Sub-regional Financial Cooperation to Social Policy Deploying: The Case of CAF in Bolivia

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Abstract: The recent economic crisis had a negative impact on economic growth that countries in Latin America had been experiencing since the beginning of the decade, especially in 2009. Considering the financial constraints they have faced in international markets right after the outbreak, due to rising uncertainties in international markets. Of course, the social impacts of this economic crisis should be expected. In such situations, however, the literature previews that regional financial mechanisms could play an important role concerning to financing social undertakings, especially to countries with little relevance on international markets. In this sense, there is a key task carried out by sub-regional development banks supporting the diffusion and implementation of social policies. Last year, for example, CAF (*Corporación Andina de Fomento*), the greatest sub-regional bank in Latin America, destined something around 12% of its total loan portfolio, or 1,970 million US dollars, to projects addressing education, social services and health (CAF, 2012).

Within this framework, the main aim of this paper is to provide a better understanding of the role that CAF plays in social policy financing. In order to achieve this, we, firstly, test the hypothesis that CAF had a significant impact on growth rates in Bolivia, the poorest country in Latin America in terms of per capita income. Through panel analysis, it will be possible to infer whether being a member of CAF cushioned the negative effect of the economic crisis in 2008. Then, we show how this is linked to social policy financing. With the results it will be possible to know to what extent, and through what mechanisms, have financial regional initiatives, like CAF, been efficient in supporting social policy in Latin America.

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1. Introduction

Since the stock exchange market crash of New York in 1929 and the fall of the Berlin wall, probably no historical phenomenon had and continues to have economic and social repercussions as pervasive as the financial crisis that erupted in the United States in 2008. It has been already five years after from the bankruptcy of Lehman Brothers, the symbol of the collapse of the crisis, and the global economy still struggles to recover.

More recently, the euro zone has become the main epicenter of the crisis where several economies are in a deep recession and governments are under pressure to reconcile growth with the reduction of fiscal deficits and debt burdens. However, crisis impacts were not only circumscribed to developed regions, they also spread worldwide. For instance, emerging economies, including those in Latin America, were also affected by the hecatomb, despite the fact many were facing a completely different economic scenario at the domestic level compared to previous international turbulences (Argentina's 2001 crisis, Russia 1998 crisis, etc).

The recent economic crisis had a negative impact on economic growth in 2008 and 2009, interfering on the growing process that Latin America States had been experiencing since 2003, as shown in Graph 1. As a matter of fact, considering the financial constraints they have faced due to rising uncertainties on international markets, if counter-cyclical instruments were not carried out soon, financing and funding capacity, especially in States with restricted means, could be further affected. However, although negative financial crisis impacts were pervasive, they remained mainly concentrated in 2009. This because, in addition to the American Federal Reserve response with loosen monetary policy, Latin American States were able to implement countercyclical policies, heating domestic markets. Besides, as it is going to be discussed in section 2, even if commodity prices fell during crisis peak, in 2010 they started to rise again. Finally, the role of multilateral organizations as CAF was significant in order to sustain economic growth and, consequently, it helped to sustain social investments, especially in poor countries.

As it will be presented in section 3, literature previews regional financial mechanisms playing an important role in social and infrastructure projects, especially to countries with trivial relevance on international markets and during financial turbulences (GRIFFITH-JONES *et al.*, 2008; OCAMPO, 2006).

In this sense, there is an important role carried out by sub-regional development banks supporting the diffusion and implementation of social policies, especially with the provision of financing and technical support. Amid others[5], the *Corporación Andina de Fomento (Andean Development Corporation)* – CAF[6] emerges as an important yardstick.

The choice of this institution for this research comes from the fact that it is the most dynamic of all sub-regional development banks operating in Latin America, and in recent years its loans to the Andean countries have actually surpassed joint lending to these States by the IDB and the World Bank (OCAMPO: 2006, p.15). Its membership has also gradually increased to near that of a regional development bank. This institution is, indeed, the best example of risk pooling in the developing world: it holds investment-grade status, regardless of the fact that none of the Andean countries does. Also, it plays a significant role in social arena. In 2012, for instance, education, social services and health projects totaled 1,970 million US dollars, accounting for approximately 12% of CAF's total loan portfolio (CAF, 2012). In addition, the low loan losses experienced by the CAF, despite the troubled macroeconomic history of most of its members, also demonstrate the strong preferred-creditor status of this institution with its members, as it is going to be developed in section 3.

Within this framework, the main aim of this paper is to provide a better understanding of the role that CAF plays in the area of social policy. In order to achieve this purpose, we firstly test the hypothesis that CAF had a significant impact on economic growth rates in Bolivia, the poorest country in South America in terms of per capita income. Through panel analysis, it will be possible to infer whether being a member of CAF cushioned the negative effect of the economic crisis in 2008. Then, we explain for what extent this is important to social policy financing.

The paper is divided in five sections, including this Introduction. The next section examines an outlook for some Latin American economies, focusing, firstly on macroeconomic issues, assessing potential impacts of recent financial crisis for the region in the short run. Specifically, it highlights the mechanisms that connect

[5]Besides CAF, other regional development banks that operate in Latin America are the Inter-American Development Bank (IDB), the Central American Bank for Economic Integration (CABEI) and the Caribbean Development Bank (CDB).

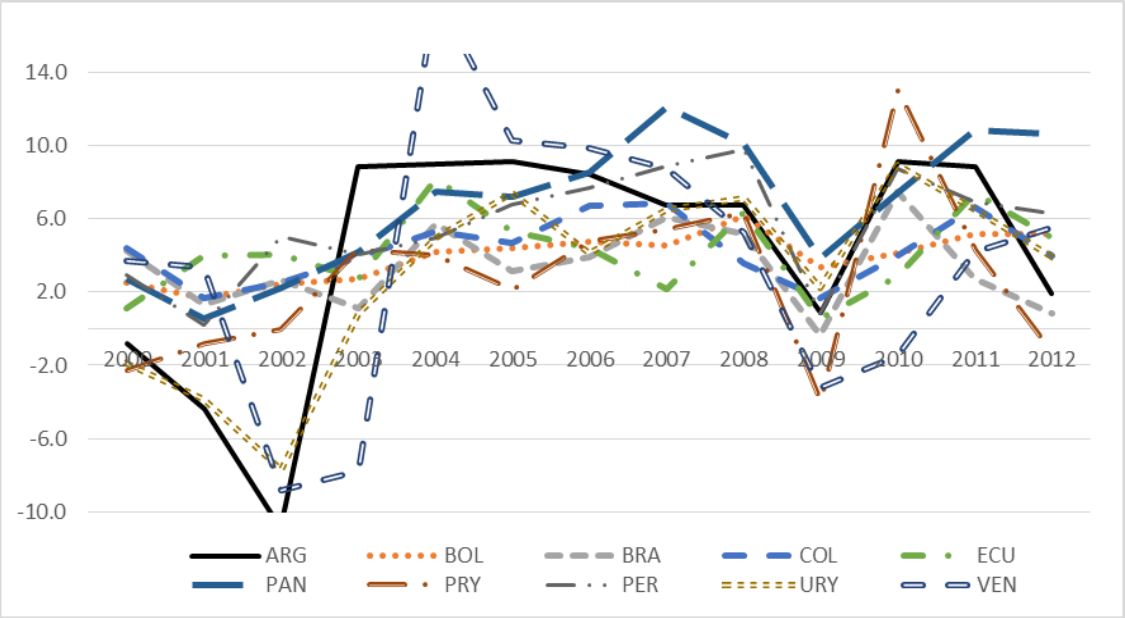
[6] Among all countries, Argentina, Bolivia, Brazil, Colombia, Ecuador, Panama, Peru, Uruguay and Vezenuela are full members of CAF while Chile, Costa Rica, Dominican Republic, Jamaica, Mexico, Portugal, Spain and Trindad and Tobago are associate shareholders.

