{it} is the matrix of the control variables (EDU, GOV, CRISIS, PRIV, EXP, POLI and/or GOV); α_0 is a constant; μ_i is the country-specific effect; λ_t is the time-specific effect; ε_{it} is the error term. The indicators i and t represent respectively the countries ($i = 1, 2, \dots, N$) and the periods ($t = 1, 2, \dots, T$).

To estimate Equation (1) and (2), we use the GMM system dynamic panel data estimator developed by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998), and we calculate robust two-step standard errors using the method proposed by Windmeijer (2005). In doing so, we avoid the potential problem of endogeneity of the explanatory variables, possibly due to the correlation between the error terms and country-specific effects and/or the presence of the lagged real GDP per capita variable on the right of the Equation (1) and (2). As Bond (2002) explains in more detail, the use of the two-step standard errors induces a more asymptotically efficient estimator than the first-step estimates in small samples. In addition, Windmeijer's correction method allows us to obtain the estimated corrected variance of the GMM system estimator, which leads to more efficient inferences. Hansen and Arellano-Bond (AR2) test values above the 10% level validate the instruments in all our regressions (see Tables 1 to 6). These valid instruments are the levels and first-differences of exogenous explanatory variables that are lagged by two or more periods (Roodman 2009a; 2009b).

5. Baseline results

Table 1 highlights four main results from our baseline estimates. First, regressions (1), (3), (7) and (9) show that the coefficients associated with the indicators of financial globalization (GLOB) and investment-globalization (INV-GLOB) are significant and positive. This reflects the positive and direct impact of financial globalization and investment-globalization on growth. In addition, according to regressions (5) and (11), the coefficient of the indicator of indebtedness-globalization (DEB-GLOB) is not significant, which proves that this type of globalization does not benefit economic growth. Several theoretical studies explain this impact by the better risk sharing, the complementarity between domestic and foreign investment (crowding effect), the technology transfer and higher capital accumulation (Borensztein et al., 1998; Bekaert and Harvey, 2000). The non-significant effect of indebtedness-globalization on growth is also justified by theoretical models, such as those developed by Obstfeld (1998) and Broner et al. (2010), that often predict negative or ambiguous repercussions on economic development for this type of globalization, as mentioned above. In addition, according to McKinnon and Pill (1996; 1998), indebtedness-globalization could lead to agency problems in the domestic financial system. In this sense, Rodrik and Velasco (1999) pointed out that foreign

debt flows are correlated with higher risks and crises occurrence. Second, Table 1 reveals that the coefficients associated with the nominal exchange rate volatility indicators, ADR-EXCH and SD-EXCH, are significant and negative in all regressions (from 1 to 12). Thus, it appears that nominal exchange rate volatility has negative repercussions on GDP growth, knowing that the same finding has been highlighted by Schnabl (2007; 2008; 2009), De Grauwe and Schnabl (2008) and Arratibel et al. (2011) for different periods and samples than ours. This effect is explained by the negative impact of uncertainty, due to exchange rate fluctuations on investment, production and foreign trade. Even more so, exchange rate volatility can lead to crises resulting from extreme instability movements (e.g. Kaminsky and Reinhart, 1999; Aizenman and Hausmann, 2000). Third, as shown in Table 1, the coefficients associated with the terms of interaction between financial globalization, investment-globalization and nominal exchange rate volatility (GLOB x ADR-EXCH, GLOB x SD-EXCH, ADR-EXCH x INV-GLOB and SD-EXCH x INV-GLOB) are both positive and significant. It seems that a positive effect of financial globalization, and investment-globalization in particular, offsets the negative effect of nominal exchange rate volatility. It therefore appears that financial globalization has a collateral advantage in addition to its direct positive impact on growth. Conversely, the non-significance of the interaction terms between indebtedness-globalization and nominal exchange rate volatility (ADR-EXCH X DEB-GLOB and SD-EXCH X DEB-GLOB) proves that indebtedness-globalization does not provide this collateral advantage. With reference to the results of the recent studies by Kunieda et al. (2014), Ahmed (2016), Trabelsi and Cherif (2017) and Gaies et al. (2019b) on the positive indirect effect of FDI on the financial development of developing countries and those by Gaies et al. (2019a) on the relationship between investment-globalization, indebtedness-globalization and financial instability, our findings could be explained by the following mechanism. Financial globalization, especially through foreign investment, promotes the development of the financial sector and its stability in developing countries, and, in doing so, mitigates the negative effect of nominal exchange rate volatility on growth. Indeed, the transmission channel for the negative effect of exchange rate volatility on growth is uncertainty, which reduces investment, trade and production and is reinforced by the weakness of the financial sector. In fact, in a developed financial market, hedging currency risk reduces this uncertainty and its negative consequences (De Grauwe, 1992). However, due to its neutral or even negative impact on financial development and stability, indebtedness-globalization does not guarantee the positive spillover effect in terms of reducing of the negative impact of exchange rate volatility on growth. Finally, by referring to Table 1, it appears that the coefficients of the significant control variables are consistent with the standard economic growth studies (Sala-I-Martin et al., 2004). The negative sign of the coefficient of the variable GOV is in line with the public choice theory. The education level indicator (EDU) is characterized by a positive coefficient, which is consistent with the human capital theory. The negativity and significance of the crisis variable (CRISIS) are in accordance with the studies of Levy-Yeyati and Sturzenegger (2003), De Grauwe and Schnabl (2008) and Arratibel et al. (2011).

Table 1. Baseline estimates

	Mod(1)	Mod2(2)	Mod1(3)	Mod2(4)	Mod1(5)	Mod2(6)	Mod1(7)	Mod2(8)	Mod1(9)	Mod2(10)	Mod1(11)	Mod2(12)
L.GDPPC	-0.025 (0.020)	-0.026 (0.016)	-0.011 (0.012)	-0.022 (0.014)	-0.028* (0.017)	-0.031* (0.017)	-0.014 (0.017)	-0.016 (0.018)	-0.015 (0.014)	-0.016 (0.018)	-0.017 (0.018)	-0.019 (0.015)
EDU	0.019*** (0.007)	0.020*** (0.007)	0.011* (0.005)	0.019** (0.008)	0.024** (0.011)	0.020** (0.010)	0.019*** (0.007)	0.018** (0.007)	0.013* (0.007)	0.015 (0.009)	0.019** (0.009)	0.020** (0.009)
PRIV	0.005 (0.011)	0.003 (0.010)	0.005 (0.007)	0.006 (0.007)	0.004 (0.010)	0.006 (0.011)	-0.002 (0.011)	-0.002 (0.011)	0.004 (0.008)	0.001 (0.009)	-0.001 (0.011)	0.002 (0.011)
GOV	-0.050** (0.022)	-0.054*** (0.019)	-0.050*** (0.017)	-0.051*** (0.016)	-0.049** (0.021)	-0.069*** (0.020)	-0.042** (0.017)	-0.051** (0.022)	-0.046** (0.021)	-0.048*** (0.018)	-0.054*** (0.020)	-0.044* (0.026)
CRISIS	-0.024** (0.010)	-0.021** (0.009)	-0.022*** (0.008)	-0.023** (0.009)	-0.025* (0.012)	-0.023* (0.012)	-0.023** (0.009)	-0.022** (0.009)	-0.023** (0.011)	-0.018* (0.010)	-0.022* (0.011)	-0.026** (0.011)
GLOB	0.053** (0.021)						0.053*** (0.017)					
ADR-EXCH	-0.023** (0.012)	-0.039*** (0.009)	-0.031*** (0.008)	-0.038*** (0.010)	-0.028** (0.013)	-0.030*** (0.011)						
GLOB X ADR-EXCH		0.202*** (0.061)										
INV-GLOB			0.057*** (0.019)						0.039* (0.021)			
INV-GLOB X ADR-EXCH				0.040** (0.019)								
DEB-GLOB					0.028 (0.027)						0.012 (0.023)	
DEB-GLOB X ADR-EXCH						0.078 (0.083)						
SD-EXCH							-0.057*** (0.017)	-0.072*** (0.018)	-0.050** (0.020)	-0.079*** (0.023)	-0.063*** (0.020)	-0.073*** (0.023)
GLOB X SD-EXCH								0.350*** (0.116)				
INV-GLOB X SD-EXCH									0.099** (0.044)			
DEB-GLOB X SD-EXCH												0.297 (0.240)
Constant	0.231* (0.121)	0.251** (0.106)	0.163** (0.077)	0.217** (0.083)	0.236** (0.107)	0.313*** (0.103)	0.161* (0.089)	0.200* (0.105)	0.173** (0.085)	0.196** (0.095)	0.209* (0.107)	0.180 (0.110)
Observations	309	309	307	307	309	309	309	309	307	307	309	309
Countries	66	66	66	66	66	66	66	66	66	66	66	66
AR2 P-value	0.698	0.686	0.836	0.549	0.626	0.393	0.718	0.635	0.627	0.554	0.557	0.486
Hansen P-value	0.213	0.341	0.735	0.390	0.200	0.289	0.409	0.484	0.555	0.449	0.310	0.339

