

# The global financial crisis and sub-Saharan Africa

## The effects of slowing private capital inflows on growth

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José Brambila Macias and Isabella Massa

**Working Paper 304**

Results of ODI research presented  
in preliminary form for discussion  
and critical comment

Working Paper 304

# The global financial crisis and sub-Saharan Africa

The effects of slowing private capital inflows on growth<sup>1</sup>

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June 2009

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<sup>1</sup> This paper is part of a UK Department for International Development (DFID) funded study at the Overseas Development Institute (ODI) on the effects of the global financial crisis on developing countries. The views presented in this paper are those of the authors and do not necessarily represent the views of the ODI or DFID. The authors would like to thank DFID, Dirk Willem te Velde and Karen Ellis for helpful comments and suggestions.

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ISBN 978 0 85003 906 1  
Working Paper (Print) ISSN 1759 2909  
ODI Working Papers (Online) ISSN 1759 2917

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## Acronyms

AfDB	African Development Bank
BFPI	Bond Foreign Portfolio Investment
BIS	Bank for International Settlements
DFID	Department for International Development
DRC	Democratic Republic of Congo
EMTA	Trade Association for the Emerging Markets
FDI	Foreign Direct Investment
FPI	Foreign Portfolio Investment
GDP	Gross Domestic Product
GMM	Generalised Method of Moments
IDS	Institute of Development Studies
IMF	International Monetary Fund
NSE	Nairobi Stock Exchange
ODI	Overseas Development Institute
OFI	Other Foreign Investment
SSA	Sub-Saharan Africa
UN	United Nations
UNCTAD	UN Conference on Trade and Development
US	United States

## **Abstract**

This paper uses a panel cointegration analysis to examine the long-run relationship between economic growth and four different types of private capital inflows (cross-border bank lending, foreign direct investment (FDI), bonds flows and portfolio equity flows) on a sample of selected sub-Saharan African countries over the period 1980-2007. Our results show that FDI and cross-border bank lending exert a significant and positive impact on sub-Saharan Africa's growth, whereas portfolio equity flows and bonds flows have no growth impact. Our estimates suggest that a drop by 10% in FDI inflows may lead to a 0.5% decrease of income per capita in sub-Saharan Africa, and a 10% decrease in cross-border bank lending may reduce growth by up to 0.7%. Therefore, the global financial crisis is likely to have an important effect on sub-Saharan Africa's growth through the private capital inflows channel (half a percent of growth is worth around \$5 billion in lost output).

# 1. Introduction

This paper examines the controversial link between capital flows and economic growth (see, for example, Rodrik and Subramanian, 2009). Looking at the sub-Saharan African region (SSA), it seeks to shed light on the growth impact of different types of private capital inflows. It also discusses the effects so far of the current global financial crisis on private capital flows into SSA, and examines the possible consequences for economic growth of a sudden slowdown or reversal of private capital inflows owing to the current global financial crisis.

Over the past decade, SSA has enjoyed robust growth. Private capital inflows took off, driven by a number of domestic and external factors that contributed towards enhancing the region's attractiveness for foreign investors in search of high yields. Net foreign direct investment (FDI) inflows grew progressively from \$13 billion in 2004 to about \$33 billion in 2007; portfolio equity flows took off, reaching a value of \$15 billion in 2006; bonds flows rapidly increased, by \$7.13 billion from 2006 to 2007; and international banking activity all expanded significantly.

However, the financial turmoil originating in the developed world in August 2007 has since spread to developing countries, and SSA has not been immune to the secondary effects of the global financial crisis. SSA's growth dropped from 6.9% in 2007 to 5.5% in 2008; in January 2009, the International Monetary Fund (IMF) once more cut its forecast for growth for this year by 1.6 percentage points to 3.5%. In April 2009, the IMF revised again its forecast leading to a new projection for SSA growth in 2009, equal to 1.7%. Private capital inflows to SSA were relatively robust up to the first half of 2008, but dropped sharply from the third quarter of 2008, owing to a reduced capability and propensity to invest on the part of foreign investors. Many bond issuance plans were put on hold in countries such as Ghana, Kenya, Tanzania and Uganda. FDI inflows continued to grow, but at a lower rate. Portfolio equity flows slowed down and sometimes reversed, consistent with sharp falls in stock markets in South Africa, Nigeria, Kenya, Mauritius and Côte d'Ivoire. The first signs of contraction of international bank lending began to emerge: banks' total foreign claims on Zambia declined from \$2908 million in June 2008 to \$2607 million in September 2008, and Ghana experienced a similar drop over the same period.

These developments in private capital inflows to sub-Saharan Africa raise a number of questions, which we will address in this paper. Do private capital inflows foster economic growth in SSA? What types of private capital inflows are specifically useful for growth in SSA? To what extent is the slowdown or reversal in private capital inflows to SSA going to affect the region's economic growth?