international financial crisis to social policy financing. The following section addresses the literature concerning the role played by sub-regional development banks and their importance to socioeconomic development of Nation-States. In the fourth section, we will present the data and the methodology used to capture CAF´s effect on Bolivia economic performance. Lastly, we present the results and final considerations, making it possible to infer to what extent, and through what mechanisms, have financial regional initiatives, like CAF, been efficient in supporting social policy financing in Bolivia.

2. The 2008 Crisis Impacts to Latin America: From Financial to Social Policy Issues

It is possible to merge into the impacts of financial crisis in Latin America through two different perspectives: looking at macroeconomic or social indicators. Two pieces of macroeconomic data illustrate the Latin America´s conjuncture: gross domestic product growth rates (GDP growth) and financial flows[7].

Graph 1. GDP real growth rates (annual %) – selected countries



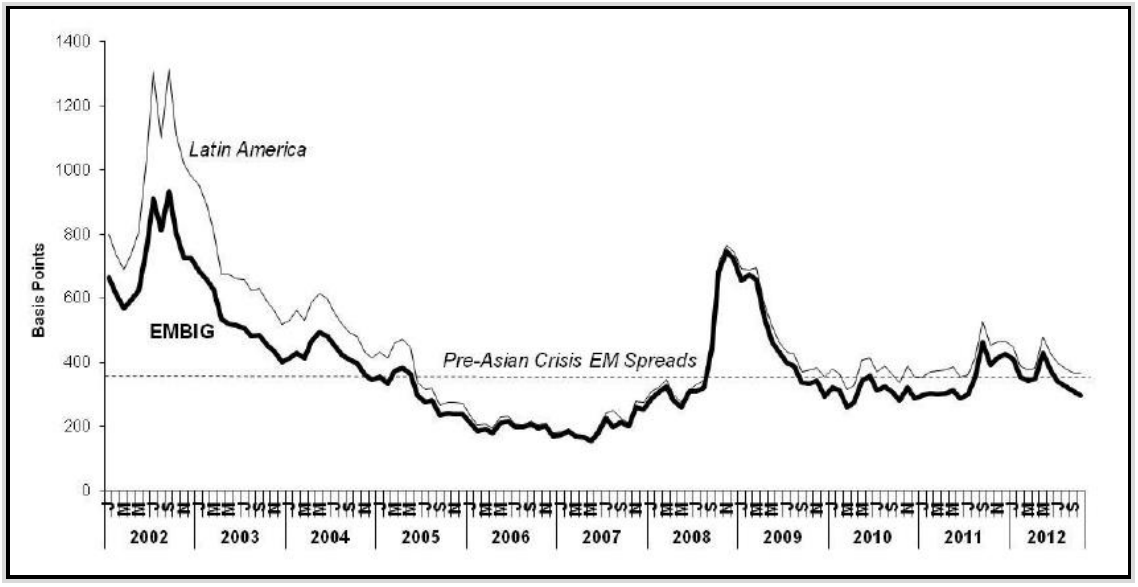
Source: Elaborated by the authors from *World Bank* Database (2013)

Graph 1 illustrates how uncertainties soon spread all over the markets, negatively affecting GDP growth of all selected countries[8] in 2009. The haziness in international

[7] Financial flows are defined as Capital Flows minus Foreign Direct Investment and Capital Flows are defined as Capital Account Balance plus Errors and Omissions. (IDB, 2013).
[8] The selected countries are all the full members referred in footnote 6.

markets resulted in a certain degree of financial volatility associated with heightened perceived risk, as Graphs 2 and 3 indicate. The evident smaller financial inflows to region during 2008-2009 shown at Graph 3, elucidates markets insecurity, corroborating the importance of constant financing and funding availability through multilateral development banks performance.

Graph 2.EMBIG Spreads and Latin American Component



Source: ECLAC (2013A, p. 12), based on J.P. Morgan´s "Emergent Market Bond Index (EMBI+)[9]"

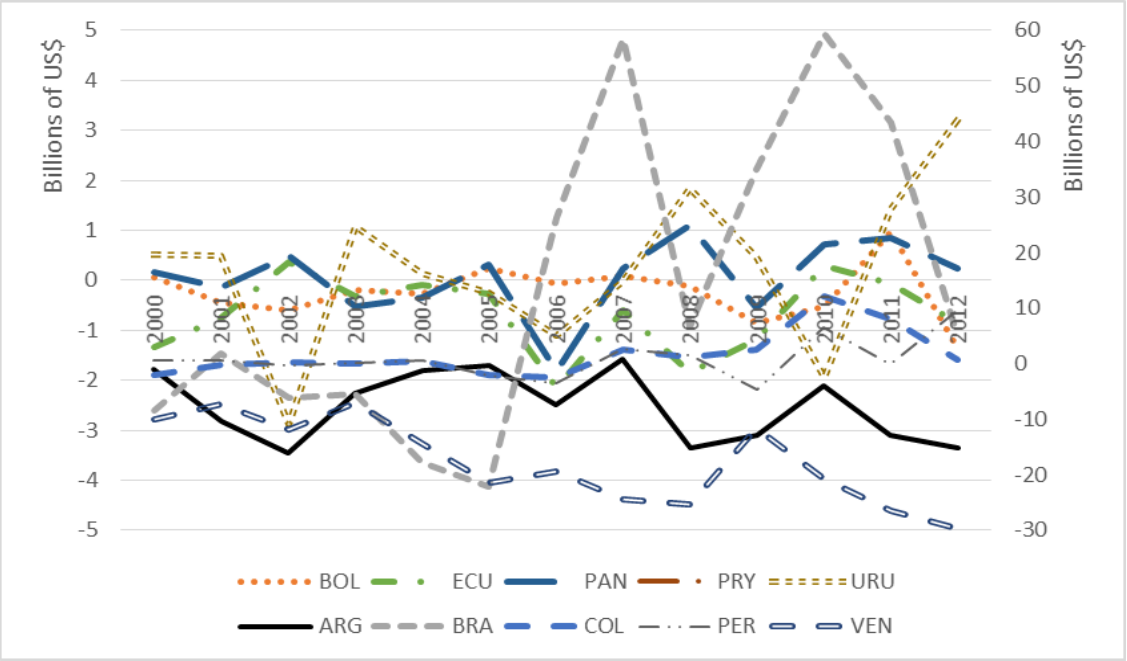
Nevertheless, this scenario has not hampered the region's access to international capital markets for long, as it happened in previous international crisis, like financial crisis in the 1980´s or the Asian crisis by the end of 1990. However, the shrink in financial flows and the rising risk in 2008-2009 were considerable, affecting the amount of inflows from capital markets. Graph 3 shows that the sharp decline in financial flows after the outbreak of the 2008-2009 global crisis was followed by a gradual rise beginning in 2010.