Notes: Dependent Variable: Growth rate of real GDP per capita. Period: 1972-2011 (Non-overlapping five-year data). Estimation: Two-step system GMM with Windmeijer (2005) small sample robust correction. Time and fixed effects are included in all regressions. Standard errors are presented below the corresponding coefficient. Symbols *, ** and *** mean significant at 10%, 5% and at 1%.

6. Robustness tests

To test the robustness of our baseline estimates, we renew our regressions using alternative estimation methods³, considering alternative variables of nominal exchange rate volatility, including and removing some control variables and changing the dependent variable.

i. Alternative variables of nominal exchange rate volatility

The Tables 2 and 3 (in Appendix) report the results of the estimates made after the insertion of the alternative variables of nominal exchange rate volatility, namely STAB-EXCH, SDR-EXCH, SCOR-EXCH, AD-EXCH. They highlight the negative and significant impact of these alternative indicators in most regressions. This is further empirical evidence of the harmful (positive) impact of nominal exchange rate volatility on growth. The indicator of financial globalization and that of investment-globalization have significant positive coefficients, confirming their beneficial effects on growth. On the other hand, the indicator of indebtedness-globalization remains statistically non-significant. The terms of interaction between the indicators of financial globalization and investment-globalization and nominal exchange rate volatility are also characterized by significant and positive coefficients. However, these coefficients are non-significant for the interaction between indebtedness-globalization and nominal exchange rate volatility. The control variables retain the same signs and almost the same significance. Overall, the alternative variables did not significantly affect the stability of our baseline estimates, which corroborates their robustness.

ii. Changing control variables

In Table 4 (in Appendix), we have retained Models 1 and 2, adding four new control variables, namely POPG, POLI, LIQG and EXP. We have also omitted the variables CRISIS and PRIV from both models to see if these changes considerably modify our baseline results. In fact, Eichengreen (1998) argues that increasing liquidity in the domestic financial market and improving the quality of institutions are channels through which financial globalization affects growth. Consequently, the inclusion of the new control variables POLI and LIQG may decrease the significance of our financial globalization variables. The same is true for the variable EXP, which is likely to absorb part of the effect on growth of the indicators of nominal exchange rate volatility, with reference to the “Marshall-Lerne hypothesis”. Yet, Table 4 (in Appendix) shows that the change in control variables leaves our interest variables and the interaction terms significant with signs that support our baseline estimates.

iii. Changing the dependent variable

RGDPG is the first alternative indicator of our dependent variable. It is the logarithmic growth rate of real GDP based on the Purchasing Power Parity (PPP) rates in dollars (WDI). For the second alternative indicator, we used the investment rate (INVEST) extracted from the WDI. We have chosen these two indicators for this last robustness test because, as indicated above, it is by lowering production and investment that nominal exchange rate volatility could reduce

³ We re-estimate Models 1 and 2 using the feasible generalized least squares (FGLS) panel regression method. These alternative estimates confirm our main results, in terms of signs and significance of all explanatory variables (interest and control) and the interaction terms. The tables presenting these results are not reproduced in order to lighten the paper. They are available on request. We refer to Phillips (2010) for the choice of these methods as robustness tests of GMM estimations, since he has shown that the IFGLS estimator provides robust results compatible with those of the GMM estimator, although this estimator remains the best recommended for dynamic panel models.

growth. As Table 5 and 6 (in appendix) reveal after the inclusion of these alternative dependent variables, there is *i*) a positive and significant impact of the financial globalization variable – and in particular of investment-globalization – on production and investment, *ii*) a negative and significant effect of nominal exchange rate volatility variables on production and investment, *iii*) a non-significant effect of indebtedness-globalization on domestic production and investment and *iv*) a positive and significant effect of the interaction between financial globalization, investment-globalization and nominal exchange rate volatility on production and investment. On the contrary, the terms of interaction between indebtedness-globalization and nominal exchange rate volatility remain non-significant.

7. Conclusion

This paper examines the impact of financial globalization, investment-globalization, indebtedness-globalization and nominal exchange rate volatility on growth. The effects of the three indicators of financial globalization and nominal exchange rate volatility on growth are studied independently and in interaction with each other for a sample of 72 developing countries over the period 1972–2011. Four main results have been identified: *i*) financial globalization and investment-globalization in particular directly promote long-term economic growth; *ii*) on the contrary, nominal exchange rate volatility represses it ; *iii*) financial globalization and investment-globalization in particular indirectly promote long-term economic growth by reducing the negative effect of nominal exchange rate volatility on it; *iv*) indebtedness-globalization does not directly or indirectly support growth. These results are consistent with recent studies by Gaies et al. (2019a; 2019b). They also complement and enrich them. In view of all these results, it seems that investment-globalization is more attractive for developing countries than indebtedness-globalization. This justifies the application of regulated financial openness by controlling capital inflows. Moreover, nominal exchange rate volatility appears to be a serious constraint in developing countries in a context of financial globalization. Thus, since these countries can really suffer from the volatility of these rates, they must develop their financial systems to better manage exchange rate risk. Here again, it is necessary to promote investment-globalization and to curb indebtedness-globalization, as it is only investment-globalization that improves the banking sector and the stock market in developing economies.