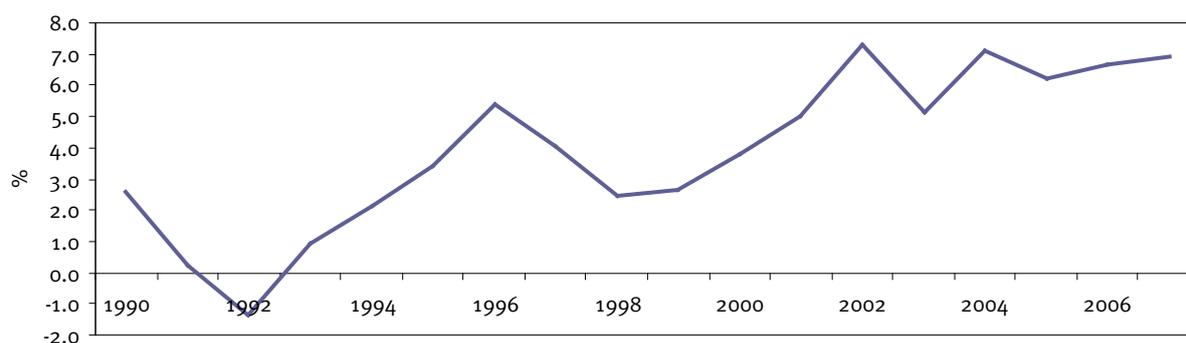
The paper is structured as follows. Section 2 describes the trends and composition of private capital inflows to SSA before and after the global financial crisis. Section 3 provides a brief literature review of the growth impact of specific categories of private capital inflows in recipient countries. Section 4 examines which types of capital inflows foster economic growth in SSA. We pay particular attention to cross-border bank lending, FDI, bonds flows and portfolio equity flows. We also examine the possible effects of the slowdown or reversal of private capital flows owing to the global financial crisis on growth in SSA. Section 5 concludes.

## 2. Trends and composition of private capital flows to sub-Saharan Africa

### 2.1 Private capital inflows boom: Opportunities versus challenges

Private capital flows into SSA have experienced a remarkable increase since the early 2000s: private equity and debt inflows reached a record high of \$53 billion in 2007 (IMF, 2008a). This surge in private capital inflows owes mainly to the fact that the period 2000-2007 was characterised by abundant global liquidity, and an increasing number of investors in search of high yields were attracted to SSA. The region has enjoyed robust economic growth since the mid-1990s, supported by exports and private consumption, reaching in 2007 one of its highest growth rates (6.9%, see Figure 1). Several factors contributed towards attracting investors to SSA. First, many SSA countries strengthened their macroeconomic performance and reformed their economies, leading to fiscal consolidation, reduced deficits, lower inflation rates and an improved business environment. Second, political instability in SSA became less frequent, and a number of countries embarked on democratic transitions.<sup>4</sup> Third, the vast natural resources endowment of some countries attracted the rapidly growing emerging markets, especially China. In turn, external factors like debt relief and the recent commodities boom added to the attractiveness of SSA.

**Figure 1: Real GDP growth in SSA, 1990-2007 (%)**



*Source:* IMF World Economic Outlook Database, April 2009.

Private capital flows include FDI, portfolio equity flows and debt flows (i.e. portfolio bond flows and bank lending). The rise of private capital inflows to SSA in the period 2000-2007 owed mostly to a rapid surge in private portfolio flows and debt flows, whereas FDI remained rather stable, experiencing a progressive rise over time.

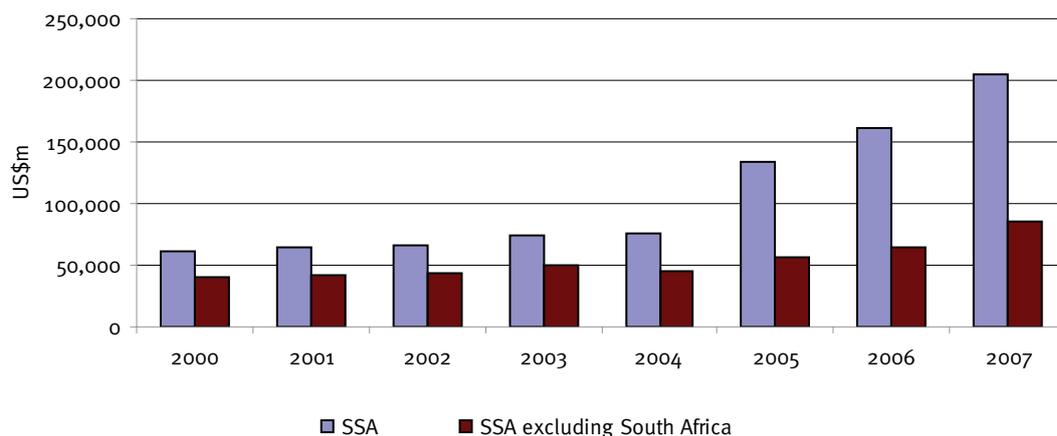
International banking activity in SSA expanded significantly from 2004: total foreign claims on SSA economies held by banks reporting to the Bank for International Settlements (BIS) almost tripled from that point, reaching a value of about \$205 billion by the end of 2007 (see Figure 2).<sup>5</sup> Furthermore, bond flows to SSA increased by \$7.13 billion from 2006 to 2007 (see Figure 3), with Nigeria, Ghana, Gabon and the Seychelles issuing bonds internationally for the first time.<sup>6</sup>

<sup>4</sup> The number of democratic countries in Africa had increased from 10 in 1980 to 34 by the end of 2007.