According to ECLAC[10] (2012) and shown in Graph 2, current risk levels are substantially below those at the peak of the global crisis, although they are higher than

[9] J.P. Morgan Emerging Markets Bond Index Plus is a market capitalization-weighted index based on bonds in emerging markets. The EMBI series covers all of the external currency denomination debt of the emerging markets. It consists in an index number measuring the rate of return (of the securities that are part of the hypothetical portfolio mentioned above) since the inception of the portfolio. For the majority of the portfolios in the EMBI+, the basis (an index number equal to 100) is December, 1993, when calculation of the EMBI+ began. The country risk, as described, is the spread of this country's hypothetical portfolio return over U.S. Treasuries, also released with the EMBI+ index (BCB, 2005).

pre-crisis levels. In this environment, Latin America has been recovering its access to the international financial markets and, with some exceptions, financial flows are coming back to the region, after 2008-2009 valley.

Graph 3. Financial Flows in Billions of US Dollars



Source: Elaborated by the authors from *Inter-American Development Bank (IDB)* Database (2013). Obs: There were not available observations for Paraguay. Data for Argentina, Brazil, Chile, Colombia. Peru and Venezuela is plot by the axis on the right.

However, although GDP growth and financial flows are the main variables by which economic crises affect social policy, it is important to understand that, besides global financial issues, 2008 crisis also influenced Latin America conditions for socioeconomic improvement by, at least, three more aspects. Firstly, the decrease of international demand, considering China´s slowdown and European Union and USA recessions. Secondly, the impact on commodities prices, culminating in Latin American countries' external accounts imbalances. Lastly, dollar depreciation due to American loose monetary policy.

Concerning the first aspect, world trade decelerated sharply in 2008-2009, mainly owing to declining import demand in Europe, as many countries in the region entered into recession, and weak aggregate demand in the United States and Japan (WTO, 2013). Latin American States have seen demand for their exports weaken as a result.

[10] ECLAC - Economic Commission for Latin America and the Caribbean.

The second facet is related to the unfavorable international economic environment, which is triggering sudden slowdowns in China, and affects Latin America countries through commodity prices. When commodity price indexes fall, worsening the terms of trade, most external accounts run imbalances, especially Latin American countries most dependent on minerals, metals and energy exports, like Bolivia[11]. Therefore, although international commodity prices are currently facing a consistent recovering and are well above the levels posted before 2003, when they began their steady climb, from 2008-2009 most important commodity indexes fell about 50%[12].

Add to the downtick in commodity prices, the third important element is sudden dollar appreciation (overshooting) followed by relatively depreciation. Right after 2008 crisis, dollar exchange rates increased about 30% in average, falling back to pre-crisis baselines by the end of 2009. Dollar exchange rates affect Latin American economies in ambiguous ways. By one hand, when dollar is appreciated in relation to local currencies, Latin American exports become cheaper, although international borrowing is more expensive. By other hand, when local currencies are appreciated in relation to dollar, Latin American exports become more expensive, while borrowing becomes cheaper.

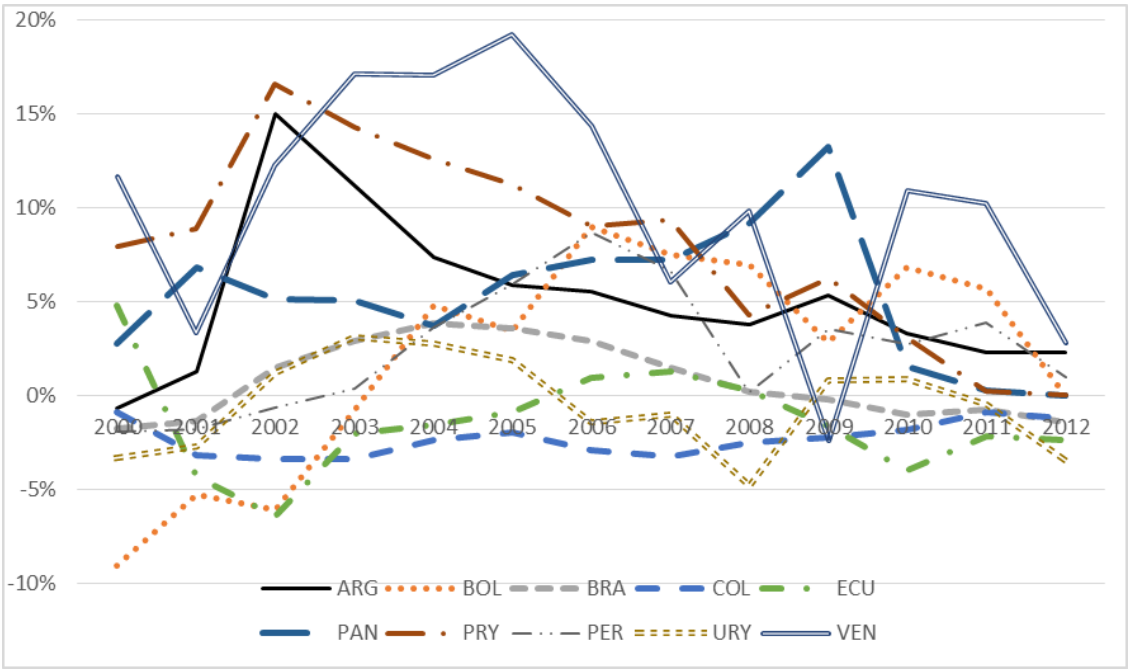
Therefore, although the effects of American loose monetary policy answering financial crisis started to appreciate local currencies, right after the outbreak of financial crisis, Latin American exchange rates overshot. Consequently, international borrowing became costly whilst the positive effect in exports did not turn up soon as international demand was contracted (ECLAC, 2013b).