Appendix

Table A. Variable description and sources

Variable	Description	Source
GDPPCG	Real GDP per capita growth (log first difference).	World Development Indicators
RGDPG	Logarithmic growth rate of real GDP based on the Purchasing Power Parity (PPP) rates in dollar.	WDI
INVEST	Investment rate.	WDI
L.GDPPC	Logarithm of real GDP per capita one period lagged.	WDI
L.RGDP	Logarithm of real GDP based on the Purchasing Power Parity (PPP) rates in dollar one period lagged.	WDI
L.INVEST	Investment rate one period lagged.	WDI
GLOB	Logarithmic first difference of total stocks of external assets and liabilities, in terms of FDI, portfolio equity and debts.	External Wealth of Nations Dataset
INV-GLOB	Logarithmic first difference of total stocks of external assets and liabilities, in terms of FDI and portfolio equity.	External Wealth of Nations Dataset
OPENDEB	Logarithmic first difference of total stocks of external assets and liabilities, in terms of debts.	External Wealth of Nations Dataset
PRIV	Logarithm of domestic credit to private sector (% of GDP).	Financial Structure Database
GOV	Logarithm of the government spending as a share of GDP.	WDI
EDU	Logarithm of the ratio of total secondary enrollment, regardless of age, to the population of the age group that officially corresponds to that level of education.	WDI
POL	Freedom House index of Political Rights, with 1 representing the freest and 7 the least free.	Freedom House (2014)
LIQG	The growth rate of liquid liabilities to the GDP.	Financial Structure Database
CRISIS	Number of years in which a country underwent a systemic banking crisis, as a fraction of the number of years in the corresponding period.	Systemic Banking Crises Database, IMF
EXP	Logarithm of exports of goods and services (% of GDP).	WDI
POPG	Growth rate of population (%).	WDI
EXCHAVG	The log-difference of nominal exchange rate versus U.S. Dollar, period average.	External Wealth of Nations Dataset
SD-EXCH	The five-year standard deviation of the log-difference of nominal exchange rate versus U.S. Dollar, period average.	External Wealth of Nations Dataset
ADR-EXCH	The five-year average absolute value of residual ε_t . ε_t is the pooled OLS estimated residual of the following regression: $x_t = a + bx_{t-1} + ct + \varepsilon_t$ Where x is of the log-difference of the nominal exchange rate versus U.S. Dollar, period average, a is a constant and t the time. This regression is estimated separately for each country in the sample. $x_t = a + bx_{t-1} + ct + \varepsilon_t$	External Wealth of Nations Dataset
SDR-EXCH	The five-year standard deviation of residual ε_t . ε_t is the pooled OLS estimated residual of the following regression: $x_t = a + bx_{t-1} + ct + \varepsilon_t$ Where x is of the log-difference of nominal exchange rate versus U.S. Dollar, period average, a is a constant and t the time. This regression is estimated separately for each country in the sample.	External Wealth of Nations Dataset
AD-EXCH	The five-year average absolute deviation of the log-difference of nominal exchange rate versus U.S. Dollar, period average.	External Wealth of Nations Dataset
SCOR-EXCH	The measure of the <i>de facto</i> exchange rate volatility proposed by Ghosh et al. (2003). $\text{SCOR-EXCH} = \sqrt{\mu_t^2 + \sigma_t^2}$ where μ corresponds to the arithmetic five-year average of the nominal exchange rate versus U.S Dollar, period average, and σ is the five-year standard deviation of the nominal exchange rate versus U.S Dollar, period average.	External Wealth of Nations Dataset
STAB-EXCH	The five-year average of the index of exchange rate stability, by Aizenman et al. (2008).	The Trilemma Indexes Database

Table B. Summary statistics

Variables	Obs	Mean	Std.dev	Min	Max
GDPPCG	2514	0,010	0,072	-1,051	0,651
GDPPC	2591	6,511	0,762	3,913	8,337
GLOB	2450	0,099	0,157	-1,078	3,040
INV-GLOB	2409	0,139	0,229	-2,419	2,118
DEB-GLOB	2469	0,091	0,187	-1,392	3,161
EXCHAVG	2605	0,114	0,496	-0,384	13,450
STAB-EXCH	2695	0,673	0,344	0,001	1,000
EDU	1843	3,268	0,917	0,171	4,785
POPG	2880	2,278	1,214	-7,597	11,043
EXP	2471	3,154	0,638	0,926	4,849
POLI	2714	5,541	2,106	1,000	7,000
LIQG	1901	0,028	0,168	-1,666	3,580
GOV	2370	2,586	0,464	0,319	4,242
PRIV	1986	2,572	0,847	-2,120	4,692
CRISIS	2880	0,059	0,236	0,000	1,000
RGDPG	1470	0,035	0,074	-1,023	0,724
RGDP	1546	23,513	1,913	18,771	29,386
INVEST	2378	2,943	0,499	-1,228	4,534

Data from 1972 to 2011, including the 72 developing countries listed below.

List of country sample (72 countries)

Albania, Chad, Georgia, Kiribati, Niger, Sudan, Armenia, Comoros, Ghana, Lesotho, Nigeria, Swaziland, Bangladesh, Rep. Demo of Congo, Guatemala, Liberia, Pakistan Rep., Syria, Belize, Republic of Congo, Guinea, Madagascar, Papua New Guinea, Tajikistan, Benin, Côte d'Ivoire, Guinea-Bissau, Malawi, Paraguay, Tanzania, Bhutan, Djibouti, Guyana, Mali, Philippines, Tonga, Bolivia, Egypt, Haiti, Mauritania, Rwanda, Uganda, Burkina Faso, Salvador, Honduras, Moldova, Samoa, Uzbekistan, Burundi, Eritrea, India, Mongolia, Senegal, Vanuatu, Cambodia, Ethiopia, Indonesia, Mozambique, Sierra Leone, Vietnam, Cameroon, Fiji, Iraq, Nepal, Solomon Islands, Zambia Rep., Central African Republic, Gambia, Kenya, Nicaragua, Sri Lanka, and Zimbabwe.

