The impact of regulatory requirements on the banking flows to emerging countries

Samira Hellou, Michel Boutillier

EconomiX

http://economix.fr

The impact of regulatory requirements on the banking flows to emerging countries

Document de Travail
Working Paper
2017-09

Samira Hellou
Michel Boutillier

UMR 7235

Université de Paris Ouest Nanterre La Défense
(bâtiment G)
200, Avenue de la République
92001 NANTERRE CEDEX

Tél et Fax : 33.(0)1.40.97.59.07
Email : nasam.zaroualete@u-paris10.fr

The impact of regulatory requirements on the banking flows to emerging countries*

Samira Hellou†
EconomiX - Université Paris Nanterre,
hellou.samira@u-paris10.fr

Michel Boutillier
EconomiX - Université Paris Nanterre,
michel.boutillier@u-paris10.fr

Abstract:
The strengthening of regulatory requirements, along with evolution in banking regulations, can have a negative impact on the external bank financing of emerging countries heavily dependent on this type of financing. Indeed, several studies have aroused fears about the potential effects of significant regulatory adjustments on bank lending to emerging markets. This paper presents a trial to estimate the sensitivity of the banking flows to increased regulatory requirements. We adopt a macroeconomic approach based on the determinants of cross-border banking claims flows from banks located in 19 developed countries to 37 emerging countries. The results of the GMM estimation confirm the negative impact of regulatory requirements on the banking flows to emerging countries, the significant impact of business openness and the negative effect of bank financialization on banking flows to these countries. The results also show that countries rated as speculative grade are influenced by the regulatory requirements, unlike countries rated in investment grade category.

Keywords: banking flows, emerging countries, pull and push factors, regulatory requirements

Résumé :
Le renforcement des exigences réglementaires, avec l'évolution de la réglementation bancaire, peut avoir un effet négatif sur le financement extérieur bancaire des pays émergents fortement dépendants à ce type de financement. En effet, plusieurs études ont fait naître des craintes sur les effets potentiels des ajustements réglementaires importants sur les prêts bancaires vers les marchés émergents. Ce papier présente un essai pour estimer la sensibilité des flux bancaires à l'augmentation des exigences réglementaires, dans un cadre macroéconomique basé sur les déterminants des flux des crédits des banques de 19 pays développés vers 37 pays émergents. Les résultats des estimations en *GMM* confirment l'impact négatif des exigences réglementaires sur les flux bancaires vers les pays émergents, l'impact significatif de l'ouverture commerciale et l'effet négatif de la financiarisation des banques sur les flux bancaires vers ces pays. Les résultats montrent aussi que les pays notés en catégorie spéculative sont influencé par les exigences réglementaires, contrairement aux pays notés en catégorie investissement.

Mots clés : flux bancaires, pays émergents, facteurs *pull* et *push*, exigences réglementaires.
JEL classifications : F21, F34, G18.

* We would like to thank Hamza Bennani, Vincent Bouvatier and the participants at the 33rd Symposium on Money Banking and Finance of GdRE "Monnaie-Banque-Finance" for useful comments and suggestions.
† Corresponding author. Tel: 33 (0)1 40 97 59 06, Fax : 33 (0)1 40 97 41 98. EconomiX - Université Paris Nanterre, Bâtiment G, bureau 301. 200, avenue de la république, 92001 Nanterre cedex.

1. Introduction

Given the importance of capital flows in the financing of emerging countries and the increasing regulatory requirements, several studies have aroused fears about the potential effects of significant regulatory adjustments on bank lending to emerging markets. Indeed, the reduction of regulatory arbitrage opportunities can change the structure of banking flows to emerging countries. This structure has been greatly influenced by evolutions in prudential regulation. Basel I was characterized by simple categorization based on OECD membership countries which gave a wide margin of arbitration. Banks could hold risky assets without regulatory coverage such as short-term assets of OECD emerging countries (Bisignano, 2003). These arbitrages have fueled massive banking flows to emerging countries before the 1997 crisis. Indeed, 64% of bank flows to five countries in crisis were short-term in 1997 (Figuet & Lahet, 2007). In 1999, after publishing the first proposal of Basel II, the Basel Committee received several concerns about its negative effects on lending to risky entities in lower rating category ex: SMEs and emerging countries. The last financial shock has highlighted the weaknesses of this legislation. Therefore, the Basel Committee has proposed a new regulatory framework, Basel III, to strengthen the solvency and liquidity of banks in case of shocks (Basel Committee on Banking Supervision, 2010). Due to capital requirements even higher under Basel III, banking flows might know a tightening due to increased costs and limited risk-taking.

As financing conditions become increasingly restricted with new regulatory reforms, these countries, in need of financing, offset the decline in banking flows in financial markets, which remain volatile and depend on market cycles. Indeed, the tightening of bank financing is part of the current debate around the change in the external financing structure of emerging countries, with the increase of financing in the bonds market to the detriment of bank financing. On the other hand, access to this type of financing requires a fairly developed market, which is not the case for all emerging countries. In this context, this paper attempts to provide some answers to the question of the new prudential regulations effects on the banking flows to emerging countries. We use a macroeconomic approach in order to test the regulatory requirements as a determinant of banking flows to emerging countries under the push and pull factors.

In the best of our knowledge, no paper discusses this question in such way. Firstly, as no specific data is yet available for capital requirements we integrate variables reflecting

regulation ratio to consider the effect of the regulation through the effect of these criteria. Secondly, based to Weder & Wedow (2002) paper who attempted to evaluate *ex-ante* the impact of Basel II requirements over the period 1993-2001, we evaluate *ex-post* the capital requirements changes. This method permits the association of risk with regulatory requirements. So, this allows for a detailed analysis of sensitivity to regulatory requirements based on the level of risk. To conduct our empirical assessment, we use cross border data of international banking claims from 19 developed countries to 37 emerging countries, provided by the Bank for international settlements, and ratings to estimate risk, provided by Standard & Poor's, used in the evaluation of regulatory requirements.

Comparing the results of the two estimates with GMM for both periods 1990-2006 and 2007-2014 confirms the significant effect of banking regulations on the banking flows to emerging markets through the significance weighting criteria, the OECD membership for Basel I period and the rating for the Basel II period. The results confirm also the negative impact of regulatory requirements on the banking flows to emerging countries, the significant impact of business openness and the negative effect of bank financialization on banking flows to these countries. Moreover, the results show that countries rated in the speculative grade category are influenced by the regulatory requirements, contrary to countries rated in investment grade category.

The paper is structured as follows. Section 2 present the structure of capital flows to emerging countries and their relation with banking regulation evolution. Section 3 presents the literature review of the banking regulation as an important push or pull factor of these flows. Sections 4 and 5 discuss the empirical model and results. Section 6 concludes.

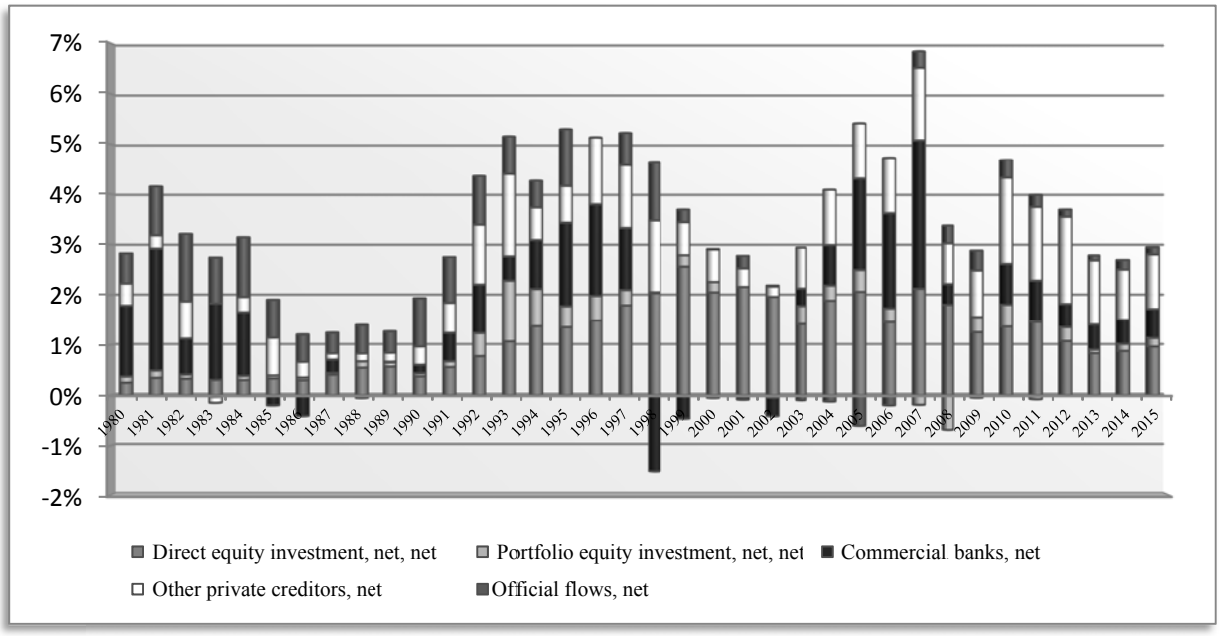
2. Banking flows to emerging countries and banking regulation. What link?

Despite the current crisis, the emerging economies still know exceptional growth levels and significant capital flows. Several factors played a positive role in improving the financial situation of these countries. Indeed, after the 1997 crisis, emerging countries try to stabilize and increase the level of confidence in their markets. They are increasing foreign exchange reserves, improving economic fundamentals and the risk-return relationship to be more competitive in terms of capital flows attractiveness. This is through the intervention of elements which reduce the risk such as: the stabilization of inflation or other elements that increase yields as institutional reforms for more open markets. Consequently, the overall situation appears strengthened. Nevertheless, when taken separately, several countries are still

dependent on capital flows and very vulnerable to the volatility of international liquidity. These capital flows have been the source of several crises in global markets, such as: the Asian crisis in 1997 with the sharp reversal of these flows or the subprime crisis in 2008 when capital flows played an amplifier role through the transmission of shocks between markets. Thus, several studies have examined the movements of capital flows and they focus mostly on the determinants of these flows.