All those three factors together: the lower post-crisis demand in the industrialized countries, plus a decrease in commodity prices combined with local currencies appreciation, helped to push net exports growth down, along 2008-2009, at almost all Latin American countries analyzed, as corroborated by Graph 4.

[11]Information from Bolívia *Instituto Nacional de Estadística*. Available at: http://www.ine.gob.bo/. Accessed on 26th September, 2013.

[12]Information on commodity prices was obtained at International Monetary Fund (IMF). Available at: http://www.imf.org/external/np/res/commod/index.aspx. Accessed on 1st October 2013.

Graph 4. Foreign Trade measured as Net exports as % of GDP – selected countries



Source: Elaborated by the authors from *World Bank* Database (2013).

However, all economic indicators sign a relatively rapid recovering from the crisis effects and in 2010 Latin American States were already performing reasonable growth rates. Therefore, major social impacts have not emerged from that crisis as it happened before during Argentine crisis, in 2001 (ECLAC, 2013c). Considering this framework, the question to be answered is: what could explain this?

Here, we can enumerate four variables, which were already briefly mentioned in the Introduction. The first is related to American economic policy: as soon as risk started to spread through international financial markets, the United States monetary authority, the Federal Reserve, adopted a loose monetary policy, injecting liquidity and buying risky bonds from the markets. The second one refers to the recovering of commodity prices by 2010 is also important, once it favors Latin American States' external accounts. Thirdly, there are the domestic counter-cyclical monetary and fiscal instruments, which helped to heat national markets in order to sustain the demand and employment rates. Overall, Latin America States had space for implementing counter cyclical policies enabling them to face temporary external shocks originated in the industrialized economies. Nevertheless, a prolonged global economic slowdown, could limit the scope of those counter cyclical policy measures. Lastly, we highlight the role performed by multilateral development institutions, as CAF.

Besides providing financial resources even in the midst of financial bluster, those institutions also fulfill a significant gap in social development. According to Massa (2011, p.3), there are, at least, seven dimensions through which socioeconomic progress is promoted by multilateral development banks: i) financial performance;(ii) economic performance (*e.g.* job creation, capacity building, technology transfer, demonstration effects, etc.); (iii) social performance (*e.g.* local community participation to projects, creation of schools and hospitals, etc.); (iv) environmental performance (*e.g.* environmental management, health and safety standards, etc.); (v) governance (*e.g.* accountability, transparency, etc.); (vi) contribution to the investment facility strategy ('special value added'); and (vii) contribution to the millennium development goals (MDGS) (*e.g.* projects in the water sector, etc.).

Analyzing only Bolivia social and environmental disbursements from CAF[13] during the period of 2000-2012, for example, it becomes visible how CAF had a key role during the crisis peak, in 2008-2009, comparing this amount with total public social investments in Bolivia. Table 1 more generally and Graph 5 more explicitly show how Bolivia social disbursements from CAF are significant. For instance, it responded by approximately 25% of La Paz public investments on social sector in 2008, during the eroding of financial crisis.

Table 1. Selected variables for Bolivia (in current millions of US$)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bolivia GDP	8398	8142	7905	8082	8773	9549	11452	13120	16674	17340	19650	23949	27035
Public Social Invest.[14]	285	295	251	187	221	194	263	284	427	475	472	566	NA
Caf Social Dis.[15]	2.1	0	0	18	26	2.8	7.6	35.5	120	36.9	74.9	76.3	98.0

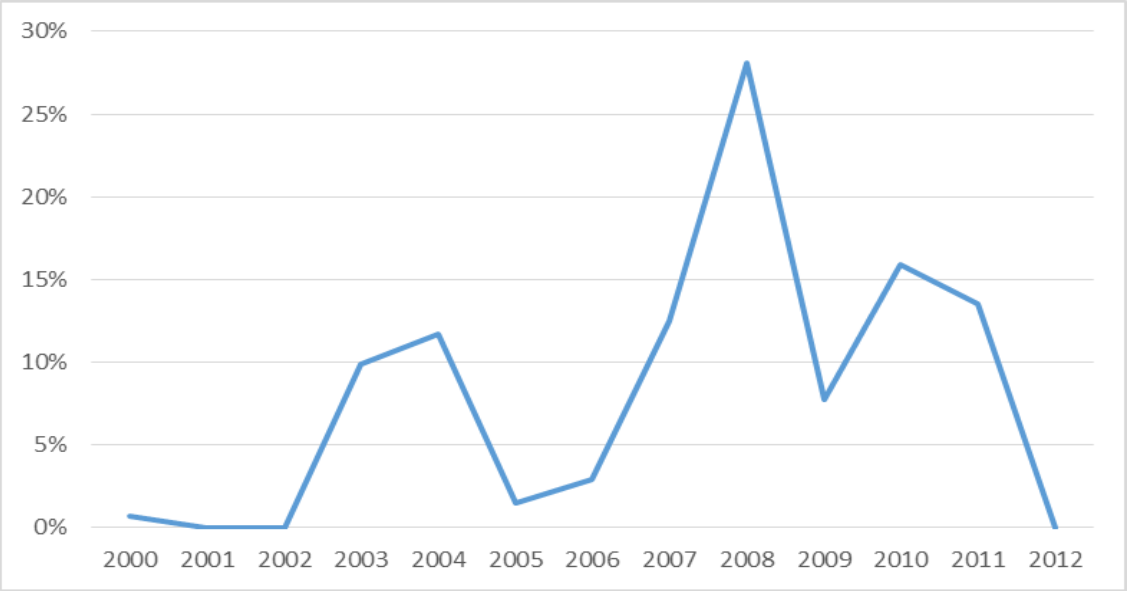
Source: Elaborated by the authors from World Bank and databases described bellow.

[13]Examining all the clients of the approved projects described in CAF annual reviews, all Bolivia social and environmental disbursements from CAF go to the State of Bolivia. Available at: http://publicaciones.caf.com/corporativo?page=0. Accessed on September, 26th2013.

[14]Public investments on social sector collected from UDAPE (*Unidad de Análisis de Políticas Sociales y Económicas*). Estado Plurinacional de Bolivia. Available at: http://www.udape.gob.bo/index.php?option=com_wrapper&view=wrapper&Itemid=38 Accessed on October, 15th 2013.

[15]Bolivia disbursements from CAF in social and environmental development sectors collected from CAF annual reviews. Available at: http://publicaciones.caf.com/corporativo?page=0 Accessed on August, 19th 2013.

Graph 5. Bolivia Social disbursements from CAF/Public Investments on Social Sector in Bolivia (in %)



Source: Elaborated by the authors from data described in Table 1.

Especially in Bolivia, the vulnerabilities arising from the concentration of exports in a few primary goods can represent a fragility for its fiscal sector in the event of decreasing commodities prices. If one focus on 2008-2009 numbers, when the crisis impacts were sharp, data presented above indicates how significant CAF´s operation is in order to sustain this country social investments rates.