<sup>5</sup> Total foreign claims include banks' cross-border claims plus foreign offices' local claims in all currencies.

<sup>6</sup> Nigeria issued a \$350 million private corporate bond in January 2007 and a \$175 million private corporate bond in March 2007; Ghana issued a \$750 million Eurobond in September 2007; Gabon issued a \$1 billion 10-year Eurobond in December 2007; Seychelles issued a \$200 million sovereign bond in September 2006.

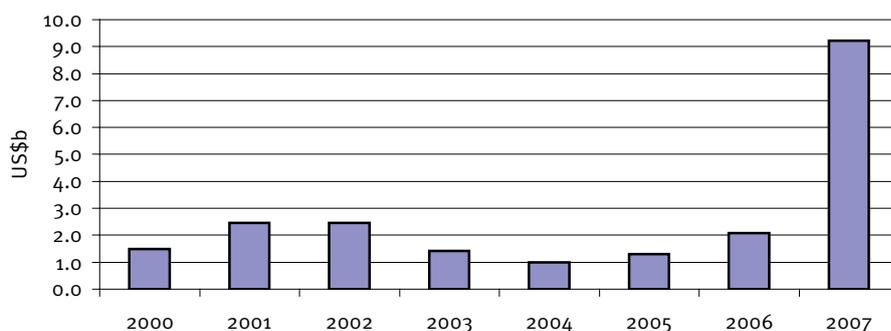
**Figure 2: Banks' total foreign claims on SSA, 2000-2007 (US\$ millions)**



*Note:* End of the year values.

*Sources:* BIS Consolidated Banking Statistics, March 2009 and authors' calculations.

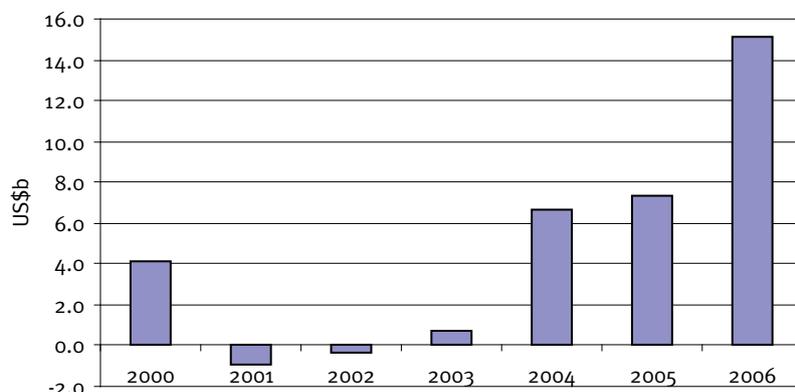
**Figure 3: Bond issuance in SSA, 2000-2007 (US\$ billions)**



*Sources:* World Bank's Global Development Finance, 2008 and authors' calculations.

Portfolio equity flows took off: in 2006 they more than doubled, reaching a value of \$15 billion, as shown in Figure 4. Most of these flows went to South Africa (88%), but other countries with established and relatively more developed stock markets, like Botswana, Côte d'Ivoire, Ghana, Mauritius and Kenya, also experienced increases in portfolio flows.

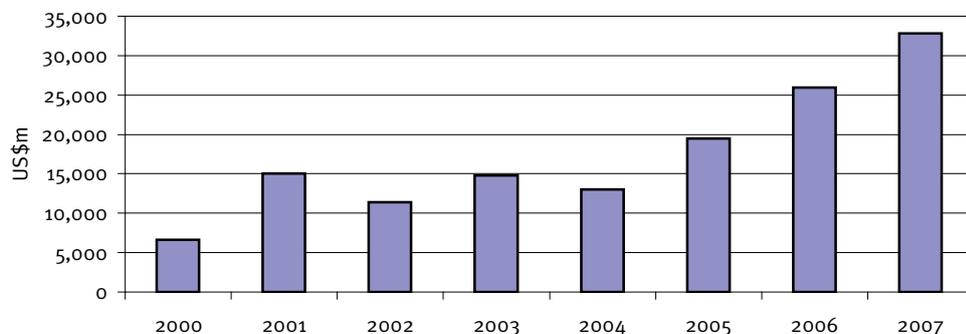
**Figure 4: Net portfolio equity inflows to SSA, 2000-2006 (US\$ billions)**



*Sources:* World Bank's Global Development Finance, 2008 and authors' calculations.

Net FDI inflows to SSA grew progressively, from \$13 billion in 2004 to about \$33 billion in 2007 (see Figure 5). Distribution of the inflows within the region was not homogeneous, since resource-intensive countries attracted most of the flows. Indeed, in 2007 Nigeria and South Africa accounted together for 55% of total FDI inflows to SSA. Nevertheless, other countries, like Equatorial Guinea, Madagascar and Zambia, contributed towards boosting overall FDI to SSA.

**Figure 5: Net FDI inflows to SSA, 2000-2007 (US\$ millions)**



Sources: UNCTAD (2008) and authors' calculations.