After the 2007 crisis, net capital flows fell by half (Figure 1), they quickly rebounded in 2010, because of high levels of foreign exchange reserves. Figure 1 shows that this decline in flows after the crisis has affected mainly the portfolio equity investment and commercial banks flows.

Figure 1: Evolution of net capital flows to emerging countries (in % of GDP)[3]



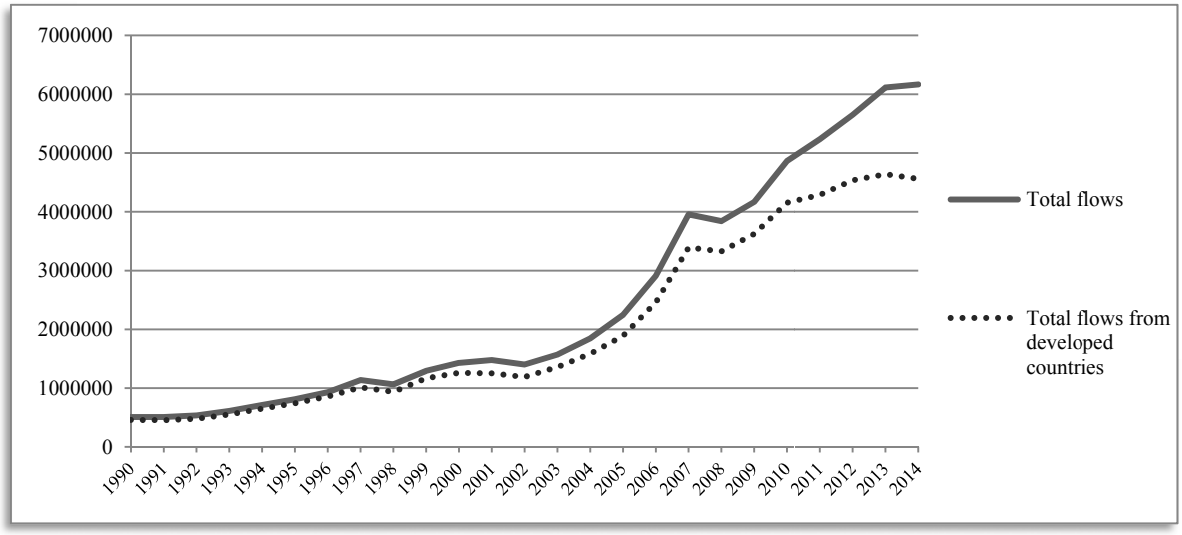
Source: Net capital flows, IIF 2015 and GDP, IMF, 2016

However, some countries worry about the possible effects of these inflows which still represent a significant source of funding for these economies, despite the high level of foreign exchange reserves. Figure 1 also shows the importance and the volatility of banking flows within total flows. These flows originate mainly from developed countries (Figure 2), hence the interest for the issue of capital requirements and their effects on the volume of flows that can affect the financing of growth in emerging countries. Indeed, the external financing

[3] The 30 emerging countries are as follows: Argentina, Brazil, Bulgaria, Chile, China, Colombia, Czech Republic, Ecuador, Egypt, Hungary, India, Indonesia, Korea, Lebanon, Malaysia, Mexico, Morocco, Nigeria, Peru, Philippines, Poland, Romania, Russia, Saudi Arabia, South Africa, Thailand, Turkey, Ukraine, United Arab Emirates and Venezuela.

structure of emerging countries change with the increase of financing in the bonds market to the detriment of bank flows, as bank financing conditions become increasingly restricted.

Figure 2: Banking flows from developed countries and total banking flows to emerging countries*



*37 emerging countries in the sample (Appendix 2) Source: BRI, 2015

International bank flows, FDI and portfolio investment are the main sources of financing in emerging markets to offset domestic savings. They exploit investment opportunities and push the level of growth. The regulatory requirements are among the factors that affect the banking flows by influencing the bank's costs level. Indeed, at an international level, the prudential supervision of banks is based on the principle of maintaining reserve capital based on the risk faced. These funds represent a loss of income for banks. Consequently, regulatory requirements may influence the behavior of banks which adjust their lending to the less expensive actors in terms of regulatory requirements. Basel I prompted the short-term financing to emerging countries. 60 % of international bank loans were short term before the Asian crisis (Figuet & Lahet, 2007). This is primarily related to fixed weightings proposed by Basel I. These weights favor loans for OECD countries with a rate of 0% for public sector. Short-term bank loans to emerging countries are made in foreign currencies to avoid foreign exchange risk and are weighted at 20%. Against the long-term loans to non-OECD countries are weighted at 100%. As a result, emerging countries are penalized by prudential regulations of 1988 in the amount of loans and maturity, which is an obstacle to their access to international financing. Indeed, the old agreement seems questionable to perform its role of

ensuring financial stability. These too simple principles seem unable to correctly measure the banking risks.

Therefore, the overhaul of prudential regulation focuses on more sophisticated methods of calculating risks. The Basel II agreement adopts a menu of options to differentiate more finely borrower's level of risk and capital requirements, to cover always a rate of 8%. However, some economists call into question the effectiveness of Basel II agreement because of its pro-cyclical effect and too stringent regulatory requirements for risky entities (SMEs and lower-rated countries). Indeed, the increased requirements for capital strengthening economic cycles may have a destabilizing macroeconomic impact if the decline of credit is not substitutable by other funding sources.

The new Basel agreement further strengthens the regulatory capital requirements in quantity and quality. The minimum requirements for common equity increased from 2% to 4.5% with the introduction of a conservation buffer of 2.5% of active funds, the establishment of countercyclical capital reserves of 2.5% -to contain the excessive accumulation of leverage- and the introduction of threshold leverage. This significant cost could push banks to increase the credit rate and reduce their loan allocation levels, which can create a drag on economic activity and the level of investment. An effect that highly disrupts dependent markets such as banking flows to emerging markets especially those have not an alternative financing.

3. Literature review

The literature review consists in three main parts; the first one focuses on the general framework on the determinants of the banking flows to emerging countries. The second part, discuss the role of banking regulation as pull or push factor of the banking flows. The third part deals with the effects of regulatory requirements on bank flows to emerging countries.

3.1.Determinants of banking flows to emerging countries

The emerging countries have experienced a great return of capital flows after 2003, a return explained by changes in economic fundamentals of these countries as well as the abundance of international liquidity. The level of favorable performance in emerging economies is one of the determinants of banking flows that are classified into two categories: Pull and Push determinants (Calvo & al, 1993; Fernandez-Arias, 1996). The external factors (*push*) represent the disadvantage to investing in developed countries with low yields pushing liquidity to emerging countries. The internal factors (*pull*) are the favorable economic

situation in emerging countries that attract liquidity to these markets. But the relationship between these factors and capital flows remain ambiguous because of the complex interaction between them.

External or push factors are the unfavorable situation in countries originating of banking flows pushing these capitals to emerging countries. The origin of these flows is mainly developed countries that have excess liquidity, low yields and low interest rates. Several studies, as Calvo & al. (1993), Montiel & Reinhart (1999), Kim (2000), Ying & Kim (2001), Ferrucci & al. (2004), confirm the influence of these factors on the direction of financial flows. Research on push factors of bank flows focus on developed countries GDP as Jeanneau & Micu (2002) and S&P 500 as Broto & al. (2008). Other factors are recently discussed as push factor such as the cost of bank flows and contagion.

Internal or pull factors are the internal factors reflect the economic performance of a country which makes it more attractive in terms of investment as the economic fundamentals, growth rate, interest rate, inflation, …etc. Several studies such as –Fernandez-Aria (1996), Bohn & Tesar (1998) showed the importance of these factors as determinants of capital flows to developing countries. The stability of exchange rates, political stability and trade openness also are factors that may favor some countries in terms of attractiveness of flows. Few studies, on determinants of foreign bank lending, focused on risk aversion, interest rate and economic growth (Jeanneau & Micu, 2002). After the last crisis, several studies have highlighted the disruptive effects of fluctuations in capital flows by identifying the episodes of sudden stops and surges as; Ghosh & al. (2014); Forbes & Warnock, (2012); Reinhart & Reinhart, (2008).

Therefore, several studies have been conducted within this context. Nevertheless, the literature, on the determinants of banking flows under the pull and push factors to emerging countries, remains limited and focus mainly on traditional variables: interest rate and economic growth (Figuet & al., 2015). Other studies, Jeanneau & Micu (2002), Heid & al. (2004); Forbes & Warnock (2012); Bruno & Shin (2015), concentrate on risk aversion variable such as yield spread and VIX. They show the strong correlation between capital flows and the level of risk. Ghosh & al. (2011) discuss the factors that determine banking flows from advanced economies to emerging markets in the context of global factors push and pull. The results show that the impact varies considerably depending on the region. Bruno & Shin (2013) and Rey (2013) show that banking sector capital flows are strictly associated with US monetary policy.

3.2. Banking regulation: push or pull factor?

Basel III is the result of improvements experienced by prudential regulation based on Basel II imperfections revealed by the 2007 crisis. These reforms are supposed reduce the frequency or intensity of financial crises, covering both; micro-prudential measures that strengthen banks' resilience to shocks and macro-prudential measures to strengthen the banking system. These measures limit the pro-cyclicality and risk interdependence between institutions. So, this bank regulation should have a positive impact on the stability of banking systems. However, the implementation of this new agreement gives rise to concerns about the effects on the costs of its application. This can lead banks to reduce their credit offers by increasing capital cost. Therefore, it may cause a slowdown in economic activity and a reduction in the level of liquidity in the country which adopts this regulation and flows of this country to emerging countries. It is " the financial flows channel " through direct and indirect effects on banking flows (Ghosh & al. 2011).