For that reason, regional and sub-regional financial institutions acquire importance, once they are able to provide financing, while international markets would not. Therefore, regional and sub-regional development banks may assist countries, performing an anti-cyclical role. In order to provide a better understanding on the functioning of those institutions, the next section will present the origins, the reasons of creation and the roles of regional and sub-regional development banks.

3. Regional financial cooperation and regional development banks – when, why and how?

Since the end of the World War II, the State assumed an important role on projects financing and funding through the emergence of development banks. However, with the increasing financial liberalization, since the 1970´s, the importance of those instruments declined in face of the great financing possibilities by international flows. In this scenario, many development institutions lost their importance and, in some countries, they disappeared. Nonetheless, after several crises that negatively influenced

financial inflows, especially in direction to emerging economies, public financial institutions returned to have its existence recognized (CINTRA, 2007).

The role of the State in financing is justified by several arguments. A first one backs the existence of market failures and negative externalities. In this case, public intervention is explained by the need to ensure the safety and soundness of the financial system, considering the fragility resulting from a process inherent to the banking business: the maturity mismatch. Besides this factor of instability, high leveraging, a typical characteristic of the banking sector, would also generate negative externalities, which could be avoided by intervention and regulation, in order to preserve markets' strength and confidence (STIGLITZ, 1994).

The second argument is based on the need to minimize market imperfections arising from asymmetric and costly information, both in this relationship credit supplier/applicant, resulting in credit rationing, as it happens in transactions between depositors and borrowers (STIGLITZ & WEISS, 1981).

Another argument concerns the possibility of non-profitably, socially relevant, project financing. Public intervention has also important because of its countercyclical role, so that, in cases of crisis, it serves as a policy tool to balance the markets. In addition, it may stimulate competitiveness; hindering the formation of trusts and making banking services become more accessible to lower income strata.

Therefore, in face of the need for public financing at the national level, it is possible to identify the importance of multilateral funding mechanisms at the international echelon. Prates (2002) highlights the failures in the international supply of credit to certain sectors and regions, resulting from the volatility of capital flows and the scarcity of resources, particularly in developing countries. Thus, especially the smaller States, few alternatives are presented to meet the demand for international capital, since they cannot submit their own economies at the mercy of international flows.

In this context, multilateral development institutions acquire an important role, as they have the ability to provide financing conditions relatively more stable and with less cyclical variation. Corroborating the national effort to encourage development, multilateral institutions, composed of more than one country shareholder, arise with the aim of filling the existing gap between demand and supply of finance. Moreover, once the insertion of developing countries in international financial structure is asymmetric, access to private financial markets can become limited and costly (BIANCARELI,

2008). Consequently, the significance of those mechanisms increase, especially when there is reversal of the liquidity cycle, which is exactly the case of the recent crisis of 2008.

Thus, funding initiatives acting on sub-regional, regional or even global levels have an important role. According to the UNCTAD[16] report (2007), the proposal to create institutions to foster multilateral cooperation is not new. In the post World War II, the role of multilateral institutions spread in three spheres of globalization: trade liberalization, with the creation of the GATT[17], the provision of funding for crises in the balance of payments, with the creation of the IMF[18], and the financing long-term projects, with the creation of the World Bank.

Afterwards, many institutions with regional operations were established during the Cold War. Ocampo (2006) emphasizes the creation of several organizations: the Inter-American Development Bank (IDB), in 1959; the Asian Development Bank (ADB), in 1966; the African Development Bank (AfDB), in 1963; the *Corporación Andina de Fomento*, in 1968, and the European Investment Bank (EIB), in 1958. All of them created as a way of providing support to backward regions, contributing to a process of integration and equitable financing investment in regional development and infrastructure integration.

More recently, we highlight financial cooperation initiatives in various regional blocks such as swap agreements, reserve funds, exchange coordination mechanisms, institutions of regional supervision, payment arrangements, expansion or creation of sub-regional development banks and securities markets. According to UNCTAD (2007), those instruments are classified into three fronts. The first encompasses the mechanisms of regional cooperation for facilitation payments and short-term financing; the second deals with the initiatives of regional cooperation for development finance; and the last, the exchange rate arrangements and monetary unions[19].

The first two types represent a large part of financial cooperation initiatives in the sphere of Latin America. Among all experiences in the region of short-term finance, there are: FLAR (Latin American Reserve Fund), CCR (Reciprocal Payment and Credit Agreement) and, running between Brazil and Argentina, the SML (Payment System in

[16] United Nations Conference on Trade and Development.
[17] General Agreement on Trade and Tariffs.
[18] International Monetary Fund.
[19] According to Biancareli (2008), although this is the final stage of an integration process, there is no need to develop short-term mechanisms in order to build long-term instruments.

Local Currency). In the second group of initiatives, the focus is on regional and sub-regional development banks and regional securities markets, which may become a stable source of funding for companies, banks and public entities in the region. Fit up here initiatives like FOCEM (Fund for Structural Convergence and Institutional Strengthening of MERCOSUR), CAF and the FONPLATA (Financial Fund for the Development of the River Plate Basin).

Regional and sub-regional development banks (RDBs; SRDBs) are part of the group of multilateral banks, providing shareholder countries better loan terms than market, technical assistance and other complementary services. The purpose of their existence is to mobilize resources from private capital markets and official sources to lend at better conditions than markets, offering technical assistance and advising.

The reasoning of RDBs undergoes various spheres. To Ocampo (2006), only the geographical issue would be enough for the RDBs and SRDBs institutions be preferred *vis-à-vis* global ones, especially from the smaller economies point of view, as they would have easy access to such sources. At least in theory, smaller countries could enjoy greater support granted by institutions with less geographic coverage. Therefore, at the regional level, those institutions would play a complementary job to global development banks, *e.g.* World Bank.

Above and beyond complementarity, the creation or strengthening of those mechanisms is positive to endorse competition among global, regional and sub-regional institutions so that countries with difficult access to resources in the international market have more opportunities for funding. Still, there are, at least, three more reasons for the establishment and strengthening of institutions for regional operations.

Firstly, the relatively low performance of global institutions would have caused gaps in the international financial architecture that were filled by action of RDBs and SRDBs. For Griffith-Jones et *al*. (2008), market imperfections would also be starting points to justify the emergence of this institutional arrangement. According to the authors, these organizations would act granting detailed assessments of applicants and credit monitoring member countries more closely, so that borrowing costs could fall, due to an increase at members' credibility.

Secondly, the expansion of regional initiatives would be supported by the failures in crisis management by institutions with greater scope and in the slow process of multilateral negotiations. Additionally, the existence of externalities not priced by

markets, would prevent the approval of loans to projects that even with high social gains, do not yield financial profits. Thus, RDBs and SRDBs would operate providing social assessments of proposed investments, coordinating relations between the various actors involved and offering subsidized loans where the social returns were higher than the private ones.