Table C. Correlation coefficients

	GDPPCG	GDPPC	GLOB	INV-GLOB	DEB-GLOB	EXCHAVG	STAB-EXCH	EDU	POPG	EXP	POLI	LIQG	GOV	PRIV	CRISIS	RGDPG	RGDP	INVEST
GDPPCG	1.0000																	
GDPPC	0.0796	1.0000																
<i>(p-values)</i>	<i>0.0001</i>																	
GLOB	0.0658	0.0247	1.0000															
<i>(p-values)</i>	<i>0.0015</i>	<i>0.2318</i>																
INV-GLOB	0.1389	0.0367	0.2515	1.0000														
<i>(p-values)</i>	<i>0.0000</i>	<i>0.0781</i>	<i>0.0000</i>															
DEB-GLOB	0.0091	0.0110	0.9371	0.0727	1.0000													
<i>(p-values)</i>	<i>0.6590</i>	<i>0.5919</i>	<i>0.0000</i>	<i>0.0004</i>														
EXCHAVG	-0.1754	-0.1000	-0.0725	-0.0566	-0.0362	1.0000												
<i>(p-values)</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0003</i>	<i>0.0057</i>	<i>0.0731</i>													
STAB-EXCH	0.0308	0.1241	0.1236	0.0322	0.0969	-0.2437	1.0000											
<i>(p-values)</i>	<i>0.1290</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.1163</i>	<i>0.0000</i>	<i>0.0000</i>												
EDU	0.0538	0.5793	-0.0792	0.0965	-0.1075	0.0084	-0.1562	1.0000										
<i>(p-values)</i>	<i>0.0282</i>	<i>0.0000</i>	<i>0.0014</i>	<i>0.0001</i>	<i>0.0000</i>	<i>0.7296</i>	<i>0.0000</i>											
POPG	0.0370	-0.2856	0.0271	-0.0712	0.0351	-0.0109	0.1382	-0.4598	1.0000									
<i>(p-values)</i>	<i>0.0636</i>	<i>0.0000</i>	<i>0.1802</i>	<i>0.0005</i>	<i>0.0808</i>	<i>0.5774</i>	<i>0.0000</i>	<i>0.0000</i>										
EXP	0.0330	0.5579	-0.0082	0.0610	-0.0296	-0.0176	0.0340	0.3933	-0.1566	1.0000								
<i>(p-values)</i>	<i>0.1080</i>	<i>0.0000</i>	<i>0.6972</i>	<i>0.0038</i>	<i>0.1557</i>	<i>0.3937</i>	<i>0.0956</i>	<i>0.0000</i>	<i>0.0000</i>									
POLI	-0.0694	-0.2841	0.0605	-0.0120	0.0806	0.0658	0.0869	-0.3065	0.1169	-0.1790	1.0000							
<i>(p-values)</i>	<i>0.0006</i>	<i>0.0000</i>	<i>0.0028</i>	<i>0.5578</i>	<i>0.0001</i>	<i>0.0009</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>								
LIQG	-0.0596	-0.0183	0.0507	0.1091	0.0263	-0.0067	-0.0275	0.0294	-0.0698	0.0319	0.0153	1.0000						
<i>(p-values)</i>	<i>0.0104</i>	<i>0.4308</i>	<i>0.0283</i>	<i>0.0000</i>	<i>0.2543</i>	<i>0.7698</i>	<i>0.2321</i>	<i>0.2943</i>	<i>0.0023</i>	<i>0.1742</i>	<i>0.5043</i>							
GOV	-0.1237	0.1519	0.0656	0.0203	0.0659	-0.0938	0.1763	-0.0064	0.0333	0.2114	-0.0739	-0.0199	1.0000					
<i>(p-values)</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0022</i>	<i>0.3488</i>	<i>0.0020</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.7976</i>	<i>0.1055</i>	<i>0.0000</i>	<i>0.0004</i>	<i>0.4053</i>						
PRIV	0.0110	0.4130	-0.0074	-0.0058	-0.0100	-0.2431	0.0058	0.3216	-0.1123	0.3105	-0.2853	0.0298	0.1449	1.0000				
<i>(p-values)</i>	<i>0.6313</i>	<i>0.0000</i>	<i>0.7465</i>	<i>0.8024</i>	<i>0.6623</i>	<i>0.0000</i>	<i>0.7960</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.1965</i>	<i>0.0000</i>					
CRISIS	-0.1313	-0.0608	-0.0646	-0.0341	-0.0458	0.1157	-0.0613	-0.0043	-0.0357	-0.0058	0.0579	0.0179	-0.0518	-0.0100	1.0000			
<i>(p-values)</i>	<i>0.0000</i>	<i>0.0020</i>	<i>0.0014</i>	<i>0.0940</i>	<i>0.0230</i>	<i>0.0000</i>	<i>0.0015</i>	<i>0.8523</i>	<i>0.0554</i>	<i>0.7722</i>	<i>0.0025</i>	<i>0.4364</i>	<i>0.0116</i>	<i>0.6546</i>				
RGDPG	0.9707	0.0280	0.0608	0.1401	-0.0132	-0.2280	0.0658	-0.0759	0.2140	-0.0036	-0.0657	-0.0620	-0.0848	0.0023	-0.1788	1.0000		
<i>(p-values)</i>	<i>0.0000</i>	<i>0.2831</i>	<i>0.0217</i>	<i>0.0000</i>	<i>0.6166</i>	<i>0.0000</i>	<i>0.0125</i>	<i>0.0232</i>	<i>0.0000</i>	<i>0.8912</i>	<i>0.0118</i>	<i>0.0312</i>	<i>0.0017</i>	<i>0.9357</i>	<i>0.0000</i>			
RGDP	0.1128	-0.0168	0.0496	0.0284	0.0305	0.0255	-0.1051	0.1328	0.0413	-0.0193	0.1613	-0.0242	-0.4025	0.1655	0.0217	0.1183	1.0000	
<i>(p-values)</i>	<i>0.0000</i>	<i>0.5089</i>	<i>0.0559</i>	<i>0.2741</i>	<i>0.2394</i>	<i>0.3239</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.1049</i>	<i>0.4554</i>	<i>0.0000</i>	<i>0.3906</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.3949</i>	<i>0.0000</i>		
INVEST	0.2084	0.2586	0.1452	0.1788	0.0892	-0.1189	0.0874	0.2969	-0.0842	0.2118	-0.1527	0.0723	0.2138	0.2565	-0.1335	0.2588	0.1044	1.0000
<i>(p-values)</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0024</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0001</i>	

This table reports the correlation coefficients of Pearson between the main variables used in this paper.

Table 2. First group of alternative variables of nominal exchange rate volatility

	Mod(1)	Mod2(2)	Mod1(3)	Mod2(4)	Mod1(5)	Mod2(6)	Mod1(7)	Mod2(8)	Mod1(9)	Mod2(10)	Mod1(11)	Mod2(12)
L.GDPPC	-0.015 (0.020)	-0.009 (0.009)	-0.022* (0.013)	-0.032** (0.013)	-0.020 (0.018)	-0.025* (0.014)	-0.029** (0.012)	-0.027** (0.012)	0.003 (0.033)	-0.020 (0.016)	-0.031** (0.012)	-0.029** (0.012)
EDU	0.018*** (0.006)	0.023*** (0.007)	0.015** (0.007)	0.024** (0.011)	0.021** (0.009)	0.020** (0.009)	0.023*** (0.008)	0.023*** (0.008)	0.011 (0.025)	0.019** (0.008)	0.024** (0.009)	0.023** (0.009)
PRIV	-0.003 (0.013)	-0.002 (0.007)	0.008 (0.008)	0.009 (0.014)	-0.002 (0.010)	0.002 (0.011)	0.011 (0.008)	0.011 (0.008)	0.003 (0.025)	0.012 (0.010)	0.013 (0.008)	0.013 (0.008)
GOV	-0.051*** (0.017)	-0.024* (0.014)	-0.052** (0.022)	-0.017 (0.025)	-0.056*** (0.018)	-0.052** (0.021)	-0.051** (0.023)	-0.050** (0.023)	-0.029 (0.058)	-0.014 (0.021)	-0.053** (0.022)	-0.054** (0.022)
CRISIS	-0.021** (0.009)	-0.006 (0.019)	-0.024** (0.011)	0.026 (0.042)	-0.016* (0.009)	-0.024* (0.013)	-0.021 (0.015)	-0.023 (0.016)	-0.009 (0.047)	-0.002 (0.025)	-0.021 (0.016)	-0.022 (0.016)
GLOB X SCOR-EXCH		0.281** (0.136)										
INV-GLOB			0.032** (0.016)						0.070* (0.036)			
GLOB	0.051*** (0.018)						0.061* (0.033)					
SCOR-EXCH	-0.043*** (0.016)	-0.065** (0.028)	-0.032** (0.014)	-0.079** (0.036)	-0.046*** (0.017)	-0.047** (0.018)						
GLOB	0.051*** (0.018)						0.061* (0.033)					
INV-GLOB X SCOR-EXCH				0.151* (0.076)								
DEB-GLOB					0.036 (0.026)						0.041 (0.028)	
DEB-GLOB X SCOR-EXCH						0.063 (0.111)						
STAB-EXCH							0.036** (0.015)	0.030* (0.016)	0.033** (0.016)	0.003 (0.016)	0.039*** (0.014)	0.035** (0.016)
GLOB X STAB-EXCH								0.066* (0.036)				
INV-GLOB X STAB-EXCH									0.101** (0.049)			
DEB-GLOB X STAB-EXCH												0.046 (0.031)
Constant	0.192* (0.105)	0.074 (0.061)	0.221*** (0.081)	0.166 (0.118)	0.228** (0.096)	0.246*** (0.085)	0.198** (0.099)	0.191* (0.098)	-0.008 (0.181)	0.073 (0.101)	0.209** (0.092)	0.207** (0.095)
Observations	309	309	307	307	309	309	310	310	307	307	310	310
Countries	66	66	66	66	66	66	66	66	66	66	66	66
AR2 P-value	0.843	0.494	0.564	0.186	0.887	0.526	0.472	0.397	0.408	0.137	0.445	0.414
Hansen P-value	0.297	0.604	0.541	0.593	0.274	0.299	0.539	0.466	0.760	0.628	0.481	0.483