Banking regulation is an important factor in banking flows at national or international level through its influence on the banks behavior. Regulatory requirements are an additional cost and can influence the volume of loans and their costs. Capital level change effects can create shocks in the banking market; the regulator has taken into account this change through the gradual establishment by 2019 to allow time for banks to accumulate more capital with the retained earnings. Nevertheless, on the capital market this can cause a significant increase in capital costs: the IIF report (2012) estimate that financial markets would be less elastic with this new agreement. Therefore, the emerging economic equity markets may be affected through several channels, even excluding the application of Basel III by the emerging countries. The first channel is the "trade flows channel" due to the economic activity decrease in developed countries. Indeed, the implementation of Basel III in developed countries affects the supply of credit and slowing economic activity, imports and trade. This is the effect of Basel III on the developed countries to emerging countries transmitted through the foreign trade channel. The second is the financial channel (Ghosh & al. 2011) which results of lower banking flows to emerging countries through increased capital costs and the decline in interest rate spreads. This channel is composed of two small channels; the first is the effect of the reduction in direct bank loans from developed countries to non-banking institutions in emerging countries. This has a direct effect on investment in these countries. The second channel represents indirect effects on these markets through lower lending to banks in emerging countries. These effects can be enhanced by asymmetric information and problems

of country risk assessment by the rating agencies. Moreover, the impact of the decrease in banking flows to emerging countries on the financing of these markets depends on the level of diversification of funding sources and access to capital markets. Small and medium companies can find themselves in trouble compared to large companies that can offset the lack of funding by access to financial markets that has evolved after the 1990s. In these countries, effects may be different from one country to another, depending on their level of independence on banking flows.

The importance of capital flows in the convergence of emerging countries incomes and the importance of financial channel in the transmission of shocks leads us to study the effects of this channel on the capital markets. In this context, the role of banking regulation remains ambiguous to classify it as pull or push factor. It influences the arbitration of international investors in two ways: it can push banking flows through the increase in capital costs, thus decreasing profitability flows to emerging countries, or attract these flows by improving the ratings of these countries.

3.3. Empirical studies

Regarding the literature on regulatory requirements, few works have treated its effects on the stability of emerging funding. Van Hoose (2007) shows that it is generally accepted in the theoretical academic literature that the immediate effects of the capital requirements can reduce total loans and increase loan rates. It was not until the 2000s that the subject began to attract economist studies despite the important role played by Basel I in amplifying the 1997 crisis. Bisignano (2003); Buch & al. (2003) show that Basel I favored the short-term financing to emerging countries. As for Basel II, few studies reported negative effects on banking flows to emerging countries such as Reisen (2001). He argued that borrowers speculative grade of most emerging and developing countries, would suffer a dramatic rise in debt costs and increased cyclicality of the global banking credit due to Basel II. Griffith-Jones & Spratt (2001) also confirm that Basel II will have a likely negative effect on developing countries. Other economists confirm that Basel II will have a negligible effect on the financing of emerging countries. Weder & Wedow (2002) address this issue by calculating a measure of the economic capital variation and test its influence on the banking flows of BIS reporting banks. Liebig & al. (2007), by adopting a micro perspective, calculate the level of bank regulatory capital and the unexpected loss using a value to risk model. This measurement is then tested in a dynamic panel model on the determinants of claims to emerging markets. The

results show that there will be a negligible effect on lending by German banks to emerging markets. Liebig & al. (2007), Claessens & al. (2008), estimate that the Basel II effect on the financing of emerging countries is negligible. About the new Basel III, literature remains limited in some authors', which seems to confirm the negative impact of this agreement on the levels of bank lending in the world. Elliot (2009) shows that it is likely to be relatively small changes on the lending volumes of US banks due to higher capital requirements. As well Frenkel & Rudolph (2010) examine the macroeconomic and financial effects of the leverage ratio and prove that it will have a significant economic impact. This is likely to lead to a reduction of loans and thus a slowdown in economic activity. They also offer an extensive transition period to avoid these side effects. Others find different results that depend on the characteristics of each economy as Cosimano & Hakura (2011). They confirm that the increase in regulatory requirements under Basel III will push banks to increase their lending rates and reduce the level of credit supply. However, this varies considerably from an advanced economy to another according to equity and elasticity of demand for loans in relation to changes in loan rates. On the other hand, Solvik (2011) shows that more stringent capital requirements on the basis of risk-weighted assets are intended to increase the capacity of the banking system to absorb losses, but also increase banks' incentives to circumvent regulations. Houston & al. (2012) confirm that differences in banking regulation may be important push or pull factors for cross-border bank claims. The introduction of a leverage ratio based on the unweighted total assets helps to harmonize the activities of banks with their main economic functions and to maximize capital - allocation- efficiency, even if the common argument against a strict leverage ratio is that it increases the cost of bank loans and hurts the economy. Figuet & al. (2015) show the significant effect of different components of Basel III on the level of banking flows to emerging countries. They use statistics of capital requirement of 500 international banks. This method separates the level of risk from regulatory requirements, which does not allow the detection of categories of countries that will not be affected by the strengthening of regulatory requirements.

This literature review has been prepared in order to present reflection elements concerning the issue of banking flows vulnerability to emerging countries. A deductive reading literature about, on one side, the banking flows determinants to emerging countries, and on the other side, the banking regulation role in the supply of bank financing to these countries confirm " theoretically " the role of banking regulation as banking flows determinant to emerging countries without providing a unanimous empirical answer to the question. In this paper we

intend to assess the impact of regulatory requirements as push factors on cross border banking claims to 37 emerging markets.

4. Measurements and estimation procedure

Our estimation of the prudential regulations impact on bank lending to emerging markets use modeling of banks' lending decisions through the push and pulls factors, which constitute the general framework of our empirical test. With this aim, we must develop a model of international bank lending. Most of the existing literatures on international capital flows have adopted a macroeconomic approach, focusing on the push and pull factors determinants of banking flows. However, these studies use data aggregated by creditor countries which does not allow a detailed analysis of the behavior of individual banks. Thus, to test the sensitivity of banking flows to regulatory requirements, we are adopting a macroeconomic approach. On the basis of the push and pull models of banking flows, we are trying to integrate regulatory requirements as a determining factor of these flows. We try to assess these regulation requirements as a quantitative variable.

Regulatory requirements related to credit risk still represent 8% of the risk-weighted assets under Basel I and Basel II. The difference between these two regulations lies in the weights which are primarily related to the OECD membership under Basel I and related to risks under Basel II. Thus, we try firstly to see the effects of these two criteria on the banking flows to emerging countries before and after the implementation of Basel II. Subsequently, we try to estimate the sensitivity of these flows with regulatory requirements through the weights applied under Basel II. These weights represent risk-weighted assets as a percentage of outstanding capital and represents 12.5 of the level of minimum capital requirements.

Concerning the date of the Basel II implementation, according to the Basel Committee, its implementation was scheduled for early January 2007. In our study, the year 2007 is considered as the beginning of the Basel II implementation period. We have known since that date that all developed countries have already begun at least the application of the standard method under Basel II, excepting USA which began its implementation in 2009[4]. Moreover, the USA was already using another form of regulation as sophisticated and stringent than the Basel II regulations.

Regulatory requirements under Basel I are based on the only criterion of OECD membership. So, we included a dummy variable that takes the value 0 if the country is not OECD member

[4] Report: European Parliament's Committee on Economic and Monetary Affairs. October 2011. http://www.europarl.europa.eu/activities/committees/studies.do?language=EN

and the value 1 otherwise (Appendix 3). The estimation is performed for Basel I implementation period (1990-2006) and Basel II implementation period (2007-2014) to test the effect of OECD membership on the banking flows before and after Basel II. The Diff in Diff estimate confirms the structural change of bank flows between the two periods (Appendix 7). In the same way, the fact that regulatory requirements under Basel II depend mainly on risk, we include a variable that reflects the risk -which takes a value between 1 and 26 from the AAA to SD rating (Appendix 6) - in the model to compare the risk effect on the credit flows before and after the implementation of Basel II. In a last step, and to measure the credit flows sensitivity to the regulatory requirements under Basel II, we include a variable that reflects the weights applied under Basel II. For the regulatory requirements calculation given that we don't have any information indicating the requirements level applied by each bank. The calculation of these weights is based on the IRB method (Internal Ratings Based) that represents the method used by most large international banks to calculate capital requirements under Basel II (Bank for International Settlements, June 2006. p78) and Basel III (Bank for International Settlements, December 2010 revised June 2011. p43).

Calculation of interest variable: the risk weights with the IRB approach under Basel II

Under the IRB approach, four risk indicators are defined: 1. PD is the default probability: the risk weights are calculated[5] using the default probabilities associated with sovereign ratings of Standard & Poor's as a proxy to internal ratings. Since the study focuses on annual changes in international bank claims, we take the default probabilities on one year out forecast in order to avoid the multicollinearity problem. 2. M is the credit maturity, which is fixed at 1 year for the same reasons. 3. EAD is the exposure to default which represents the amount due credit. 4. LGD is the loss given default that fixed at 50%.
The risk weights (RWA / EAD) represent risk-weighted assets as a percentage of the amount due:

$$\frac{RWA}{EAD} = 12.5\ K \quad \text{Or} \quad K = 8\%\ \frac{RWA}{EAD}$$

Under this method, K regulatory requirements can take two following values that the counterparty may in default (equation 2) or not (equation 1):

[5] We assume that the default probability for all economic actors in a country (public sector, private sector, banking sector) tend to the country's default probability. For this variable, we use the ratings provided by S&P rating agency.

$$1.\ K = \left[LGD.\emptyset\left(\frac{\emptyset^{-1}(PD)+\sqrt{p(PD)}\emptyset^{-1}(0.999)}{\sqrt{1-p(PD)}}\right) - LGD.PD\right]\left(\frac{1+(\mathrm{M}-2.5)\times \mathrm{b(PD)}}{1-1.5\mathrm{b(PD)}}\right)$$

With

$$p(PD) = p_{min}\frac{1-e^{-50PD}}{1-e^{-50}} + p_{max}\frac{1-e^{-50PD}}{1-e^{-50}}$$

$$b(PD) = \left(0.11852 - 0.05478\, In(PD)\right)^2$$

$$2.\ K = \max(0, LGD - EL)$$

With Φ : the distribution of a standard normal distribution function. ρ (*PD*): the correlation is a decreasing function of the default probability. *b* (*PD*) **:** stipulates that adjustment of maturity is a decreasing function of the default probability. EL (Expected Losses) = PD*LGD with 99.9% confidence interval, p_{min}= 0.12, p_{max} =0.24.