Finally, there is the argument of the sense of belonging, which points to the structural advantage of regional institutions in face of global ones, by a preferred creditor status. Consequently, SRDBs are in even better position against RDBs, so that their operations have considerably increased. In the case of Latin America, for example, while CAF has gotten prominence by conferring all shareholders a relatively higher voicing power, the IDB has implemented a structure similar to the World Bank, where major economies have kept the majority of the voting power and the smaller, relatively negligible power (TITELMAN, 2010).

From Sagasti & Prada (2006) and Griffith-Jones *et al*. (2008) it is possible to point out the main functions of a development bank with regional operations, analyzed under a more institutional perspective: (1) mobilizing financial resources through ordinary loans to countries where with low credibility and high costs, or where access to private funds is prohibitive; (2) creating institutional development and transmission of knowledge, through technical assistance and dissemination of best practices; (3) promoting the production of regional public goods; (4) acting on countercyclical fluctuations in private capital markets; (5) providing new lines of funding and, finally, (6) mobilizing concessional lending to low-income countries.

It is noteworthy that, in addition to providing financial support and economic development, RDBs and SRDBs may finance projects with high social returns, not necessarily with great financial earnings. In this case, the European Investment Bank (EIB) would be an ideal example. The purpose of its creation would follow the policies of European integration to foster economically backward regions and promote infrastructure projects considered as regional public goods.

Therefore, these banks are able to operate in basically three niches of activity: (i) profitable projects, such as financing infrastructure, (ii) high externality projects, with strong systemic and social gains and (iii) projects grants (transfers), with unprofitable operations that should drive development.

Another element of RDBs is the importance granted to the States. According to

Medeiros (2008), cooperation mechanisms, applied at the regional level, can promote considerable reduction of external vulnerability, and greater regional economic stability, increasing the level of policy space and sovereignty of the countries. These instruments could secure funding, even when access to the international capital markets is costly, unreliable or non-existent. Regional funds reservation and reciprocal credit agreements between central banks are examples of this type of cooperation, which act to strengthen liquidity assistance, mitigate external impacts and promote intraregional trade.

For all those reasons, it is possible to imply that CAF has had a significantly role during the 2008 financial crisis. Since the 1970s, the bank performs a distinct role, operating in technical and financial support for studies, projects, programs and initiatives to promote socioeconomic development and physical integration of the Latin America region. The institution was created before the strengthening of 1990s open regionalism, when the support of such initiatives fell with the spread of the argument that foreign direct investment and international loans would be enough to encourage investment and technological progress in countries.

By the beginning, its operations were limited to the Andean region. Over the years, it started to expand, and today CAF provides significant funding lines in the entire Latin America. The amount of its subscribed capital in 2012 was $ 6.9 billion US dollars, with $ 3.6 billion US dollars effectively fully paid (paid in capital)[20]. The credit portfolio jumped from $ 8.2 billion in 2006 to $ 16.5 billion at the end of 2012, an increase of over 100% in 6 years, which indicates the increased importance of the institution for the region recent period (CAF, 2012)[21].

Therefore, as sub-regional development banks may perform a greater countercyclical role to small economies, we test the hypothesis that CAF played a differential in sustaining social projects financing in Bolivia. The estimated model and data used are presented next section.

[20] CAF Annual Report 2012, p. 188. Available at: http://publicaciones.caf.com/media/29749/annualreportcaf2012.pdf. Accessed on 15th September.
[21] *Op. cit.*, p. 31.

3. Data and Methodology

To analyze our research question we employ both dynamic and static panel data techniques, which offers a series of advantages over cross-section analyzes as it allows the increase of estimation accuracy and controlling for unobserved heterogeneity (HSIAO, 2003; CAMERON AND TRAVEDI, 2005).

It will be carried out three different estimates to check the effect of the variables of interest using static panel techniques. First, we estimate using a *pooled regression model* (POLS)[22]. Then we use the *random effects model* (RE)[23]and finally the *fixed effects model* (FE), which allows consistent estimation of the coefficients of interest even in the presence of unobservable idiosyncratic heterogeneity correlated with other regressors. The *fixed effects model* considers different intercepts for individuals, assuming that the inclinations and variance are constant. The unobservable idiosyncratic heterogeneity, αi, is no longer dealt as a random variable but as a parameter to be estimated. Therefore, unlike random effects, fixed effects model allows consistent estimation even in the presence of *ci* correlated with the regressors (WOOLDRIDGE, 2002). Then, we will check which model is the most suitable for our data, maximizing efficiency and the consistency of the coefficients[24].

The sample analyzed covers 10 Latin American countries[25] between 2000 and 2012. The dataset is strongly balanced and it includes eight economic variables and one temporal controls of the economic crisis. The data were collected from the IDB and World Bank databases or compiled from the Annual Reviews of CAF. The countries from the sample are the members of CAF with the most available data from CAF annual reviews and were considered in the model in order to control the effects of CAF in

[22] In the basic POLS model, the estimator considers all the information as cross-section units, ignoring the temporal aspect of the data. Despite the method being frequently used, an immanent problem is related to the validity of the hypotheses that there is no important information about the idiosyncratic heterogeneity and that they are not correlated with any explanatory variables.

[23]The random effects model deals with the unobservable idiosyncratic heterogeneity (*ci*) as a random variable that is distributed regardless of the regressors. The *ci* becomes part of the error and, therefore, cannot be correlated with any regressor in any period.

[24]We shall carry out two tests to elucidate the consistent estimators and, among those, which one is the most efficient. If there is unobserved idiosyncratic heterogeneity that is not correlated with any regressor, the fixed and random effects estimators are consistent, the latter being more efficient. If the heterogeneity is correlated with a regressor, the former is the unique that is consistent. In this fashion, we use the Breusch-Pagan Test to check the presence of idiosyncratic heterogeneity by analyzing the existence of self-correlation on the unobservable heterogeneity and the Hausman Test to check the correlation between the idiosyncratic heterogeneity and the regressors.

[25] The countries are: Argentina, Bolivia, Brazil, Colombia, Ecuador, Panama, Paraguai, Peru, Uruguay and Venezuela.

Bolivia. All the definitions and descriptive statistics of each variable included in the model are provided in Tables 2 and 3, respectively.