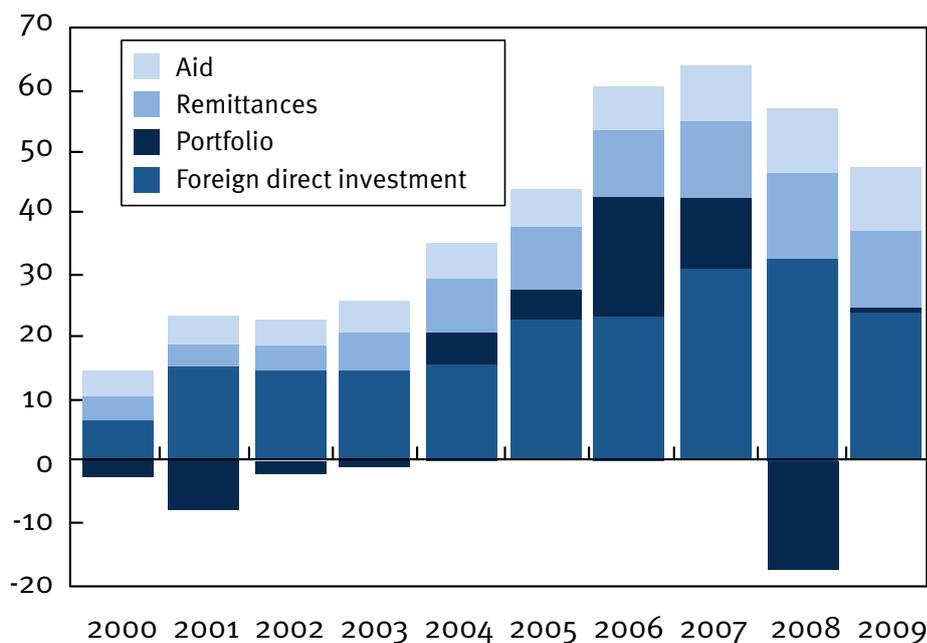
Increased private capital flows into SSA may carry important opportunities to the region. For example, they may allow recipient countries to finance more investment than can be supported by domestic saving. They may also increase the efficiency of sub-Saharan African countries by facilitating the transfer of technology and managerial expertise, improving resource allocation, reducing the cost of raising capital and intensifying domestic competition.

However, the spread of the financial turmoil that originated in the developed world in August 2007 may put at risk the potential beneficial effects of the recent surge in private capital inflows. Indeed, sub-Saharan African countries are currently exposed to the risk of a slowdown or even a reversal of private capital inflows owing to the global financial crisis.

## **2.2 Private capital inflows and the global financial crisis: The evidence so far**

The direct impact of the financial turmoil on sub-Saharan Africa has so far been less severe than in advanced economies, since SSA countries are less integrated in the global financial system and their financial institutions are relatively inactive in the derivatives market, relying mainly on domestic market resource mobilisation rather than on foreign borrowings to finance operations. Nevertheless, SSA is not immune to the global financial crisis and it is already feeling the secondary effects, like the drying up of financial inflows (see Figure 6).

**Figure 6: Financial inflows to SSA, 2000-2009 (US\$ billions)**



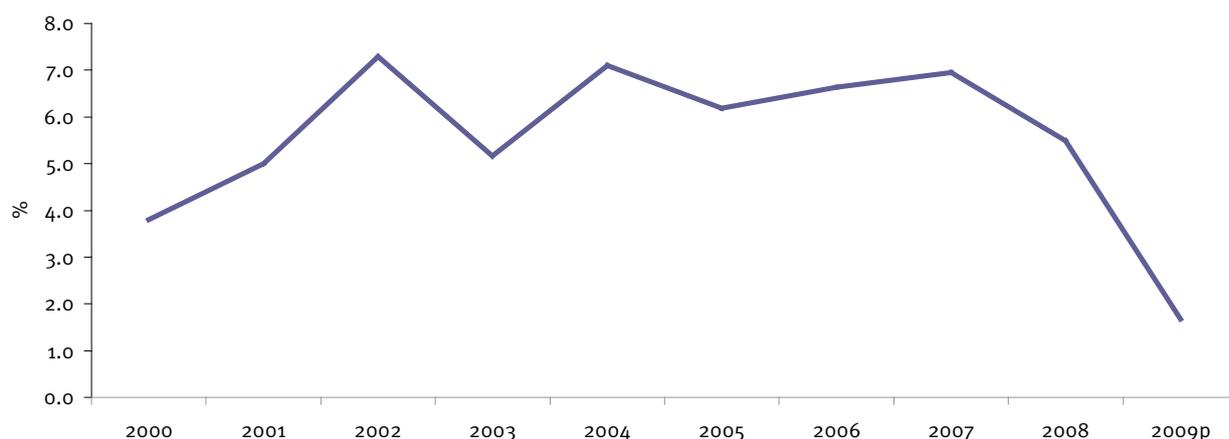
Note: 2009 expected values.

Source: IMF (2009a).

Private capital inflows to SSA were relatively robust up to the first half of 2008, but dropped sharply from the third quarter of that year. Two main factors were responsible for the fall in direct and portfolio investment: first, a reduced capability to invest; second, a reduced propensity to invest. Credit conditions became tighter, making it more difficult and expensive to invest in foreign operations. At the same time, the gloomy growth prospects worldwide and the increased risk aversion reduced investors' appetite for risk.