Model specification

We opt for push and pull factors models which consider the key factors that determine the level and direction of banking flows. The choice of empirical modeling is conform to empirical studies on these factors. The model is represented as follows:

$$Y_{i,t} = \alpha Y_{i,t-1} + \beta X_{i,t} + \omega Z_t + \mu_i + \delta_t + \varepsilon_{i,t}$$

$Y_{i,t}$ the cross-border banking claims from 19 developed countries to the emerging country *i* in each period *t*, $Y_{i,t-1}$ the dependent lagged variable with α the corresponding coefficient, $X_{i,t}$ represents all push variables with β the vector of corresponding coefficients, Z_t represents all pull variables with ω the vector of corresponding coefficients; μ_i the fixed effect, δ_t the time fixed effect and $\varepsilon_{i,t}$ the term error.

As part of the dynamic panel, the generalized method of moments (GMM) appears to be the most appropriate choice for three reasons; the explanatory variable endogeneity, the low temporal dimension in the model and the individual effects resulting from the heterogeneity in the emerging countries group. All tests with the GMM method are validated like so: the p-value of the Hansen test is above the 10% level (accepting the hypothesis of non-correlation

instrumental variables with the error term) and the p-value of the test AR2 is above the 10% threshold (accepting the null hypothesis of no-autocorrelation of errors in order 2). For robustness tests (Appendix 8), we use Static and Dynamic Feasible Generalized Least Squares model, which allows to correct autocorrelation of errors.

Sample

We attempt to provide empirical evidence by focusing on a specific spatiotemporal field. It covers the period of the application of a uniform banking regulation recorded during the years 1990. Thus, two major waves help defining the temporal scope of our study: Basel I in 1988 and Basel II in 2007. The spatial field of the study is identified by defining a list of 37 emerging countries. To date, there is no universal definition for emerging markets. Therefore, the selection of emerging countries is not unanimous among the different academic or professional sources. To select a list of emerging countries, we based our study on databases provided by the IFC (International Finance Corporation) in emerging markets and the list of countries available in the database of the basic variables, i.e. the default probability, which allows us to evaluate changes in regulatory requirements for these countries and cross-border international banking claims. The excluded countries are not retained for non-compliance in the period, or data unavailability. In total, a sample of 37 countries is retained (Appendix 2) representing all geographic regions of emerging countries over 1990-2014.

Variables

After selecting the countries included in the study and the temporal dimension, we consider the problem of the variables selection that best fits with the objective of our test, specifically the variables that influence banking flows to these countries. We hold variables widely used in the literature on the subject. Data used in the model are defined in appendix 1[6]. The dependent variable is provided by the cross-border international claims from BIS reporting banks[7] to all sectors in emerging country i by the end of year. Those are referred as a locational banking statistics and include international transactions between parent banks to their affiliates. The explanatory variables are grouped into two categories according to the literature on the determinants of bank credit flows to emerging economies, pull factors and push factors.

[6] See appendices 4 and 5 for variables detailed information.
[7] BIS reporting banks located in 19 developed countries : Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Portugal, Spain, Sweden, Switzerland , United Kingdom, United States.

Pull factors:

GDP is the first indicator of country development. We use GDP per capita to remove the effect of the country size (Ghosh & al., 2011; Figuet & al., 2015). The competitiveness in terms of profitability as measured by the differential in real interest rates between emerging countries and the United States (Jeanneau & Micu, 2002; Figuet & al., 2015). The degree of trade openness measured as the sum of imports and exports of goods and services as a percentage of GDP and variables reflecting the weighting criteria in the regulations, OECD membership and rating. These criteria are indicators of the country solvability. OECD membership and good credit rating score are an attractive factor for capital flows.

Push factors:

GDP per capita in developed countries to indicate prosperity pushing these countries to offer more funds (Jeanneau & Micu, 2002; Ghosh & al., 2011; Figuet & al., 2015). We include the attractiveness of financial markets as a proxy of profitability in the financial markets through the Standard & Poor's 500 index (Broto & al., 2008; Figuet & al., 2015) and VIX (Volatility Index) to measures market expectation of volatility. Finally, we consider the weights related to bank claims that reflect the bank credit cost.

5. Result analysis

We conduct the empirical test in four steps in two periods and by groups of variables. We begin with the baseline model with traditional push and pull variables (column 1) and then, one by one with variable representing criteria of bank regulation under Basel I (column 2) and Basel II (column 3). Then, we combine these two variables (column 4). Finally, as a robustness test we change variables control (column 5). All estimates show that the lagged variable is very significant with a positive coefficient sign (table 1). This strong significance reflects the continuity in the behavior of the supply of credit, which can be explained by pattern and familiarity of the borrower.

As for macroeconomic factors, the pull factors determine the banking flows to emerging countries with a highly significant GDP per capita (with a positive and significant coefficient at 1% and 5%), unlike the per capita GDP of developed countries which doesn't seem to play a role in the behavior of lending to emerging countries. The differential in interest rate does not seem have a significant role, which consist with the literature (Weder & Wedew, 2002;

Liebig & al., 2007; Broto & al., 2008; Figuet & al., 2015). The role of financial markets depends on the estimate period. Profitability in the financial markets, represented by the SP500, does not seem influencing the behavior of the credit supply for the period 1990-2006. For the 2007-2014 period, the role of profitability in the financial markets appears significantly negative (1%) which, highlights the impact of the banks' financialization and the banking evolution with financial innovations related to credit. These results are confirmed with the VIX coefficient, which is not significant for the period 1990-2006 and significant at 1% for 2007-2014 period. Finally, the role of trade openness as a determinant of banking flows is more significant and negative for the 2007-2014 period.

Concerning the two variables that reflect the weighting criteria in bank regulation, the estimate for the period 1990-2006 confirm the significant positive effect (5%) of the OECD membership in the supply of credit which highlights the effect of the easing of regulatory requirements to the OECD member countries. For the same period, the risk level appears insignificant.

The estimation for 2007-2014 shows that the ratings influence the supply of credit, which can be explained by the weight given by regulations to risk. The effect of the OECD membership does not play a significant role. Comparing the results of the two estimates for both periods confirms the significant effect of banking regulations on the banking flows to emerging markets through the significance weighting criteria, the OECD membership for Basel I period and the rating for the Basel II period. Our results on the effects of ratings before and after the implementation of Basel II are consistent with the results of Iftekhar & al. (2015), confirming the weight of ratings after the implementation of Basel II in the credits flows to emerging countries. Concerning the exchange rate variable, the effect is tested but not reported, it is not significant for both periods. Indeed, bank loans may be more sensitive to exchange rate expectations than the real exchange rate.

Table 1: Estimation results of regulation criteria with GMM system

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS
			1990-2006					***2007-2014***		
L.DlIBCLAIMS	0.215***	0.215***	0.245***	0.246***	0.157**	0.282***	0.281***	0.277***	0.274***	0.287***
	(0.0561)	(0.0602)	(0.0647)	(0.0647)	(0.0762)	(0.0778)	(0.0794)	(0.0796)	0.0811	(0.0644)
DlGDP_CEC	0.652***	0.636***	0.598***	0.592***	0.710***	0.567**	0.566**	0.573***	0.568**	0.461**
	(0.117)	(0.113)	(0.124)	(0.119)	(0.104)	(0.210)	(0.209)	(0.208)	(0.207)	(0.178)
DlGDP_CDC	-0.117	-0.101	-0.0551	-0.0566	-0.166	-0.258	-0.256	-0.262	-0.255	0.106
	(0.163)	(0.117)	(0.0955)	(0.0973)	(0.137)	(0.316)	(0.314)	(0.313)	(0.310)	(0.262)
DIFF_IR	-0.0829	-0.0926	-0.140**	-0.134*		-0.120	-0.121	-0.122	-0.126	
	(0.103)	(0.0960)	(0.0685)	(0.0667)		(0.150)	(0.150)	(0.156)	(0.156)	
lSP500	-0.0199	-0.0283	-0.0312	-0.0358		-0.212***	-0.212***	-0.213***	-0.213***	
	(0.0298)	(0.0294)	(0.0199)	(0.0212)		(0.0520)	(0.0520)	(0.0518)	(0.0518)	
OCDEDUM		**0.0704****		**0.0584****	**0.0531***		**-0.0000741**		**-0.0105**	**-0.0115**
		(0.0336)		(0.0269)	(0.0304)		(0.0229)		(0.0223)	(0.0267)
lRATING_SP			**-0.0408**	**-0.0344**	**-0.0463**			**-0.0380****	**-0.0389****	**-0.0265****
			(0.0848)	(0.0711)	(0.0891)			(0.0148)	(0.0153)	(0.0130)
lVIX					-0.0118					-0.183***
					(0.0414)					(0.0393)
DlTRADOPEN					0.303*					-0.302**
					(0.155)					(0.139)
Constant	0.210	0.259	0.392	0.400	0.203	1.528***	1.529***	1.615***	1.617***	0.605***
	(0.208)	(0.202)	(0.285)	(0.262)	(0.241)	(0.373)	(0.373)	(0.372)	(0.371)	(0.119)
Observations	419	419	377	377	417	239	239	239	239	294
AR2	0.321	0.331	0.522	0.500	0.975	0.534	0.534	0.563	0.568	0.371
Hansen	0.444	0.459	0.497	0.512	0.438	0.435	0.468	0.417	0.494	0.234
instr	32	33	33	34	34	35	36	36	37	37

Notes: Dependent variable, for all regressions, is cross-border banking claims. Standard errors in parenthesis: * p < 0.10, ** p < 0.05, *** p < 0.01.

To estimate the sensitivity of the banking flows to the changes of regulatory requirements, we integrate the weightings applied in banking regulation Basel II. The results show a negative and significant effect at 5% in order of 0.039 to risk-weighted assets as a percentage of the amount due (the credit level) on the banking flows to emerging countries (table 2).