The basic equation to be estimated can be summarized as follows:

$$\boldsymbol{gdpgrowth_{it} = \alpha + c_i + \beta_1\, crisis\text{-}caf\text{-}bol_{it} + \beta_2\, crisis\text{-}caf_{it} + \beta_3\, caf\text{-}GDP_{it} + \beta_4\, control\ variables_{it} + \lambda crisis_t + \varepsilon_{it};} \quad \textbf{(1)}$$

$$E(\boldsymbol{\varepsilon_{it}}/\mathbf{X_{is}}, ci) = 0; \text{ for } \forall t \neq s$$

$$\boldsymbol{\varepsilon_{it}} \sim \text{IID}\ (0, \sigma^2)$$

Where *i* refers to the country, *t* to the year, and α, *ci* and ε_{it} are, the constant, idiosyncratic heterogeneity and the error term, respectively; *crisi-caf-bol; crisi-caf* and *caf-GDP* are the independent variables of interest and *gdpgrowth* the dependent one. The *gdpgrowth* indicates the economic growth of each country each year; the *crisis* is an indicator of the years 2008 and 2009, the crisis zenith; the *caf-GDP* is the proportion of disbursement of CAF related to the GDP; the *crisis-caf* is an interaction *caf-GDP* with *crisis*; and, lastly, *crisis-caf-bol* is the CAF disbursement on the crisis year at Bolivia.

Given that some of the traditional factors that explain growth are either pre-determined, or endogenous, or both, and current period growth could depend on its values in the past, a dynamic variant of the fixed and random effects provided in Equation (1) above, known as the Arellano-Bond estimation (1991) is specified as follows:

$$\boldsymbol{gdpgrowth_{it} = \delta_1\, gdpgrowth_{it-1} + \alpha + c_i + \beta_1\, crisis\text{-}caf\text{-}bol_{it} + \beta_2\, crisis\text{-}caf_{it} + \beta_3\, caf\text{-}GDP_{it} + \beta_4\, control\ variables_{it} + \lambda\, crisis_t + \varepsilon_{it};} \quad \textbf{(2)}$$

Where $\boldsymbol{gdpgrowth_{it-1}}$ is the lagged dependent variable and the other variables are the other same independent variables of Equation 4. The term c_i represents each country fixed effects which are independently and identically distributed over the countries

while ε_{it} is a stochastic disturbance term and is also assumed to be independently distributed.

We estimate the model using the Arellano-Bond (1991) one-step Generalized Method of Moments (GMM) estimator to evaluate the joint effects of CAF disbursement on the crisis years at Bolivia and the other explanatory variables on economic growth in South American countries, while controlling for the potential bias due to the endogeneity of some of the regressors including the lagged dependent variable. This autoregressive specification is used as a parsimonious representation of policy choices and others determinants of economic growth that are outside the main model and could probably affect the estimated coefficients. By this way, using the Arellano-Bond specification increases our leverage to make stronger inferences. The one-step difference GMM has become a standard approach to estimating dynamic panel data models (DRAZEN AND ESLAVA, 2010). To improve the robustness of our findings, we estimate the same models by the system one-step GMM estimator proposed by ARELLANO AND BOVER (1995) and BLUNDELL AND BOND (1998) and fully developed by ROODMAN (2009).

Table 2. Description of the Variables

GDP	*Gross Domestic Product (GDP) – current values*
GDP_growth	*GDP growth*
Investiment	*Gross Capital formation*
Inv_ratio	*Gross Capital formation of GDP*
healthtt	*Total (private + public) expenditures with health*
healthpb	*Public expenditures with health*
cafdis	*CAF disbursements – current values*
biddis	*BID disbursements – current values*
caf_gdp	*CAF disbursements / GDP*
bid_gdp	*BID disbursements / GDP*
Crisis	*Temporal Indicator of Economic Crisis – 2008 and 2009 = 1, otherwise = 0*
crisis_caf	*Interaction between crisis and caf_gdp*
crisis_caf _bol	*Interaction between crisis and caf_gdp for Bolivia*

Source: Elaborated by the authors

Table 3. Descriptive Statistics

Continuous variables	*Mean*	*Median*	*Standard deviation*	*Min.*	*Max.*
GDP	210668	77840.19	406106.6	6325.152	2476652
GDP_growth	4.187944	4.341	4.109213	-10.894	18.287
Investiment	42797.07	15859.79	80397.4	952.2977	488550.9
Inv_ratio	20.13733	20.04267	3.982038	11.0217	30.34004
healthtt	5.928592	6.515	2.93594	0	11.25
healthpb	3.150141	3.245	1.736958	0	6.21
cafdis	517.2258	362	453.1391	4	2494
biddis	486.02	243	579.1578	36.6	2783
caf_gdp	.5392716	.2077485	.8312352	0	4.617047
bid_gdp	.5859025	.4389823	.608008	.011767	4.100983
Dummies	Frequency	0	1		
Crisis		121	22		

Source: Elaborated by the authors

5. Results and Final Considerations

In this section, we present the main results of our research design. Several versions of equation 1 are tested in order to obtain a model which yields robust results and best fits the data distribution. First we examine the impact of CAF disbursements on economic growth using all models for static panel data. Those are POLS, RE and FE models. At all models we use robust standard errors. At Table 4 we included all the variables of the model for the three different models estimations[26].

The main conclusion we can draw from the analysis of Table 4 is that, as expected, the investment ratio is an important determinant of the rate of GDP growth and that the crisis really shrunk the Latin American economies on something about 2 to 3 percentage points. On the other hand, the ratios of CAF and BID disbursement to the GDP are all insignificant on all models, so that they did not affect the GDP growth. Finally, we tested if the CAF disbursement could be an important counter cyclical financial mechanism enabling Latin American countries, and Bolivia in special, to face temporary the external shock of the financial crisis. At Bolivia and at general the results are similar, the increase of 1 percentage point of the ratio between CAF disbursement and GDP during the financial crisis increased the GDP growth of on something about

[26]To decide upon the most appropriate estimation method the *Breusch-Pagan Test* was applied at each different model specification. The result was the acceptance of the null hypothesis of the absence of serial correlation in the *compound error* ($v_{it} = c_i + \varepsilon_{it}$). Therefore, the *POLS* method is more efficient than the RE and the FE, although all three models are consistent. As expected, given the first result, the Hausman Test of the third and fourth specifications also shows that the RE and FE are consistent, being the former more efficient. Hence, all the three models are appropriate, being the POLS the most parsimonious.

1.3 to 1.8 percentage points.

Now, we turn to Table 5 which examines the impact of CAF disbursements on economic growth using models for dynamic panel data. Those are again POLS, Arellano-Bond (AB) difference GMM estimators and Blundell-Bond (BB) system GMM estimators. The main conclusion we can draw from the analysis of Table 5 is that, as expected and again, the investment ratio is an important determinant of the rate of GDP growth, also it points to the fact that the crisis indeed shrunk Latin American economies on something about 2 to 4 percentage points. Once more, the ratios of CAF and BID disbursement to the GDP are all insignificant on all models, so that they did not affect the GDP growth of Latin American economies. Finally, we tested whether CAF disbursements could be an important counter cyclical financial mechanism enabling Latin American countries, and Bolivia in special, to face temporary the external shock of the financial crisis. At Bolivia and at general the results are similar, the increase of 1 percentage point of the ratio between CAF disbursement and GDP during the financial crisis increased GDP growth of on something about 1.3 to 1.8 percentage points.