Notes: Dependent Variable: Growth rate of real GDP per capita. Period: 1972-2011 (Non-overlapping five-year data). Estimation: Two-step system GMM with Windmeijer (2005) small sample robust correction. Time and fixed effects are included in all regressions. Standard errors are presented below the corresponding coefficient. Symbols *, ** and *** mean significant at 10%, 5% and at 1%.

Table 3. Second group of alternative variables of nominal exchange rate volatility

	Mod(1)	Mod2(2)	Mod1(3)	Mod2(4)	Mod1(5)	Mod2(6)	Mod1(7)	Mod2(8)	Mod1(9)	Mod2(10)	Mod1(11)	Mod2(12)
L.GDPPC	-0.019 (0.016)	-0.025 (0.016)	-0.016 (0.014)	-0.027 (0.018)	-0.031 (0.019)	-0.024 (0.015)	-0.021 (0.017)	-0.021 (0.018)	-0.017 (0.014)	-0.023 (0.015)	-0.021 (0.018)	-0.019 (0.016)
GLOB	0.078*** (0.025)						0.061** (0.028)					
AD-EXCH	-0.020*** (0.007)	-0.029*** (0.007)	-0.019*** (0.006)	-0.028*** (0.009)	-0.022*** (0.008)	-0.026*** (0.008)						
EDU	0.023*** (0.007)	0.020*** (0.007)	0.013* (0.007)	0.020** (0.010)	0.022** (0.010)	0.020** (0.009)	0.020** (0.008)	0.017** (0.007)	0.013* (0.007)	0.016** (0.008)	0.019* (0.010)	0.017* (0.009)
PRIV	0.000 (0.009)	0.003 (0.009)	0.007 (0.009)	0.004 (0.009)	0.005 (0.011)	0.007 (0.010)	0.002 (0.013)	0.002 (0.011)	0.009 (0.009)	0.007 (0.008)	0.003 (0.012)	0.004 (0.011)
GOV	-0.040* (0.024)	-0.053*** (0.019)	-0.049* (0.025)	-0.056*** (0.017)	-0.062*** (0.022)	-0.049** (0.023)	-0.049* (0.027)	-0.065*** (0.022)	-0.017 (0.017)	-0.058*** (0.021)	-0.043* (0.024)	-0.050* (0.026)
CRISIS	-0.018* (0.010)	-0.020** (0.009)	-0.024** (0.011)	-0.017 (0.011)	-0.019 (0.013)	-0.019 (0.012)	-0.016 (0.011)	-0.021** (0.010)	-0.003 (0.025)	-0.019** (0.009)	-0.027** (0.012)	-0.027** (0.013)
GLOB X AD-EXCH		0.157*** (0.044)										
INV-GLOB			0.036** (0.018)						0.082** (0.031)			
INV-GLOB X AD-EXCH				0.038* (0.021)								
DEB-GLOB					0.016 (0.027)						0.020 (0.024)	
DEB-GLOB X AD-EXCH						0.076 (0.078)						
SDR-EXCH							-0.071** (0.027)	-0.088*** (0.023)	-0.086* (0.050)	-0.105*** (0.036)	-0.081** (0.033)	-0.082*** (0.028)
GLOB X SDR-EXCH								0.468** (0.182)				
INV-GLOB X SDR-EXCH									0.121* (0.069)			
DEB-GLOB X SDR-EXCH												0.179 (0.241)
Constant	0.165 (0.126)	0.247** (0.104)	0.187** (0.092)	0.263** (0.101)	0.291** (0.122)	0.217** (0.106)	0.204 (0.127)	0.262** (0.108)	0.092 (0.104)	0.245*** (0.086)	0.190* (0.112)	0.208* (0.106)
Observations	309	309	307	307	309	309	310	310	308	308	310	310
Countries	66	66	66	66	66	66	66	66	66	66	66	66
AR2 P-value	0.796	0.710	0.714	0.549	0.548	0.772	0.797	0.729	0.317	0.741	0.823	0.719
Hansen P-value	0.400	0.359	0.603	0.319	0.254	0.143	0.424	0.491	0.811	0.284	0.330	0.316

Notes: Dependent Variable: Growth rate of real GDP per capita. Period: 1972-2011 (Non-overlapping five-year data). Estimation: Two-step system GMM with Windmeijer (2005) small sample robust correction. Time and fixed effects are included in all regressions. Standard errors are presented below the corresponding coefficient. Symbols *, ** and *** mean significant at 10%, 5% and at 1%.