Table 2: Estimation results of risk weighted assets under Basel II

GMM system over 2007-2014

	(1)	(2)	(3)	(4)
	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS
L.DlIBCLAIMS	0.303***	0.274***	0.272**	0.274***
	(0.0940)	(0.0982)	(0.100)	(0.0921)
DlGDP_CEC	0.593**	0.601**	0.596**	0.571***
	(0.248)	(0.231)	(0.232)	(0.193)
DlGDP_CDC	-0.387	-0.392	-0.423	-0.113
	(0.425)	(0.390)	(0.400)	(0.341)
DIFF_IR	-0.112	-0.164	-0.164	
	(0.158)	(0.186)	(0.170)	
lSP500	-0.219***	-0.217***	-0.205***	
	(0.0597)	(0.0704)	(0.0683)	
lRWA_EAD		**-0.0391****	**-0.0455****	**-0.0385***
		(0.0174)	(0.0176)	(0.0207)
OCDEDUM			-0.0464	-0.0322
			(0.0363)	(0.0502)
lVIX				-0.178***
				(0.0462)
DlTRADOPEN				-0.290
				(0.206)
Constant	1.575***	1.524***	1.434***	0.499***
	(0.430)	(0.504)	(0.486)	(0.141)
Observations	223	223	223	222
AR2	0.562	0.665	0.686	0.680
Hansen	0.572	0.518	0.562	0.536
instr	36	36	37	38

Notes: L.DlIBCLAIMS is the lagged dependent variable (cross-border banking claims).
Standard errors in parenthesis: * p < 0.10, ** p < 0.05, *** p < 0.01.

As credit risk assessment remains unchanged (BCBS, 2010) still calculated with IRB model and given the adjustments required for credit risk under Basel III[8], the level of minimum regulatory requirements increase from 8% to 10.5% or even 13% if we consider the countercyclical buffer (Table 3). This corresponds to an increase of 2.5% to 5% regulatory requirements, inducing an increase of 31.25% to 62.5% of the weighted assets credit risk percentage. Considering the coefficient (-0.0391) of the last estimate (Table 2), this increase induces a decrease of 1.22% to 2.44% of bank claims to emerging countries. Moreover, these countries will not be affected on the same level by this increase of regulatory requirements. A priori, countries with lower ratings will be more affected.

[8] We adopt the implicit hypothesis that banks will not change their behavior with the introduction of Basel III.

Table 3: Evolution of capital -Basel II to Basel III-

Components of equity	Basel II	Basel III
Total Tier 1	Tier 1 :2% RWA	Tier 1 Core: 4,5% RWA + Conservation Buffer: 2,5% RWA + countercyclical buffer: 0 -2,5% RWA + systemic risk
	Tier 1 complementary : 2% RWA	Tier 1 complementary : 1,5% RWA
Tier 2	Tier 2 :4% RWA	Tier 2 :4% RWA
Total funds	8% RWA	10,5% à 13% RWA

Table 4: Weights and regulatory requirements related to ratings of S&P under the IRB approach of Basel II

RATING	Code RATING	PD_1Y	p_PD	b_PD	M	MA	WCDR	LGD	k	RWA/EAD (%)	ΔRWA/EAD(%)
AAA	1	0	0,24		1			0,5			-
AA+	2	0	0,24		1			0,5			-
AA	3	0,02	0,238806	0,342333	1	1	0,009991	0,5	0,004895	6.11925	6.11925
AA-	4	0,03	0,238213	0,316834	1	1	0,013774	0,5	0,006737	8.421375	2.302125
A+	5	0,06	0,236454	0,27553	1	1	0,023465	0,5	0,011432	14.29037	5.868995
A	6	0,07	0,235873	0,266737	1	1	0,02633	0,5	0,012815	16.01875	1.72838
A-	7	0,08	0,235295	0,259234	1	1	0,029062	0,5	0,014131	17.66363	1.64488
BBB+	8	0,14	0,231887	0,228957	1	1	0,043411	0,5	0,021005	26.25662	8.59299
BBB	9	0,2	0,228581	0,210641	1	1	0,055379	0,5	0,026689	33.36175	7.10513
BBB-	10	0,32	0,222257	0,18767	1	1	0,074973	0,5	0,035887	44.85812	11.49637
BB+	11	0,43	0,216785	0,173909	1	1	0,089601	0,5	0,04265	53.31287	8.45475
BB	12	0,68	0,205412	0,1536	1	1	0,115634	0,5	0,054417	68.02125	14.70838
BB-	13	1,13	0,188203	0,132566	1	1	0,148533	0,5	0,068616	85.77038	17.74913
B+	14	2,31	0,157807	0,105577	1	1	0,201957	0,5	0,089428	111.7855	26.01512
B	**15**	**4,73**	**0,131274**	**0,081606**	**1**	**1**	**0,276855**	**0,5**	**0,114778**	**143.472**	31.6865
B-	**16**	**7,92**	**0,122288**	**0,06627**	**1**	**1**	**0,362397**	**0,5**	**0,141599**	**176.9984**	**33.5264**
CCC/C	17-25	26,87	0,12	0,036294	1	1	0,685696	0,5	0,208498	260.6226	83.6242

Source: author's calculation. Note: PD-1Y refers to the default probabilities on one year associated with sovereign ratings of Standard & Poor's as a proxy to internal ratings

Besides, regulatory requirements do not only dependent on the solvency ratio; rating has a negative or positive effect in determining the level of regulatory requirements. The deterioration or improvement, such as: the deterioration of the rating B to -B causes an increase of 33.5264% of risk weighted assets which, in our estimation, and considering the same level of regulatory requirements, can induce a fall in banking flows of 1.31%. Conversely, the improved rating, from -B to B, increases the banking flows by 1.31%. Table 4 also shows that changes in risk-weighted assets are more important for the ratings that represent a high degree of risk. Therefore, we try, in table 5, to test the effect of regulatory requirements on bank flows to countries rated in speculative grade category compared to countries in investment grade category. The results confirm that countries with lower ratings are influenced by regulatory requirements unlike the well-rated countries. This increase of 2.5% to 5% regulatory requirements with Basel III, induce an increase of 31.25% to 62.5% of the weighted assets credit risk percentage. Considering the coefficient (-0.181) of the last estimate (Table 5), this increase induces a decrease of 5.65% to 11.31% of bank claims to speculative grade emerging countries. However, this can have a positive effect by encouraging these countries to develop alternative financing on capital markets and to stabilize their external financing.

Results in table 5 show that, for investment grade countries, regulatory requirements do not seem play a significant role in the determination of banking flows. This reflects the low level of regulatory requirements for this category. For control variables, lagged variable and GDP for emerging countries seem influence positively and significantly banking flows. Financial markets, through SP500 and VIX, seem have a significant and negative effect on the volume of banking flows and this is the same for trade openness. For countries rated in the speculative category, regulatory requirements are the only variable that seems to play a role in determining bank flows with the lagged variable. This shows the importance of these requirements so high that the other control variables no longer have any effect. As a final point, for both categories, differential interest rate and GDP for developed countries do not affect banking flows to emerging market.

As a robustness test for all estimations and with the same steps, we use static and dynamic feasible generalized least squares model (appendix 8). All tests confirm the significances and signs of each variable and period with the GMM model.

Table 5: Estimation results of risk weighted assets under Basel II with system GMM over 2007-2014

Speculative grade versus Investment grade countries

	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS	DlIBCLAIMS
	Investment Grade countries				***Speculative Grade countries***			
L.DlIBCLAIMS	0.139*	0.156*	0.176***	0.194**	0.329**	0.250*	0.267**	0.258*
	(0.0765)	(0.0831)	(0.0462)	(0.0731)	(0.123)	(0.121)	(0.118)	(0.130)
DlGDP_CEC	0.964***	1.001***	0.829***	0.963***	0.444	0.339	0.403	0.397
	(0.212)	(0.214)	(0.228)	(0.168)	(0.332)	(0.260)	(0.265)	(0.266)
DlGDP_CDC	-0.514	-0.587	-0.155	-0.269	0.0407	0.0124	0.0881	-0.0407
	(0.336)	(0.357)	(0.321)	(0.337)	(0.613)	(0.503)	(0.449)	(0.484)
DIFF_IR	-0.442	-0.319			0.0697	-0.211		
	(0.267)	(0.286)			(0.273)	(0.313)		
lSP500	-0.255***	-0.284***	-0.355***		-0.277	-0.238	-0.253	
	(0.0639)	(0.0810)	(0.0729)		(0.188)	(0.200)	(0.166)	
lRWA_EAD		**-0.0346**	**-0.0417**	**-0.0367**		**-0.189****	**-0.166****	**-0.181****
		(0.0343)	(0.0281)	(0.0237)		(0.0705)	(0.0584)	(0.0755)
lVIX				-0.199***				-0.119*
				(0.0547)				(0.0556)
DlTRADOPEN				-0.337*				-0.219
				(0.177)				(0.244)
Constant	1.849***	2.003***	2.477***	0.535***	1.962	1.669	1.771	0.314*
	(0.461)	(0.573)	(0.521)	(0.164)	(1.324)	(1.422)	(1.177)	(0.178)
Observations	137	122	162	122	82	81	94	80
AR2	0.386	0.403	0.523	0.246	0.518	0.605	0.651	0.554
Hansen	0.490	0.564	0.284	0.822	0.610	0.467	0.333	0.728
instr	28	29	28	30	11	12	11	13

Notes: Dependent variable, for all regressions, is cross-border banking claims. Standard errors in parenthesis: * p < 0.10, ** p < 0.05, *** p < 0.01.

These results provide an overall estimate of the effects of regulatory requirements under Basel III on bank claims to emerging countries, but their analysis must be cautious because firstly, they do not take into account the impact of the liquidity and the leverage ratio. Secondly, they will depend on the level of regulatory requirements actually applied by the banks. However, other studies have dealt with the effect of these ratios that joins our results such as Houston & al. (2012). They confirm that the introduction of a leverage ratio based on the unweighted total assets harmonize the activities of banks with their main economic functions and to maximize capital - allocation- efficiency, but a strict leverage ratio increases the cost of bank loans and hurts the economy. Otherwise, the paper does not take into account the dependence on the wholesale market to control the drying up of interbank dollar markets, which appear to have played an important role in the dynamics of international bank lending (McGuire & Peter, 2012 and McCauley & al., 2015).