The slump of economic growth to 5.5% in 2008 and its forecasted further reduction to 1.7% in 2009 (see Figure 7), as well as the end of the commodities boom, made SSA bond and equity markets less attractive to foreign investors, who preferred to flee into more liquid and safer assets, such as US Treasury bonds. Many bond issuance plans were put on hold. For example, Ghana has cancelled plans for a \$300 million debt issue owing to poor global market conditions. Kenya has delayed a planned debut \$500 million Eurobond. Tanzania has postponed plans to issue a debut Eurobond totalling at least \$500 million until market conditions improve. Uganda will not issue a debut Eurobond to fund infrastructure projects. According to the IMF (2008b), not a single sub-Saharan African foreign currency denominated bond (Eurobond) came to market in 2008, compared with a value of \$6.5 billion in 2007. More recently, the Trade Association for the Emerging Markets (EMTA, 2009) highlighted that South African bond volumes fell from \$492 billion in 2007 to \$337 billion in 2008. Looking at the long term, as suggested by the World Bank (2009), the crowding-out effects might also affect developing countries' bond markets negatively. In other words, it is likely that in the coming years developed countries may need to significantly increase the issuance of sovereign bonds – think about the US, which will need to finance a fiscal deficit expected to exceed \$1000 billion in 2009 – thus potentially crowding out developing countries' private and public debt issuers.

**Figure 7: Real GDP growth in SSA, 2000-2009 (%)**



Note: p=IMF's projection.

Source: IMF World Economic Outlook Database, April 2009.

FDI inflows are believed to be remaining more stable than other private capital flows in the face of the global financial crisis. According to the UN Conference on Trade and Development (UNCTAD, 2009), FDI inflows to Africa are expected to continue to grow in 2008 but at a lower rate (16.8%). Nevertheless, in SSA, the impact of the crisis on FDI is becoming an increasingly significant concern, since a few planned investments have already been postponed or cancelled. For example, the proposed takeover of a South African mining conglomerate by Xstrata was abandoned. In the Democratic Republic of Congo (DRC), most of the foreign mining companies have scaled back, postponed or abandoned their investment plans (AfDB, 2009a). The world's number one steel company (ArcelorMittal) has deferred indefinitely an iron-ore project in Liberia. Moreover, Malawi is about to lose a big uranium project. In Ethiopia, the Ethiopian Electric Power Corporation is afraid that its investment plans will be severely affected as a result of the crisis (IDS, 2009). In March 2009, the President of Tanzania reported that a \$3.5 billion investment in aluminium smelting had been postponed and a \$165 million nickel mining and extraction project had been rescheduled.

The slowdown and sometimes the reversal in portfolio equity flows in SSA countries were consistent with the sharp fall of their stock markets.<sup>7</sup> As shown in Table 1, South Africa, Nigeria, Kenya, Mauritius and Côte d'Ivoire were among the most hit countries over 2008. The situation did not improve much at the beginning of 2009. Indeed, in Kenya the Nairobi Stock Exchange (NSE) All-Share Index fell by 21.36% from 30 January to 27 February and stock market capitalisation dropped by 21.35% over the same period. In turn, the Nigeria Stock Exchange All Share Index fell by 30.64% in January and increased by just 7.2 percentage points in February. In Côte d'Ivoire, the BRVM Composite Index has continued to fall to date.

**Table 1: Stock index change in 2008 in selected SSA countries (%)**

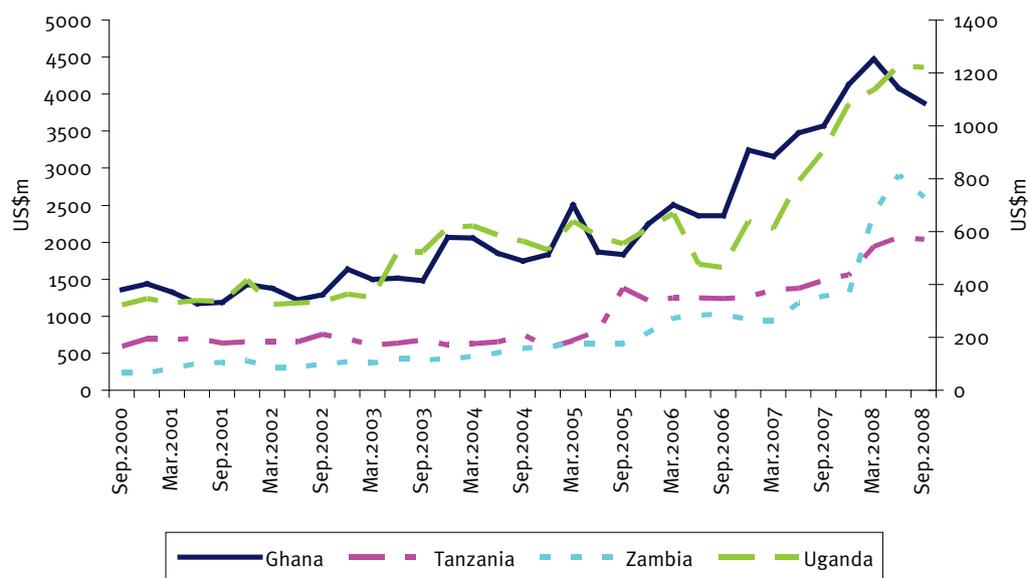
Index	% change in 2008
Nigeria All Share Index	-45.90
Mauritius All Share Indices	-36.20
NSE 20-Share Index	-34.10
JSE All Share Index	-25.70
BRVM Composite Index	-10.70

Source: AfDB (2009a).