Table 4. Changing control variables

	Mod1(1)	Mod2(2)	Mod1(3)	Mod2(4)	Mod1(5)	Mod2(6)	Mod1(7)	Mod2(8)	Mod1(9)	Mod2(10)	Mod1(11)	Mod2(12)
L.GDPPC	-0.038** (0.015)	-0.038*** (0.012)	-0.037** (0.014)	-0.036*** (0.012)	-0.040*** (0.015)	-0.038*** (0.013)	-0.037** (0.014)	-0.029* (0.016)	-0.041*** (0.015)	-0.032*** (0.012)	-0.036*** (0.013)	-0.029* (0.015)
GLOB	0.048** (0.021)		0.042** (0.019)									
ADR-EXCH	-0.033*** (0.008)	-0.044*** (0.012)			-0.034*** (0.009)	-0.039*** (0.014)			-0.035*** (0.009)	-0.035** (0.014)		
EDU	0.017** (0.007)	0.020** (0.007)	0.017* (0.008)	0.016** (0.007)	0.017** (0.007)	0.007 (0.012)	0.015 (0.010)	0.006 (0.011)	0.019** (0.008)	0.012 (0.011)	0.016** (0.007)	0.011 (0.011)
POPG	-0.001 (0.004)	-0.000 (0.004)	0.001 (0.004)	-0.001 (0.004)	-0.001 (0.003)	-0.003 (0.003)	0.001 (0.003)	-0.000 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.000 (0.003)	0.000 (0.004)
EXP	0.042*** (0.013)	0.042*** (0.015)	0.038** (0.017)	0.033** (0.013)	0.047*** (0.012)	0.046*** (0.017)	0.041*** (0.013)	0.060*** (0.017)	0.039*** (0.014)	0.039** (0.017)	0.035*** (0.011)	0.035** (0.015)
POLI	0.000 (0.003)	0.000 (0.003)	0.000 (0.002)	-0.000 (0.003)	0.001 (0.003)	-0.002 (0.003)	0.001 (0.002)	-0.000 (0.003)	-0.000 (0.003)	-0.003 (0.004)	-0.000 (0.002)	-0.003 (0.002)
LIQG	0.005 (0.031)	0.021 (0.028)	0.008 (0.030)	0.024 (0.026)	0.001 (0.027)	0.008 (0.031)	-0.000 (0.021)	-0.012 (0.027)	0.011 (0.029)	0.009 (0.031)	0.008 (0.028)	0.011 (0.027)
GOV	-0.030** (0.015)	-0.029* (0.016)	-0.021 (0.016)	-0.027 (0.020)	-0.025* (0.013)	-0.032 (0.022)	-0.019 (0.017)	-0.021 (0.024)	-0.031* (0.016)	-0.028 (0.021)	-0.022 (0.017)	-0.013 (0.029)
GLOB X ADR-EXCH		0.207** (0.102)										
SD-EXCH			-0.069*** (0.021)	-0.095*** (0.024)			-0.067*** (0.018)	-0.098*** (0.027)			-0.074*** (0.023)	-0.076*** (0.018)
GLOB X SD-EXCH				0.346** (0.163)								
INV-GLOB					0.047** (0.022)		0.035* (0.019)					
INV-GLOB X ADR-EXCH						0.049** (0.023)						
INV-GLOB X SD-EXCH								0.120** (0.046)				
DEB-GLOB									0.028 (0.019)		0.020 (0.017)	
DEB-GLOB X ADR-EXCH										0.081 (0.135)		
DEB-GLOB X SD-EXCH												0.172 (0.176)
Constant	0.150 (0.094)	0.142 (0.093)	0.134 (0.086)	0.171** (0.082)	0.129 (0.085)	0.196** (0.089)	0.115 (0.071)	0.055 (0.080)	0.179 (0.108)	0.156 (0.102)	0.152* (0.090)	0.110 (0.085)
Observations	302	302	302	302	300	300	300	300	302	302	302	302
Countries	66	66	66	66	66	66	66	66	66	66	66	66
AR2 P-value	0.540	0.510	0.823	0.956	0.376	0.530	0.605	0.587	0.624	0.546	0.852	0.654
Hansen P-value	0.335	0.237	0.351	0.313	0.342	0.177	0.331	0.237	0.328	0.104	0.377	0.233

Notes: Dependent Variable: Growth rate of real GDP per capita. Period: 1972-2011 (Non-overlapping five-year data). Estimation: Two-step system GMM with Windmeijer (2005) small sample robust correction. Time and fixed effects are included in all regressions. Standard errors are presented below the corresponding coefficient. Symbols *, ** and *** mean significant at 10%, 5% and at 1%.

Table 5. First alternative dependent variable

	Mod(1)	Mod2(2)	Mod1(3)	Mod2(4)	Mod1(5)	Mod2(6)	Mod1(7)	Mod2(8)	Mod1(9)	Mod2(10)	Mod1(11)	Mod2(12)
L.RGDP	-0.008 (0.008)	0.001 (0.005)	0.003 (0.004)	-0.007 (0.008)	-0.008 (0.009)	-0.004 (0.008)	-0.003 (0.007)	-0.001 (0.007)	-0.001 (0.004)	-0.007 (0.007)	-0.007 (0.010)	-0.003 (0.011)
GLOB	0.052** (0.023)						0.052*** (0.014)					
ADR-EXCH	-0.054*** (0.018)	-0.059*** (0.012)	-0.046*** (0.014)	-0.059*** (0.015)	-0.053*** (0.019)	-0.050*** (0.012)						
EDU	0.017 (0.010)	0.010 (0.008)	0.009 (0.010)	0.015 (0.011)	0.019 (0.011)	0.016 (0.011)	0.010 (0.010)	0.011 (0.010)	0.006 (0.009)	0.010 (0.009)	0.017 (0.013)	0.014 (0.011)
PRIV	-0.005 (0.010)	-0.005 (0.006)	-0.006 (0.008)	0.001 (0.010)	-0.006 (0.012)	-0.007 (0.009)	-0.004 (0.008)	-0.007 (0.008)	-0.004 (0.007)	0.003 (0.012)	-0.001 (0.011)	-0.007 (0.012)
GOV	-0.051*** (0.016)	-0.036** (0.018)	-0.043*** (0.012)	-0.047** (0.018)	-0.052*** (0.016)	-0.055*** (0.018)	-0.044*** (0.016)	-0.044** (0.021)	-0.035*** (0.011)	-0.036*** (0.010)	-0.056** (0.028)	-0.049* (0.028)
CRISIS	-0.009 (0.012)	-0.016 (0.014)	-0.015 (0.011)	-0.010 (0.008)	-0.011 (0.012)	-0.018 (0.013)	-0.011 (0.013)	-0.012 (0.018)	-0.001 (0.013)	-0.005 (0.011)	-0.002 (0.011)	-0.008 (0.011)
GLOB X ADR-EXCH		0.306*** (0.101)										
INV-GLOB			0.046** (0.021)						0.045** (0.022)			
INV-GLOB X ADR-EXCH				0.050** (0.023)								
DEB-GLOB					0.031 (0.030)						0.014 (0.032)	
DEB-GLOB X ADR-EXCH						0.173 (0.122)						
SD-EXCH							-0.091*** (0.026)	-0.091*** (0.021)	-0.090*** (0.025)	-0.110*** (0.025)	-0.115*** (0.033)	-0.092*** (0.026)
GLOB X SD-EXCH								0.275* (0.149)				
INV-GLOB X SD-EXCH									0.090** (0.043)			
DEB-GLOB X SD-EXCH												0.132 (0.303)
Constant	0.329* (0.173)	0.101 (0.112)	0.077 (0.097)	0.280 (0.191)	0.328 (0.198)	0.234 (0.196)	0.193 (0.148)	0.167 (0.153)	0.137 (0.097)	0.268* (0.142)	0.305 (0.246)	0.200 (0.271)
Observations	198	198	198	198	198	198	198	198	198	198	198	198
Countries	65	65	65	65	65	65	65	65	65	65	65	65
AR2 P-value	0.644	0.605	0.771	0.904	0.578	0.703	0.726	0.594	0.564	0.854	0.751	0.552
Hansen P-value	0.594	0.398	0.534	0.564	0.455	0.443	0.765	0.479	0.613	0.710	0.727	0.650

Notes: Dependent Variable: Investment rate. Period: 1972-2011 (Non-overlapping five-year data). Estimation: Two-step system GMM with Windmeijer (2005) small sample robust correction. Time and fixed effects are included in all regressions. Standard errors are presented below the corresponding coefficient. Symbols *, ** and *** mean significant at 10%, 5% and at 1%.