6. Conclusion

The high-level growth in emerging countries promises of higher equity returns. Nevertheless, these expectations will not be full filed without the large capital flows from rich countries in capital to the developed economies. While strengthening regulatory requirements, changes in banking regulation affect the structure of external financing of emerging countries. Indeed, the results of the GMM estimation confirm the negative and significant effect of the regulatory requirements levels on the banking flows towards emerging countries. Therefore, adjustments of regulatory requirements under Basel III result in restrainment of banking flows to emerging countries. However, this decline may be offset by an improvement in the level of risk in these countries or be strengthened by a drop in ratings. On the other hand, given that the banking flows to lower rated countries are more sensitive to this increase in regulatory requirements, emerging countries are encouraged to improve their ratings. The results confirm also, the significant impact of business openness and the negative effect of bank financialization on banking flows to these countries.

Consequently, emerging countries offset this decline in banking flows by financing on the financial markets, which remain highly volatile. Nevertheless, for less developed countries that do not have access to financial markets, decline in banking flows will have an impact on the financing of investment and growth.

References

Bank for international settlements (2006). International Convergence of Capital Measurement and Capital Standards a Revised Framework Comprehensive Version. June.

Banque des Règlements Internationaux (2011). Bâle III : dispositif réglementaire mondial visant à renforcer la résilience des établissements et systèmes bancaires. Juin.

Basel Committee on Banking Supervision (2010). Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems, Bank for International Settlements, December.

Bisignano, J. (2003). Qui ont été les privilégiés de Cooke ? Perdants et gagnants de la réglementation des fonds propres. *Revue d'économie financière*, 73, 77-96.

Bohn, H., & Tesar, L-L. (1998). Determinants of capital flows and exchange rates: US portfolio investment in Asian capital markets in *R Glick* (ed).

Brana, S.,& Lahet, D. (2009). Capital requirement and financial crisis: the case of Japan and the 1997 Asian crisis. *Japan and the World Economy*, 21, 97-104.

Broto, C., Diaz-Cassou, J., & Erce-Dominguez, A. (2008). Measuring and explaining the volatility of capital flows toward emerging countries. Banco de Espana Documentos de Trabajo no. 817.

Bruno, V.,& Shin, H.S. (2013). Capital Flows and the Risk-Taking Channel of Monetary Policy,NBER working paper 18942.

Bruno, V.,& Shin, H.S. (2015). Capital flows, cross-border banking and global liquidity. *Review of Economic Studies* 82 (2): 535-564.

Buch, C-M.,& Lusinyan L. (2003). Determinants of short-term debt: a note. *Journal of International Financial markets, Institutions &money,* n°13, 157-170.

Calvo, G.A., Leiderman, L.,& Reinhart, C.M.(1993). Capital inflows and the real exchange rate appreciation in Latin America – The role of external factors. *Staff Papers (International Monetary Fund)*. Vol. 40, No. 1, 108-151.

Claessens, S., Underhill, G.R.D.,& Zhang, X. (2008). The political economy of Basel II: The costs for poor countries. *The World Economy*. 31 (3), 313-344.

Cosimano, T., & Hakura, D. (2011). Bank behavior in response to Basel III: A cross-country analysis. International Monetary Fund Working Paper 119.

Elliot, D.J. (2009). Quantifying the effects on lending of increased capital requirements. In: Pew Financial Reform Project Briefing Paper 7.

Fernandez-Arias, E. (1996). The new wave of private capital inflows: Push or pull? *Journal of Development Economics*, 48, 398-418.

Ferrucci, G., Herzberg, V., Soussa, F., & Taylor, A. (2004). Understanding capital flows to emerging market economies. *Financial Stability Review*. June, 89-97.

Figuet, J-M., Humblot, T., & Lahet. D. (2015). Cross-border banking claims on emerging countries: The Basel III banking reforms in a push and pull framework, *Journal of International Financial markets, Institutions & money,* n°34, 294-310.

Figuet, J-M., & Lahet, D. (2007). Basel II and its Implications for Foreign Banks Financing Emerging Countries, *Revue d'économie du développement* n°5 (Vol.15), p. 47-67.

Forbes, K., & Warnock, F-E. (2012). Capital flow waves: surges, stops, flight, and retrenchment. *Journal of International Economics*, 88, 235–251.

Frenkel, M., & Rudolf, M. (2010). The implications of introducing an additional regulatory constraint on banks' business activities in the form of a leverage ratio. *German Banking Association* , 1er mars.

Ghosh, R.A., Qureshi, M., Zalduendo, J., & Kim, J. (2014). "Surges." *Journal of International Economics*, 92(2), 266-285.

Ghosh, S., Sugawara, N., Zalduendo, J., (2011). Bank flows and Basel III - Determinants and regional differences in emerging markets. Poverty reduction and economic management network - *Economic Premise*, 56.

Griffith-Jones, S., & Spratt, S. (2001). Will the proposed new Basel capital accord have a net negative effect on developing countries? *Jubilee Research*.

Griffith-Jones, S., & Persaud, A. (2008). The Pro-cyclical impact of Basel II on emerging markets and its political economy. In *Capital market liberalization and development*. Oxford University Press. pp 262-287.

Hannoun, H. (2010). The Basel III framework: a decisive breaktrough. BoJ-BIS High Level Seminar on Financial Regulatory Reform: Implications for Asia and the Pacific.

Heid, F., Nestmann, T., Weder, B., & von Westernhagen, N. (2004). German bank lending during emerging market crises: A bank level analysis.

Herrmann, S., & Mihaljek, D. (2010). The determinants of cross-border bank flows to emerging markets: new empirical evidence on the spread of financial crises. Bank for International Settlements Working Paper No 315, Monetary and Economic Department.

Houston, J.F., Lin, C., & Ma, Y. (2012). Regulatory arbitrage and international bank flows. *The Journal of Finance* 67, 1845–1895.

Iftekhar H., Suk-Joong, k., & Eliza, W. (2015). The effects of ratings-contingent regulation on international bank lending behavior: Evidence from the Basel II accord. *Journal of Banking & Finance*, 378-4266.

International Monetary Fund (2012). Global recovery stalls, downside risks intensify. In: World Economic Outlook Update, January.

IIF research note. (2013). Capital Flows to Emerging Market Economies January 22.

Jeanneau, S., & Micu, M. (2002). Determinants of international bank lending to emerging markets countries. In: Bank for International Settlements Working Papers No. 112, June.

Kai. G., & Vahram, S. (2011). Determinants of bank credit in emerging market economies. IMF Working Paper,WP/11/51.

Kim, Y. (2000). Causes of capital flows in developing countries. *Journal of International Money and Finance*: 19.

Liebig, T., Porath, D., Weder, B., & Wedow, M. (2007). Basel II and bank lending to emerging markets: Evidence from the german-banking sector. *Journal of Banking & Finance*, 31, 401-418.

McCauley, R., McGuire, P., & Sushko, V. (2015). Dollar credit to emerging market economies. *BIS Quarterly Review*, December, pp 27–41.

McGuire, P., & Goetz von, P. (2012). The US dollar shortage in global banking and the international policy response. *International Finance*, vol 15, issue 2. "

Montiel, P., & Reinhart, C. (1999). Do capital controls and macroeconomic policies influence the volume and composition of capital flows? Evidence from the 1990s, *Journal of International Money and Finance*.18, 619–635.

Rapport CAE *Conseil d'Analyse Economique*, (2012).Le financement de l'économie dans le nouveau contexte réglementaire, Direction de l'information légale et administrative. Paris.

Reinhart, C.M., & Reinhart, V.R. (2008). "Capital flow bonanzas: An encompassing view of the past and present." NBER Working Paper w14321

Reisen, H. (2001). Will Basel II contribute to convergence in international capital flows? In Austrian National Bank Conference, Vienna (Vol. 31).

Rey, H. (2013). Dilemma not trilemma: the global cycle and monetary policy independence. In Proceedings-Economic Policy Symposium-Jackson Hole (pp. 1-2). Federal Reserve Bank of Kansas City.

Slovik, P. (2011). Systemically important banks and capital regulation challenges. OECD Economic Department Working Papers 916. OECD Publishing.

Slovik, P., & Cournède, B. (2011). Macroeconomic impact of Basel III. OECD Economic Department Working Papers 844. OECD Publishing.

Thomas, J.M. (2013). The push and the pull into emerging markets. Economic Outlook. The Carlyle group. Novembre 1.

Thieffry, G. (2011). The impact of Basel III on commodity trade finance: Legal and regulatory aspects. *Journal of International Banking Law and Regulation*. Issue 9.

VanHoose, D. (2007). Theories of bank behavior under capital regulation. *Journal of Banking and Finance*, 31, 3680-3697.

Weder, B., & Wedow, M. (2002). Will Basel II affect international capital flows to emerging markets? OECD Development Centre Working Papers 199. OECD Publishing.

Ying, Y-H., & Kim, Y. (2001). An empirical analysis on capital flows: The case of Korea and Mexico. *Southern Economic Journal*, 67(4).