<sup>7</sup> Over 2008, investors withdrew \$6.1 billion in South Africa. Evidence of portfolio inflows reversal and capital flight may also be found in Kenya, Tanzania and Nigeria (IMF, 2009c).

While SSA countries are not highly dependent on credit from foreign banks, some countries had already seen the signs of a drop in foreign claims from the third quarter of 2008 (see Figure 8). The countries most exposed to a fall in international bank lending are likely to be those with a high share of foreign-owned banks (e.g. Ghana, Tanzania, Zambia, Uganda and Swaziland).<sup>8</sup>

**Figure 8: Banks' total foreign claims on selected SSA countries, September 2000-September 2008 (US\$m)**



Note: Uganda is on the right axis.

Source: BIS Consolidated Banking Statistics, March 2009.

The IMF (2009b) reckons that, as the crisis continues, there might be an increasing risk of contagion from distressed foreign parent banks to local subsidiaries in sub-Saharan Africa. There are different mechanisms through which this could happen. Parent banks could call in loans or withdraw capital from their sub-Saharan African subsidiaries. They could stop investing local profits in local subsidiaries or require the closure of their subsidiaries (IMF, 2009c). However, the existence of tight prudential capital controls in many SSA banking systems has so far helped to minimise this contagion effect. In Tanzania, for example, profit repatriation has been regulated and local subsidiaries are not allowed to transfer funds automatically to compensate for losses in parent banks (AfDB, 2009b).

The trends described raise two related questions. First, do private capital inflows to SSA promote growth and, in particular, what is the potential growth impact of the various types of capital inflows? Second, is the slowdown or reversal of private capital flows into SSA likely to lead to a further reduction in SSA economic growth? These two questions will be discussed in Section 3 and Section 4.

<sup>8</sup> For a more detailed description of foreign ownership of the banking system in SSA see World Bank (2008) and Massa and te Velde (2008).

### **3. Private capital flows and economic growth: A brief literature review**

The understanding of the growth impact of specific categories of private capital inflows has important policy implications, but so far it has received little – though mounting – attention in the empirical economic literature. With respect to developing countries, this may be owe in part to the relatively new phenomena of some private capital inflows, particularly portfolio equity flows.

Most studies on the growth effect of specific types of private capital flows focus on FDI. Firm-level studies of particular countries provide contradictory evidence on the role played by FDI in economic growth. Willmore (1986), looking at a sample of 282 pairs of firms belonging to 80 industries in Brazil, finds that FDI has a beneficial impact on growth, since foreign firms are more efficient than domestic ones. Moreover, Blomstrom (1986) finds that FDI enhances productivity growth of Mexican sectors. On the other hand, Haddad and Harrison (1993) find no evidence of positive spillovers from FDI in Morocco. Aitken and Harrison (1999) get a similar result with respect to Venezuela in the period 1979-1989.

Unlike the microeconomic evidence, macroeconomic studies generally suggest that FDI exerts a positive impact on economic growth in particular contexts. For example, Balasubramanyam et al. (1996) find that the effects on growth of FDI are more significant in the presence of trade openness, and Borensztein et al. (1998) argue that FDI is an important channel for the transfer of technology and contributes to economic growth when the country has a highly educated workforce. In turn, Alfaro et al. (2003) find that FDI is beneficial for economic growth when the country has sufficiently developed financial markets. However, Levine and Carkovic (2002) conducted a Generalised Method of Moments (GMM) panel analysis on pooled data from 72 countries in the period 1960-1995 and suggest that FDI flows do not exert a positive impact on economic growth.

Very few studies examine the growth effect of portfolio equity flows. Bekeart and Harvey (1998; 2000) find that portfolio equity inflows increase economic growth in 14 out of 19 lower-income countries under study. Durham (2004) suggests that portfolio equity flows promote economic growth in countries with relatively large equity markets and limited corruption. Levine and Carkovic (2002), instead, find that portfolio inflows have no impact on economic growth.

Curiously, there is very little specific literature on the effects of debt flows on economic growth. This category of capital inflows is more often taken into account in recent studies investigating simultaneously the growth impact of different types of capital flows. For example, Reisen and Soto (2001) measure the independent growth effect of bond flows as well as FDI, portfolio equity flows, official flows and short-term and long-term bank lending on a sample of 44 developing countries around the world over the period 1986-1997. Using GMM panel data analysis, they find that FDI and portfolio equity flows exert a significant impact on growth, whereas bonds and official flows do not have any significant effect on growth. Furthermore, short- and long-term bank lending is found to negatively affect economic growth in the recipient country, except when local banks are sufficiently capitalised.