Table 6. Second alternative dependent variable

	Mod(1)	Mod2(2)	Mod1(3)	Mod2(4)	Mod1(5)	Mod2(6)	Mod1(7)	Mod2(8)	Mod1(9)	Mod2(10)	Mod1(11)	Mod2(12)
L.INVEST	0.528*** (0.164)	0.505*** (0.145)	0.655*** (0.163)	0.622*** (0.119)	0.445** (0.189)	0.943*** (0.199)	0.578*** (0.163)	0.549*** (0.122)	0.743*** (0.117)	0.688*** (0.113)	0.416** (0.167)	0.329* (0.169)
EDU	0.096 (0.066)	0.066 (0.077)	0.003 (0.089)	0.023 (0.084)	0.114 (0.073)	0.156* (0.090)	0.090 (0.062)	0.083 (0.066)	-0.052 (0.073)	0.002 (0.083)	0.065 (0.105)	0.082 (0.114)
PRIV	0.018 (0.095)	0.087 (0.096)	0.107 (0.092)	0.118 (0.107)	-0.047 (0.115)	-0.049 (0.132)	0.005 (0.089)	0.078 (0.084)	0.115 (0.098)	0.142 (0.090)	0.065 (0.080)	0.009 (0.110)
GOV	-0.422* (0.233)	-0.403* (0.225)	-0.239 (0.237)	-0.256 (0.210)	-0.307 (0.244)	0.035 (0.348)	-0.372* (0.222)	-0.386* (0.225)	-0.085 (0.153)	-0.236 (0.177)	-0.050 (0.160)	0.184 (0.289)
CRISIS	-0.079 (0.143)	-0.019 (0.149)	-0.040 (0.171)	-0.107 (0.173)	0.129 (0.502)	-0.152 (0.133)	-0.075 (0.145)	-0.038 (0.130)	-0.116 (0.154)	-0.049 (0.169)	-0.042 (0.484)	0.186 (0.503)
GLOB	1.581*** (0.394)						1.590*** (0.365)					
ADR-EXCH	-0.283*** (0.089)	-0.602*** (0.163)	-0.357*** (0.087)	-0.562*** (0.130)	-0.874*** (0.314)	-0.570*** (0.180)						
GLOB X ADR-EXCH		3.770** (1.621)										
INV-GLOB			0.562* (0.304)						0.585** (0.232)			
INV-GLOB X ADR-EXCH				0.752** (0.368)								
DEB-GLOB					0.283 (0.572)						0.356 (0.529)	
DEB-GLOB X ADR-EXCH						3.523 (2.313)						
SD-EXCH							-0.733*** (0.177)	-1.618*** (0.332)	-0.884*** (0.164)	-1.480*** (0.224)	-1.760** (0.803)	-2.591*** (0.965)
GLOB X SD-EXCH								7.660*** (2.266)				
INV-GLOB X SD-EXCH									1.965** (0.879)			
DEB-GLOB X SD-EXCH												5.933 (5.794)
Constant	2.057** (0.836)	2.131*** (0.778)	1.357* (0.808)	1.503*** (0.494)	2.335** (0.902)	-0.209 (1.192)	1.849** (0.805)	1.967*** (0.598)	0.896* (0.452)	1.281** (0.507)	1.644** (0.702)	1.451* (0.814)
Observations	306	306	303	303	306	306	306	306	303	303	306	306
Countries	66	66	66	66	66	66	66	66	66	66	66	66
AR2 P-value	0.997	0.789	0.918	0.745	0.858	0.669	0.842	0.871	0.981	0.812	0.856	0.807
Hansen P-value	0.349	0.174	0.278	0.283	0.319	0.821	0.483	0.516	0.349	0.563	0.102	0.507

Notes: Dependent Variable: growth rate of real GDP (PPP). Period: 1972-2011 (Non-overlapping five-year data). Estimation: Two-step system GMM with Windmeijer (2005) small sample robust correction. Time and fixed effects are included in all regressions. Standard errors are presented below the corresponding coefficient. Symbols *, ** and *** mean significant at 10%, 5% and at 1%.

References

- Aghion, P., Bacchetta, P., Rancière, R., & Rogoff, K. (2009). Exchange rate volatility and productivity growth: The role of financial development. *Journal of monetary economics*, 56(4), 494-513.
- Ahmed, A. D. (2016). Integration of financial markets, financial development and growth: Is Africa different?. *Journal of International Financial Markets, Institutions and Money*, 42, 43-59.
- Aizenman, J., & Hausmann, R. (2000). Exchange rate regimes and financial-market imperfections. *NBER Working Papers*, 7738.
- Aizenman, J., Chinn, M. D., & Ito, H. (2008). Assessing the emerging global financial architecture: Measuring the trilemma's configurations over time. *NBER Working Papers*, 14533.
- Aizenman, J., Chinn, M. D., & Ito, H. (2010). The Emerging Global Financial Architecture: Tracing and Evaluating the New Patterns of the Trilemma's Configurations, *Journal of International Money and Finance*, 29(4), 615-641.
- Aizenman, J., Chinn, M. D., & Ito, H. (2016). Monetary policy spillovers and the trilemma in the new normal: Periphery country sensitivity to core country conditions. *Journal of International Money and Finance*, 68, 298-330.
- Al-Abri, A. (2013). Real exchange rate volatility, terms-of-trade shocks, and financial integration in primary-commodity exporting economies. *Economics Letters*, 120(1), 126-129.
- Alesina, A., Grilli, V., Milesi-Ferretti, G. M., Leiderman, L., & Razin, A. (1994). The Political Economy of Capital Controls. In *Capital Mobility: The Impact on Consumption, Investment, and Growth*, Cambridge University Press for the Centre for Economic Policy Research.
- Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, 58(2), 277-297.
- Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, 68(1), 29-51.
- Arratibel, O., Furceri, D., Martin, R., & Zdzienicka, A. (2011). The Effect of Nominal Exchange Rate Volatility on Real Macroeconomic Performance in the CEE Countries. *Economic Systems*, 35(2), 261-277.
- Baltagi, B. H., Demetriades, P., & Law, S. H. (2009). Financial Development and Openness: Evidence from Panel Data. *Journal of Development Economics*, 89(2), 285-296.
- Bayoumi, T., & Eichengreen, B. (1994). Macroeconomic Adjustment Under Bretton Woods and the Post-Bretton-Woods Float: An Impulse-Response Analysis. *The Economic Journal*, 104(425), 813-827.
- Bekaert, G., & Harvey, C. R. (2000). Foreign speculators and emerging equity markets. *The Journal of Finance*, 55(2), 565-613.
- Bekaert, G., Harvey, C. R., & Lundblad, C. (2011). Financial openness and productivity. *World Development*, 39(1), 1-19.
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115-143.
- Bond, S. R. (2002). Dynamic panel data models: a guide to micro data methods and practice. *Portuguese economic journal*, 1(2), 141-162.
- Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How does foreign direct investment affect economic growth?. *Journal of International Economics*, 45(1), 115-135.
- Broner, F., Martin, A., & Ventura, J. (2010). Sovereign risk and secondary markets. *The American Economic Review*, 100(4), 1523-1555.
- Bruno, V., & Hauswald, R. (2013). The real effect of foreign banks. *Review of Finance*, 18(5), 1683-1716.
- Cariolle, J., & Goujon, M. (2015). Measuring Macroeconomic Instability: A Critical Survey Illustrated With Exports Series. *Journal of Economic Surveys*, 29(1), 1-26.
- Chang, R., & Velasco, A. (2000). Exchange-rate policy for developing countries. *The American Economic Review*, 90(2), 71-75.
- Chinn, M. D., & Ito, H. (2007). Current account balances, financial development and institutions: Assaying the world "saving glut". *Journal of international money and Finance*, 26(4), 546-569.
- Coudert, V., & Dubert, M. (2005). Does exchange rate regime explain differences in economic results for Asian countries?. *Journal of Asian Economics*, 16(5), 874-895.