Appendix 1: Variables and sources presentations

Variables		Name	Source	Construction	Expected signe
Dependent variable		DlIBCLAIMS : Cross-border banking claims from 19 developed countries to emerging countries	Bank for international settlements (*locational banking statistics*)	Log-difference of Cross-border banking claims of the reporting banks by the BIS developed countries to emerging countries i at end of period	
Explanatory variables	Pull factors	DlGDP_CEC : Emerging countries GDP per capita	World Bank, World development indicators	Log-difference of emerging countries GDP per capita, current price	+
		DIFF_IR: The differential of real interest rates between emerging countries and the United States.	World Bank, World development indicators	The difference between the real interest rate of an emerging country i and the real interest rate of United States of closure (as a percentage)	+/-
		lRATING_SP : Ratings of emerging countries by Standard and Poor's	Standard and Poor's	Log S & P rating of emerging i associated with a numerical code from AAA = 1 'to' SD = 26 ', end of period	+/-
		DlTRADOPEN: the degree of trade openness measured as the sum of imports and exports of goods and services as a percentage of GDP	World Bank national accounts data, and OECD National Accounts data files.	Sum of imports and exports of goods and services as a percentage of GDP	+
	Push factors	DlGDP_CDC : Development countries GDP per capita	World Bank, World development indicators	Log-difference of the average GDP per capita in developed countries, current prices	-
		lSP500: Standard and Poor's 500	Standard and Poor's	Log S & P 500 closing price in Dollars	-
		lRWA_EAD : The risk weights assets used as a proxy of regulatory requirements (as a percentage of EAD)	Author's calculation	Log risk weights assets calculated by author	+/-
		VIX (Volatility Index): measures market expectation of short term volatility conveyed by stock index option prices.	Chicago Board Options Exchange	Natural Log of VIX Index, end of Period	-

Appendix 2: List of countries

borrowing countries (37)				**country lenders (19)**	
Latin America	Europe	Africa	Asia		
Argentina	Bulgaria	Egypt	China	Australia	Italy
Brazil	Croatia	Morocco	Hong Kong	Austria	Japan
Chile	Czech republic	Tunisia	India	Belgium	Netherlands
Colombia	Estonia	Turkey	Indonesia	Canada	Portugal
Costa Rica	Hungary	South Africa	Kazakhstan	Denmark	Spain
Mexico	Latvia		Malaysia	Finland	Sweden
Peru	Lithuania		Philippines	France	Switzerland
Uruguay	Poland		Russia	Germany	United Kingdom
	Romania		Singapore	Greece	United States
	Slovakia		Thailand	Ireland	
	Slovenia		Venezuela		
	Ukraine		Vietnam		

Appendix 3: List of emerging countries by OECD membership date

Country	**OECD membership date**
Chile	2010
Czech republic	1995
Estonia	2010
Hungary	1996
Mexico	1994
Poland	1996
Slovak Republic	2000
Slovenia	2010
Turkey	1961

Appendix 4: Summary of descriptive statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
DlIBCLAIMS	848	0.1318106	0.3089537	-0.8419514	3.165039
DlGDP_CEC	852	0.0663377	0.1344944	-0.9793067	0.4044666
DlGDP_CDC	888	0.0316925	0.0683007	-0.0979309	0.1769991
DIFF_IR	732	0.02951117	0.1354502	-0.9526106	0.9082268
DlTRADOPEN	859	.0165008	.1125636	-.5678611	1.437791
lVIX	925	2.942686	.3285297	2.44755	3.68888
lSP500	925	6.80176	0.5020968	5.799759	7.522054
lRATING_SP	752	2.172214	0.5453672	0	3.258096
lRWA_EAD	715	-0.8699638	0.7491007	-2.793727	0.9579032
OCDEDUM	925	0.1448649	0.3521549	0	1

Appendix 5: Pearson correlation matrix

	DlIBCLAIMS	L.DlIBCLAIMS	DlGDP_CEC	DlGDP_CDC	DIFF_IR	lSP500	lRATING_SP	lRWA_EAD	OCDEDUM	DlTRADOPEN	lVIX
DlIBCLAIMS	1,0000										
	848										
L.DlIBCLAIMS	0.4031*	1.0000									
	0.0000										
	811	811									
DlGDP_CEC	0.2935*	0.1885*	1.0000								
	0.0000	0.0000									
	828	797	852								
DlGDP_CEC	0.1712*	0.1711*	0.3916*	1.0000							
	0.0000	0.0000	0.0000								
	848	811	852	888							
DIFF_IR	-0.1419*	-0.0749	-0.1349*	-0.0217	1.0000						
	0.0002	0.0505	0.0003	0.5627							
	703	682	715	715	732						
lSP500	-0.1517*	-0.0722	0.0378	-0.0357	-0.0031	1.0000					
	0.0000	0.0399	0.2706	0.2876	0.9339						
	848	811	852	888	732	925					
lRATING_SP	-0.0447	-0.0656	-0.0400	0.0090	0.0991	-0.0141	1.0000				
	0.2244	0.0761	0.2772	0.8068	0.0116	0.6997					
	740	733	741	749	647	752	752				
lRWA_EAD	-0.1510*	-0.1866*	-0.0791	-0.0187	0.1122*	-0.0331	0.9781*	1.0000			
	0.0001	0.0000	0.0359	0.6176	0.0055	0.3770	0.0000				
	703	697	704	712	610	715	715	715			
OCDEDUM	-0.0235	-0.0079	-0.0267	-0.0102	-0.0551	0.1727*	-0.0775	-0.2361*	1.0000		
	0.4939	0.8217	0.4357	0.7615	0.1363	0.0000	0.0335	0.0000			
	848	811	852	888	732	925	752	715	925		
DlTRADOPEN	-0.0528	0.0699	-0.2292*	0.2512*	-0.0599	-0.0032	0.0237	-0.0156	0.0816	1.000	
	0.1271	0.0471	0.0000	0.0000	0.1095	0.9260	0.5179	0.6771	0.0168		
	837	806	849	859	714	859	748	711	859	859	
lVIX	-0.1298*	0.0232	-0.1496*	-0.1369*	0.0372	0.2938*	0.0454	0.0746	0.0369	-0.0513	1.000
	0.0002	0.5098	0.0000	0.0000	0.3144	0.0000	0.2134	0.0460	0.2627	0.1331	
	848	811	852	888	732	925	752	715	925	859	925

Note: * significant at $p < 0.01$

Appendix 6: Codes associated with S&P ratings

Category	Rating S&P (L-T)	code associated
Investment grade	AAA	1
	AA+	2
	AA	3
	AA-	4
	A+	5
	A	6
	A-	7
	BBB+	8
	BBB	9
	BBB-	10
Speculative grade	BB+	11
	BB	12
	BB-	13
	B+	14
	B	15
	B-	16
	CCC+	17
	CCC	18
	CCC-	19
	CC+	20
	CC	21
	CC-	22
	C+	23
	C	24
	C-	25
	D	26
	SD	26

Appendix 7: Difference in difference estimation results

VARIABLES	(1) DlIBCLAIMS
BASELDUM	-0.176***
	(0.0293)
SGDUM	-0.0909***
	(0.0260)
_diff	0.0780*
	(0.0451)
Constant	0.229***
	(0.0198)
Observations	848
R-squared	0.053

Notes: BASELDUM is a dummy variable that takes the values of 0 for the Basel I period (1990-2006) and the value of 1 for the Basel II period (2007-2014). SGDUM is a dummy variable that takes the values of 1 if country is rated speculative grade and 0 if country is rated investment grade. _diff is the interaction between BASELDUM and SGDUM.

Appendix 8: Robustness tests

8.1. Robustness tests of the first estimation with Static Feasible Generalized Least Squares model

	(1) DlIBCLAIMS	(2) DlIBCLAIMS	(3) DlIBCLAIMS	(4) DlIBCLAIMS	(5) DlIBCLAIMS	(6) DlIBCLAIMS	(7) DlIBCLAIMS	(8) DlIBCLAIMS	(9) DlIBCLAIMS	(10) DlIBCLAIMS
	1990-2006					***2007-2014***				
DlGDP_CEC	0.673***	0.671***	0.732***	0.731***	0.841***	0.699***	0.676***	0.717***	0.703***	0.676***
	(0.0647)	(0.0638)	(0.0700)	(0.0690)	(0.0826)	0.105	0.107	0.104	0.106	0.0926
DlGDP_CDC	-0.146	-0.150	-0.230*	-0.234*	-0.333**	-0.253	-0.238	-0.247	-0.242	0.0400
	(0.120)	(0.118)	(0.129)	(0.127)	(0.134)	0.167	0.168	0.156	0.158	0.163
DIFF_IR	-0.118**	-0.101**	-0.0478	-0.0294		-0.0513	-0.0753	-0.0318	-0.0474	
	(0.0495)	(0.0491)	(0.0546)	(0.0541)		0.150	0.151	0.151	0.152	
lSP500	0.0120	0.00416	-0.0207	-0.0284		-0.167***	-0.165***	-0.181***	-0.177***	
	(0.0173)	(0.0171)	(0.0215)	(0.0212)		0.0456	0.0455	0.0432	0.0437	
OCDEDUM		**0.0896*** **		**0.0870*** **	**0.0598** **		**-0.0235**		**-0.0213**	**-0.0131**
		(0.0309)		(0.0311)	(0.0263)		0.0209		0.0208	0.0188
lRATING_SP			**-0.0127**	**-0.00831**	**-0.0204**			**-0.0251*** **	**-0.0241*** **	**-0.0176** **
			(0.0187)	(0.0181)	(0.0175)			0.00830	0.00859	0.00745
lVIX					-0.0113					-0.0440*
					(0.0295)					0.0250
DlTRADOPEN					0.323***					-0.393***
					(0.112)					0.0933
Constant	-0.00510	0.0388	0.254*	0.286*	0.141	1.226***	1.222***	1.368***	1.347***	0.189**
	(0.117)	(0.116)	(0.150)	(0.148)	(0.0962)	0.327	0.327	0.311	0.314	0.0773
Observations	464	464	396	396	437	239	239	239	239	294
chisquared	140.4	153.5	138.4	150.4	161.7	72.70	74.12	82.42	83.12	108.8

Notes: Dependent variable, for all regressions, is cross-border banking claims. Standard errors in parenthesis: * p < 0.10, ** p < 0.05, *** p < 0.01.
Autocorrelation and heteroscedasticity have been corrected