In turn, Durham (2003) examines the impact on growth of bond foreign portfolio investment (BFPI) as well as total foreign portfolio investment (FPI) and other foreign investment (OFI), which includes cross-border bank lending, using a sample of 88 countries from 1977 through 2000. Most of the results suggest that FPI, BFPI and OFI have no effect on economic growth. However, there is some evidence that OFI may have a negative impact on economic growth depending on the level of financial and legal development of the recipient country.

On the other hand, Gheeraert and Malek Mansour (2005) use a structural econometric model and find a significantly positive relationship between growth and various measures of capital flows (i.e. FDI,

equity investment, debt investment and flows in financial derivatives). More recently, de Vita and Kyaw (2009), using a dynamic panel model on a large sample of 126 developing countries for the period 1985-2002, examine the impact of FDI and portfolio investment flows on the economic growth of low, lower middle and upper middle income countries. They find that only developing countries that have reached a minimum level of economic development and absorptive capacity are able to capture the growth-enhancing effects of both forms of investment inflows.

While there is evidence of mounting research on the growth impact of specific types of capital inflows in developing countries in general, there are still relatively few studies addressing this issue with respect to specific countries or regions. To our knowledge, a study investigating the long-run relationship between economic growth and cross-bank lending, FDI, bonds inflows and portfolio equity inflows in SSA is still missing in the literature. In the next section, we attempt to fill this gap.

## 4. What types of private capital inflow foster growth in sub-Saharan Africa?

### 4.1 Methodology and data

We are interested in studying the long-run relationship between economic growth and four different types of private capital inflows: cross-border bank lending, FDI, bonds flows and portfolio equity flows. In order to do this, we use a panel cointegration regression on pooled data from selected economies across the SSA region over the period (with gaps) 1980-2007.<sup>9</sup> The model estimated is the following:

$$\begin{aligned} \text{Log}Ypc_{it} &= \alpha_0 + \alpha_1 \text{BANK}_{it} + \alpha_2 \text{FDI}_{it} + \alpha_3 \text{BOND}_{it} + \alpha_4 \text{EQUITY}_{it} + \alpha_5 \text{TRADE}_{it} + \alpha_6 \text{GOV}_{it} + \dots \\ &\dots + \sum_{s=-p}^p \beta_s \Delta \text{BANK}_{it-s} + \sum_{s=-p}^p \delta_s \Delta \text{FDI}_{it-s} + \sum_{s=-p}^p \phi_s \Delta \text{BOND}_{it-s} + \sum_{s=-p}^p \gamma_s \Delta \text{EQUITY}_{it-s} + \sum_{s=-p}^p \mu_s \Delta \text{TRADE}_{it-s} + \dots \quad (1) \\ &\dots + \sum_{s=-p}^p \varphi_s \Delta \text{GOV}_{it-s} + u_{it} \end{aligned}$$

where  $Ypc_{it}$  represents real gross domestic product (GDP) per capita;  $BANK$  is net cross-border bank lending;  $FDI$  is FDI net inflows;  $BOND$  is net bond inflows; and  $EQUITY$  is net portfolio equity inflows. In addition to our variables of interest, we include two control variables: trade openness measured as the sum between exports and imports ( $TRADE$ ), and government consumption ( $GOV$ ). All the variables are normalised by GDP.<sup>10</sup>  $u_{it}$  is the error term. Equation (1) is the extended version of a Dynamic OLS ( $DOLS$ ) model, used to estimate long-run relationships in cointegrated panels.

As in standard time series techniques, panel cointegration analysis requires a first inspection of the variables to test for the presence of unit roots. To do so, a variety of tests have been developed. In our case, we used the Levin et al. (2002) methodology as well as Breitung's (2000) test.

As shown in the panel section in Table A2 in the Annex, the results from these tests are mixed, although in most of the cases there is evidence in favour of the presence of non-stationarity within our series. One of the main issues in our analysis is the lack of data for the SSA region, as well as the heterogeneity of its countries. Therefore, as a further test, we decided to add our variables into different regional series (see Figure A1), and apply the standard unit root tests to those series as well. Again, overall there is evidence of non-stationarity (see the time series section in Table A2). So, having inspected the results from both the panel and time series tests, we argue that there is enough evidence of non-stationarity to assume that all series are integrated of order one and that we can proceed with the cointegration test.

To test for panel cointegration, we opted to follow Kao's (1999) residuals test for cointegration. Table 2 summarises the outcome. As we can see, Kao's test points out to the presence of a long-run relationship between our variables.

<sup>9</sup> Table A1 in the Annex reports the selected countries covered in this study across the 45 SSA economies. Results do not change significantly, excluding South Africa, Somalia and Zimbabwe.

<sup>10</sup> We recognise the need to test the interactions with other variables in the economy in order to have a more robust model, but we refrain from introducing more control variables owing to the scarcity of data and the excessive noise this could imply.

**Table 2: Kao's cointegration test**

ADF	5.919089	***
Residual variance	0.002933	
HAC variance	0.003316	

*Notes:* Null hypothesis: no cointegration. The lags used were fixed at 1 and the Newey-West bandwidth selection using Bartlett kernel.

*Source:* Authors' calculations.

Different from standard time series cointegration analysis, panel cointegration can indicate the presence of cointegration relationships but not their number. So, in our case, we assumed the presence of only one single long-term relationship among our variables.