This autoregressive specifications, that are used as a parsimonious representation of policy choices and others determinants of economic growth that are outside the main model, are on all POLS and system GMM models significant and at all AB insignificant[27]. And all the effects of the other determinants of GDP growth have lower estimates on those models where the lagged GDP growth is significant[28].

In short, the model was able to capture the importance of CAF in relation to GDP growth, specifically during 2008-2009, the crisis effects' peak. Also, it demonstrated how CAF stands an even greater role serving States with little access to international capital markets, as is the case of Bolivia, particularly in periods of financial turbulence. In this sense, once financing is provided it is possible to hold planned investments on social policies. Therefore, as theory assumes, sub-regional banks have a significant role to be performed regarding to States socio-economic development.

[27]The Arellano Bond tests for autocorrelation, which has as null the hypothesis of no autocorrelation, show that we do have AR (1) process in first differences but we do not have an AR (2) process in first differences, which is more important because detects autocorrelation in levels. We have also tested higher order autocorrelation process and all tests have not rejected the null hypothesis of no autocorrelation.

[28]Both the Sargan and Hansen Tests of exogeneity of instruments do no reject the null hypothesis that the instruments are uncorrelated with the error term on all our specifications.

Table 4. Static Panel Models for GDP growth

	(POLS)	(RE)	(FE)	(POLS)	(RE)	(FE)	(POLS)	(RE)	(FE)	(POLS)	(RE)	(FE)
Inv_ratio	**0.506****	**0.532*****	**0.744****	**0.488****	**0.522*****	**0.709****	**0.496****	**0.546*****	**0.7107****	**0.520****	**0.557*****	**0.748****
	0.131	**0.132**	**0.153**	**0.141**	**0.143**	**0.155**	**0.139**	**0.142**	**0.154**	**0.129**	**0.132**	**0.152**
Crisis	**-1.961****	**-2.028*****	**-2.583****	**-1.945****	**-2.042*****	**-2.571****	**-2.883****	**-2.974*****	**-3.261****	**-2.361*****	**-2.443*****	**-2.873*****
	0.545	**0.559**	**0.638**	**0.550**	**0.560**	**0.605**	**0.608**	**0.622**	**0.642**	**0.425**	**0.448**	**0.540**
caf_GDP_ratio	0.352	0.353	0.232	0.412	0.437	0.485	0.239	0.293	0.411	0.222	0.243	0.256
	0.378	0.378	0.292	0.424	0.426	0.370	0.444	0.439	0.368	0.382	0.377	0.309
bid_GDP_ratio				-0.354	-0.465	-0.957	-0.298	-0.447	-0.873			
				0.847	0.818	0.761	0.903	0.858	0.799			
crisis_caf							**1.810***	**1.715****	**1.366***			
							0.635	**0.591**	**0.458**			
crisis_caf_bol										**1.838****	**1.770*****	**1.428*****
										0.395	**0.336**	**0.196**
Constant	**-5.767***	**-6.272***	**-10.329****	-5.244	**-5.846***	**-9.222***	-5.335	**-6.235***	**-9.261***	**-5.966***	**-6.695****	**-10.427****
	2.447	**2.500**	**3.062**	2.825	**2.885**	**3.257**	2.809	**2.895**	**3.235**	**2.429**	**2.511**	**3.070**
Observations	130	130	130	130			130	130	130	130	130	130
R-squared	0.219	0.219		0.221			0.232	0.231	0.228	0.230		
Breusch Pagan Test	0.510			0.770			0.670			0.410		
p-value	0.237			0.190			0.206			0.260		
Hausman Test		**7.99***			**9.30***			8.09			7.30	
p-value		**0.018**			**0.026**			0.088			0.063	

Table 5. Dynamic Panel Models for GDP growth

	(POLS)	Arellano Bond	BB System GMM	(POLS)	Arellano Bond	BB System GMM	(POLS)	Arellano Bond	BB System GMM	(POLS)	Arellano Bond	BB System GMM
lag GDP_growth	**0.212***	0.023	**0.207****	**0.217***	0.026	**0.223*****	**0.223***	0.034	**0.229*****	**0.211***	0.026	**0.206****
	0.079	0.091	**0.073**	**0.068**	0.079	**0.059**	**0.071**	0.083	**0.061**	**0.079**	0.092	**0.072**
Inv_ratio	**0.415****	**0.631*****	**0.432*****	**0.421*****	**0.633*****	**0.454*****	**0.428****	**0.622*****	**0.457*****	**0.430****	**0.628*****	**0.442*****
	0.117	**0.122**	**0.099**	**0.128**	**0.130**	**0.112**	**0.124**	**0.132**	**0.109**	**0.114**	**0.124**	**0.096**
Crisis	**-2.608****	**-3.245*****	**-2.691*****	**-2.627****	**-3.269*****	**-2.766*****	**-3.714*****	**-4.271*****	**-4.172*****	**-3.019*****	**-3.513*****	**-3.038*****
	0.555	**0.632**	**0.500**	**0.609**	**0.692**	**0.566**	**0.678**	**0.774**	**0.769**	**0.465**	**0.562**	**0.415**
caf_GDP_ratio	0.266	0.620	0.292	0.239	0.649	0.214	0.030	0.183	-0.729	0.127	0.413	0.145
	0.320	0.532	0.355	0.389	0.559	0.394	0.415	0.659	778.000	0.322	0.621	0.308
bid_GDP_ratio				0.162	0.122	0.534	0.236	0.145	0.584			
				0.972	0.993	0.924	1.043	0.990	0.976			
crisis_caf							**2.067***	**2.016***	**2.704****			
							0.646	**0.896**	**0.949**			
crisis_caf_bol										**1.883*****	**1.384***	**1.642*****
										0.327	**0.588**	**0.239**
Constant	-4.490	**-8.100*****	**-4.808****	-4.711	**-8.236****	**-5.569***	-4.796	**-7.818****	**-5.157***	**-4.706***	**-7.943****	**-4.941****
	2.059	**2.324**	**1.749**	2.533	**2.871**	**2.310**	2.478	**2.965**	**2.437**	**2.034**	**2.441**	**1.730**
Observations	120	110	120	120	110	120	120	110	120	120	110	120
R-squared	0.256			0.256			0.270			0.267		
AB test AR(1)			**-2.64****			**-2.67****		**-2.61****	**-2.57***			**-2.61****
			0.008			**0.008**		**0.009**	**0.100**			**0.009**
AB test AR(2)			-0.430			-0.460		-0.040	-0.420			-0.390
			0.666			0.648		0.691	0.678			0.694

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