8.2. Robustness tests of the first estimation with Dynamic Feasible Generalized Least Squares model

	(1) DlIBCLAIMS	(2) DlIBCLAIMS	(3) DlIBCLAIMS	(4) DlIBCLAIMS	(5) DlIBCLAIMS	(6) DlIBCLAIMS	(7) DlIBCLAIMS	(8) DlIBCLAIMS	(9) DlIBCLAIMS	(10) DlIBCLAIMS
			1990-2006					***2007-2014***		
L.DlIBCLAIMS	0.394***	0.375***	0.405***	0.384***	0.387***	0.129**	0.123**	0.112**	0.109*	0.101**
	(0.0335)	(0.0345)	(0.0375)	(0.0389)	(0.0368)	(0.0557)	(0.0561)	(0.0552)	(0.0556)	(0.0499)
DlGDP_CEC	0.611***	0.612***	0.594***	0.596***	0.759***	0.633***	0.617***	0.653***	0.644***	0.615***
	(0.0579)	(0.0575)	(0.0592)	(0.0589)	(0.0704)	(0.108)	(0.109)	(0.106)	(0.108)	(0.0968)
DlGDP_CDC	-0.0357	-0.0430	-0.0242	-0.0325	-0.159	-0.365**	-0.348**	-0.334**	-0.327**	-0.0250
	(0.106)	(0.106)	(0.114)	(0.113)	(0.119)	(0.170)	(0.171)	(0.157)	(0.159)	(0.172)
DIFF_IR	-0.0518	-0.0389	-0.0507	-0.0378		-0.0919	-0.110	-0.0717	-0.0833	
	(0.0423)	(0.0425)	(0.0466)	(0.0469)		(0.154)	(0.155)	(0.154)	(0.155)	
lSP500	0.00636	0.000803	-0.0177	-0.0229		-0.168***	-0.168***	-0.182***	-0.179***	
	(0.0174)	(0.0174)	(0.0196)	(0.0196)		(0.0448)	(0.0449)	(0.0423)	(0.0425)	
OCDEDUM		**0.0489****		**0.0458***	**0.0303**		**-0.0171**		**-0.0161**	**-0.00980**
		(0.0237)		(0.0242)	(0.0210)		(0.0205)		(0.0204)	(0.0185)
lRATING_SP			**0.00561**	**0.00670**	**-0.00126**			**-0.0242*****	**-0.0234*****	**-0.0175****
			(0.0133)	(0.0130)	(0.0125)			(0.00810)	(0.00828)	(0.00772)
lVIX					0.00498					-0.0555**
					(0.0262)					(0.0262)
DlTRADOPEN					0.336***					-0.356***
					(0.0964)					(0.0975)
Constant	-0.00849	0.0245	0.148	0.176	0.00617	1.227***	1.228***	1.367***	1.354***	0.217***
	(0.119)	(0.119)	(0.137)	(0.137)	(0.0839)	(0.322)	(0.322)	(0.304)	(0.306)	(0.0804)
Observations	443	443	389	389	430	239	239	239	239	294
chi squared	345.6	353.1	317.0	322.3	371.8	79.12	79.68	89.56	90.02	110.2

Notes: Dependent variable, for all regressions, is cross-border banking claims. Standard errors in parenthesis: * p < 0.10, ** p < 0.05, *** p < 0.01.
Autocorrelation and heteroscedasticity have been corrected

8.3. Robustness tests of the second estimation with Static Feasible Generalized Least Squares model

	(1) DlIBCLAIMS	(2) DlIBCLAIMS	(3) DlIBCLAIMS	(4) DlIBCLAIMS
DlGDP_CEC	0.699***	0.779***	0.754***	0.668***
	(0.105)	(0.113)	(0.116)	(0.0997)
DlGDP_CDC	-0.253	-0.319*	-0.312*	0.0297
	(0.167)	(0.186)	(0.189)	(0.181)
DIFF_IR	-0.0513	0.00943	-0.0358	
	(0.150)	(0.153)	(0.156)	
lSP500	-0.167***	-0.205***	-0.200***	
	(0.0456)	(0.0518)	(0.0516)	
lRWA_EAD		**-0.0353*** **	**-0.0433*** **	**-0.0111**
		(0.0115)	(0.0130)	(0.0110)
OCDEDUM			-0.0427*	-0.0119
			(0.0245)	(0.0211)
lVIX				-0.0329
				(0.0285)
DlTRADOPEN				-0.412***
				(0.104)
Constant	1.226***	1.446***	1.418***	0.104
	(0.327)	(0.370)	(0.369)	(0.0863)
Observations	239	223	223	278
chi squared	72.70	75.13	79.48	85.68

Notes: Dependent variable, for all regressions, is cross-border banking claims.
Standard errors in parenthesis: * p < 0.10, ** p < 0.05, *** p < 0.01.
Autocorrelation and heteroscedasticity have been corrected

8.4. Robustness tests of the second estimation with Dynamic Feasible Generalized Least Squares model

	(1) DlIBCLAIMS	(2) DlIBCLAIMS	(3) DlIBCLAIMS	(4) DlIBCLAIMS
L.DlIBCLAIMS	0.0693	0.0806*	0.0695	0.0972**
	(0.0469)	(0.0466)	(0.0474)	(0.0458)
DlGDP_CEC	0.707***	0.765***	0.756***	0.697***
	(0.104)	(0.111)	(0.114)	(0.0993)
DlGDP_CDC	-0.271	-0.293	-0.312*	0.0274
	(0.168)	(0.181)	(0.186)	(0.174)
DIFF_IR	-0.0491	-0.0110	-0.0379	
	(0.150)	(0.153)	(0.156)	
lSP500	-0.159***	-0.197***	-0.193***	
	(0.0459)	(0.0516)	(0.0518)	
lRWA_EAD		**-0.0343*** **	**-0.0392*** **	**-0.0161***
		(0.0108)	(0.0124)	(0.00859)
OCDEDUM			-0.0332	-0.0132
			(0.0235)	(0.0197)
lVIX				-0.0674**
				(0.0327)
DlTRADOPEN				-0.365***
				(0.110)
Constant	1.157***	1.383***	1.354***	0.191*
	(0.330)	(0.370)	(0.370)	(0.0980)
Observations	239	223	223	278
chi squared	77.28	80.32	82.78	96.39

Notes: Dependent variable, for all regressions, is cross-border banking claims.
Standard errors in parenthesis: * p < 0.10, ** p < 0.05, *** p < 0.01.
Autocorrelation and heteroscedasticity have been corrected.

8.5. Robustness tests of the third estimation with Static Feasible Generalized Least Squares model

	(1) DlIBCLAIMS	(2) DlIBCLAIMS	(3) DlIBCLAIMS	(4) DlIBCLAIMS	(1) DlIBCLAIMS	(2) DlIBCLAIMS	(3) DlIBCLAIMS	(4) DlIBCLAIMS
	Investment Grade countries				***Speculative Grade countries***			
DlGDP_CEC	0.822***	0.815***	0.728***	0.651***	0.529***	0.520***	0.609***	0.750***
	(0.115)	(0.129)	(0.118)	(0.103)	(0.197)	(0.188)	(0.173)	(0.176)
DlGDP_CDC	-0.266	-0.236	-0.115	0.328*	-0.0491	-0.169	0.0789	-0.320
	(0.171)	(0.205)	(0.166)	(0.170)	(0.332)	(0.226)	(0.248)	(0.329)
DIFF_IR	-0.195	-0.111			0.134	-0.489		
	(0.152)	(0.164)			(0.278)	(0.369)		
lSP500	-0.180***	-0.176***	-0.189***		-0.187**	-0.259***	-0.288***	
	(0.0440)	(0.0522)	(0.0457)		(0.0891)	(0.0566)	(0.0512)	
lRWA_EAD		**-0.00696**	**-0.00736**	**0.00962**		**-0.130*** **	**-0.103*** **	**-0.0843** **
		(0.0171)	(0.0150)	(0.0105)		(0.0438)	(0.0331)	(0.0371)
lVIX				-0.0107				-0.0564
				(0.0305)				(0.0538)
DlTRADOPEN				-0.631***				-0.000410
				(0.103)				(0.203)
Constant	1.329***	1.284***	1.359***	0.0576	1.339**	1.839***	2.046***	0.160
	(0.317)	(0.378)	(0.326)	(0.0963)	(0.642)	(0.408)	(0.371)	(0.161)
					.			
Observations	152	137	179	179	87	86	100	99
chi squared	87.77	71.06	63.89	111.7	15.74	43.98	66.48	27.34

Notes: Dependent variable, for all regressions, is cross-border banking claims. Standard errors in parenthesis: * p < 0.10, ** p < 0.05, *** p < 0.01. Autocorrelation and heteroscedasticity have been corrected

8.6. Robustness tests of the third estimation with Dynamic Feasible Generalized Least Squares model

	(1) DlIBCLAIMS	(2) DlIBCLAIMS	(3) DlIBCLAIMS	(4) DlIBCLAIMS	(1) DlIBCLAIMS	(2) DlIBCLAIMS	(3) DlIBCLAIMS	(4) DlIBCLAIMS
	Investment Grade countries				***Speculative Grade countries***			
L.DlIBCLAIMS	0.0883*	0.104*	0.0967*	0.111**	0.247**	0.217**	0.195**	0.247***
	(0.0525)	(0.0548)	(0.0500)	(0.0504)	(0.0969)	(0.0909)	(0.0834)	(0.0949)
DlGDP_CEC	0.849***	0.839***	0.721***	0.655***	0.443**	0.543**	0.598***	0.802***
	(0.110)	(0.120)	(0.116)	(0.109)	(0.221)	(0.213)	(0.190)	(0.199)
DlGDP_CDC	-0.461***	-0.493**	-0.208	0.384**	0.548	0.147	0.256	-0.0649
	(0.176)	(0.204)	(0.172)	(0.179)	(0.344)	(0.337)	(0.315)	(0.363)
DIFF_IR	-0.195	-0.125			0.360	-0.224		
	(0.126)	(0.139)			(0.238)	(0.350)		
lSP500	-0.136***	-0.121**	-0.157***		-0.301***	-0.279***	-0.281***	
	(0.0456)	(0.0537)	(0.0492)		(0.0927)	(0.0983)	(0.0909)	
lRWA_EAD		**-0.0183**	**-0.0123**	**-0.00449**		**-0.139*** **	**-0.142*** **	**-0.135*** **
		(0.0184)	(0.0156)	(0.0126)		(0.0484)	(0.0397)	(0.0429)
lVIX				-0.0748**				-0.106
				(0.0306)				(0.0677)
DlTRADOPEN				-0.636***				-0.0226
				(0.127)				(0.224)
Constant	1.002***	0.856**	1.112***	0.211**	2.129***	1.950***	1.963***	0.264
	(0.329)	(0.388)	(0.351)	(0.0870)	(0.671)	(0.707)	(0.653)	(0.201)
Observations	137	122	162	162	79	78	89	88
chi squared	92.82	73.30	61.45	141.5	45.89	46.13	53.13	47.57

Notes: Dependent variable, for all regressions, is cross-border banking claims. Standard errors in parenthesis: * p < 0.10, ** p < 0.05, *** p < 0.01. Autocorrelation and heteroscedasticity have been corrected.