- Cuñado, J., Biscarri, J. G., & De Gracia, F. P. (2006). Changes in the dynamic behavior of emerging market volatility: Revisiting the effects of financial liberalization. *Emerging Markets Review*, 7(3), 261-278.
- De Grauwe, P. (1992). *The benefits of a common currency, the economics of monetary Integration*, Oxford University Press, New York.
- De Grauwe, P. (2005). *Economics of Monetary Union*. Oxford University Press, Oxford.
- De Grauwe, P., & Schnabl, G. (2008). Exchange Rate Stability, Inflation, and Growth in (South) Eastern and Central Europe. *Review of Development Economics*, 12(3), 530-549.
- De Haas, R. T., & Van Lelyveld, I. P. P. (2004). Foreign bank penetration and private sector credit in Central and Eastern Europe. *Journal of Emerging Market Finance*, 3(2), 125-151.
- De Los Rios, A. D. (2009). Exchange rate regimes, globalisation, and the cost of capital in emerging markets. *Emerging Markets Review*, 10(4), 311-330.
- Durham, J. B. (2002). The effects of stock market development on growth and private investment in lower-income countries. *Emerging Markets Review*, 3(3), 211-232.
- Edwards, S., & Levy-Yeyati, E. (2005). Flexible exchange rates as shock absorbers. *European Economic Review*, 49(8), 2079-2105.
- Eichengreen, B. (1998). Exchange rate stability and financial stability. In *Ideas for the Future of the International Monetary System* (pp. 199-237). Springer US.
- Frankel, J. A., & Rose, A. (2002). An Estimate of the Effect of Common Currencies on Trade and Income. *The Quarterly Journal of Economics*, 117(2), 437-466.
- Gaies, B., Goutte, S., & Guesmi, K. (2019a). What Interactions between Financial Globalization and Instability?—Growth in Developing Countries. *Journal of International Development*, 31(1), 39-79.
- Gaies, B., Goutte, S., & Guesmi, K. (2019b). FDI, banking crises and growth: direct and spill over effects. *Applied Economics Letters*, 1-4.
- Gaies, B., Goutte, S., & Guesmi, K. (2019c). Are We Sentenced to Financial Globalization?. *Journal of European Economic History*, 1, 49-72.
- Ghosh, A., Gulde, A. M. & Wolf, H.C. (2003). *Exchange Rate Regimes: Choices and Consequences*, MIT Press, Cambridge.
- Iamsiraroj, S. (2016). The foreign direct investment–economic growth nexus. *International Review of Economics & Finance*, 42, 116-133.
- Joyce, J. P. (2011). Financial globalization and banking crises in emerging markets. *Open Economies Review*, 22(5), 875-895.
- Kaminsky, G. L., & Reinhart, C. M. (1999). The Twin Crises: The Causes of Banking and Balance-of-Payments Problems. *American Economic Review*, 89(3), 473-500.
- Kose, M. A., Prasad, E., Rogoff, K., & Wei, S. J. (2009). Financial Globalization: A Reappraisal. *IMF Staff papers*, 56(1), 8-62.
- Lane, P. R., & McQuade, P. (2014). Domestic credit growth and international capital flows. *The Scandinavian Journal of Economics*, 116(1), 218-252.
- Levine, R. (1996). Foreign banks, financial development, and economic growth. In *International financial markets: Harmonization versus competition* (pp. 224-254). AEI Press, Washington.
- Levy-Yeyati, E., & Sturzenegger, F. (2003). To float or to fix: Evidence on the impact of exchange rate regimes on growth. *The American Economic Review*, 93(4), 1173-1193.
- McKinnon, R. I. (1973). *Money and Capital in Economic Development*. The Brookings Institution, Washington, D.C.
- McKinnon, R. I., & Pill, H. (1996). Credible Liberalizations and International Capital Flows: The "Overborrowing Syndrome". In *Financial Deregulation and Integration in East Asia, NBER-EASE Volume 5* (pp. 7-50). University of Chicago Press, Chicago.
- McKinnon, R. I., & Pill, H. (1998). International overborrowing: a decomposition of credit and currency risks. *World Development*, 26(7), 1267-1282.
- McKinnon, R., & Schnabl, G. (2004). The East Asian dollar standard, fear of floating, and original sin. *Review of Development Economics*, 8(3), 331-360.
- Mishkin, F. S. (2009). Globalization and financial development. *Journal of Development Economics*, 89(2), 164-169.
- Mundell, R. A. (1961). A Theory of Optimum Currency Areas. *The American Economic Review*, 51(4), 657-665.

- Obstfeld, M. (1998). *Foreign resource inflows, saving, and growth*, (No.C98-099). University of California. Berkeley.
- Phillips, R. F. (2010). Iterated feasible generalized least-squares estimation of augmented dynamic panel data models. *Journal of Business & Economic Statistics*, 28(3), 410-422.
- Prasad, E., Rajan, R., & Subramanian, A. (2007). The paradox of capital. *Finance and development*, 44(1).
- Quinn, D. (1997). The correlates of change in international financial regulation. *American Political Science Review*, 91(3), 531-551.
- Quinn, D. P., & Toyoda, A. M. (2008). Does capital account liberalization lead to growth?. *The Review of Financial Studies*, 21(3), 1403-1449.
- Rodrik, D. (1998). Who needs capital-account convertibility?. *Essays in International Finance*, 55-65.
- Rodrik, D., & Velasco, A. (1999). Short-term capital flows. *NBER Working Papers*, 7364.
- Roodman, D. (2009a). A note on the theme of too many instruments. *Oxford Bulletin of Economics and statistics*, 71(1), 135-158.
- Roodman, D. (2009b). How to do xtabond2: An introduction to difference and system GMM in Stata. *Stata Journal*, 9(1), 86-136.
- Sala-I-Martin, X., Doppelhofer, G., & Miller, R.I. (2004). Determinants of long-term growth: a Bayesian averaging of classical estimates (BACE) approach. *American Economic Review*, 94(4), 813-835.
- Schnabl, G. (2007). Exchange Rate Volatility and Growth in Small Open Economies at the EMU Periphery. *European Central Bank Working Paper*, 773.
- Schnabl, G. (2008). Exchange rate volatility and growth in small open economies at the EMU periphery. *Economic Systems*, 32(1), 70-91.
- Schnabl, G. (2009). Exchange rate volatility and growth in emerging Europe and East Asia. *Open Economies Review*, 20(4), 565-587.
- Shaw, E. S. (1973). *Financial Deepening in Economic Development*. Oxford University Press, Oxford.
- Stiglitz, J. (2017). *Globalization and Its Discontents Revisited: Anti-Globalization in the Age of Trump*.
- Temple, J. (1999). The new growth evidence. *Journal of Economic Literature*, 37(1), 112-156.
- Tille, C. (2008). Financial integration and the wealth effect of exchange rate fluctuations. *Journal of International Economics*, 75(2), 283-294.
- Trabelsi, M., & Cherif, M. (2017). Capital account liberalization and financial deepening: Does the private sector matter?. *The Quarterly Review of Economics and Finance*, 64, 141 -151.
- Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics*, 126(1), 25-51.