Once we had established the presence of cointegration, we estimated the long-run cointegrating vector. In order to estimate the long-run relationship between our variables, we used the Dynamic OLS (*DOLS*) methodology suggested by Kao and Chiang (2000).<sup>11</sup> *DOLS* relies on the use of leads and lags of the differenced explanatory variables in order to obtain the long-run relationship. The appropriate number of leads and lags can be determined using the Bayes information criterion.

In our study, cross-border bank lending, FDI, bond, and portfolio equity flows data stem from the World Bank's Global Development Finance Database. FDI and cross-border bank lending data are available for a representative number of countries, whereas bond and portfolio equity flows data are less abundant.<sup>12</sup> This constrained our analysis, but left us with enough data to build a small panel. Real per capita GDP data, as well as government consumption and trade openness data, are sourced from the World Bank's World Development Indicators.

## 4.2 Results

Table 3 summarises the results of the panel cointegration regression, showing that there exists a long-run relationship between economic growth and cross-border bank lending, FDI and the traditional growth determinants. In the table, we report the different specifications of the *DOLS*, varying the number of lags and leads included in the model.<sup>13</sup>

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11 Kao and Chiang (2000) study the properties of the normal OLS, the Fully Modified OLS and the *DOLS* estimator. In their opinion, OLS has a non-negligible bias in finite samples, whereas the Fully Modified estimator does not improve over OLS in general. On the other hand, the *DOLS* may be the most promising estimator when dealing with cointegrated panel regressions. Interested readers can refer to Baltagi's (2008) book for a brief review on panel cointegration. Furthermore, the estimation of a normal OLS regression using cointegrated variables is subject to potential serial correlation as well as endogeneity issues. Kao's *DOLS* estimator takes the potential endogeneity of the variables of interest into account, and uses leads and lags of the differenced explanatory variables.

12 Bond and equity flows data in sub-Saharan Africa are rather restrained. In some cases, this owe to the fact that there are no stock or bond markets. Nevertheless, there are cases in which information is just not reported. For our purpose, we assume that zero values refer to no trade in equity or bond markets. Given this, the few countries reporting movements on bonds different from zero are Ghana, South Africa, Zimbabwe and Uganda, while countries reporting non-zero equity flows are Benin, Malawi, Mali, South Africa, Togo, Uganda and Zambia.

13 In our case, we used a maximum of two lags and one lead owing to data constraints. However, in theory, different numbers of lags and leads are possible. As we mentioned before, the best model can be found after different iterations and using different information criteria.

**Table 3: Dynamic OLS (DOLS) results for selected SSA countries, 1980-2007**

Variable	1	2	3	4	5
<i>FDI</i>	0.051***	0.051***	0.047***	0.049***	0.049***
<i>BOND</i>	0.024		0.026	0.022	
<i>BANK</i>	0.068***	0.065***		0.053***	0.051***
<i>EQUITY</i>	-1.715	-1.714	-0.904		
<i>TRADE</i>	0.002***	0.002***	0.002***	0.002***	0.002***
<i>GOV</i>	-0.013***	-0.013***	-0.012***	-0.012***	-0.012***
$R^2$	0.76	0.75	0.71	0.75	0.75
<i>Adjusted R<sup>2</sup></i>	0.64	0.65	0.58	0.65	0.66
<i>Observations</i>	151	151	151	151	151

*Notes:* Dependent variable: log of GDP per capita. The *DOLS* was estimated including two lags and one lead. All regressions include a constant not reported. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% level.

*Source:* Authors' calculations.

FDI net inflows (*FDI*) remain significant, positive and stable throughout all specifications, suggesting that FDI inflows exert a positive and significant impact on per capita income growth of SSA recipient economies. This result is consistent with previous findings (see e.g. Reisen and Soto (2001), among others), and confirm that, in SSA, FDI inflows may play an important role in the economic performance of a host country. Indeed, FDI provides additional resources that can be used to build additional physical capital and create more employment; it increases the size of capital stock and encourages more efficient use of existing resources, thus enhancing recipient country's output and productivity; and it improves the local skills and promotes technological know-how, thereby enhancing overall economic growth and development. Therefore, the importance is underscored of an adequate set of policies capable of influencing the way in which FDI affects growth, productivity, employment and, above all, poverty within developing countries, and in particular in SSA.<sup>14</sup>

A similarly important growth impact comes from cross-border bank lending, which in SSA has a positive effect on economic growth.<sup>15</sup> This result is different from previous findings in the literature (Durham, 2003; Reisen and Soto, 2001), but could be explained as follows. In the literature, the potential benefits of financial integration, such as increased opportunities for risk sharing and diversification and better allocation of capital among investment opportunities, are widely recognised. Indeed, cross-border activities allow banks to better realise their optimal size, exploit economies of scale and scope, diversify activities and spread risk and revenues. This enables them to improve resource allocation and risk management and increase profitability. As a final effect, the development and integration of the banking sector has a positive impact on economic growth.<sup>16</sup> On the other hand, cross-border banking could also make the banking system more vulnerable to crises by opening up additional transmission channels of systemic risk across borders. In the context of SSA, this risk may have been mitigated over the past years, thanks to a continued effort in reinforcing the regulatory and supervisory framework. As a consequence, the beneficial growth effects of cross-border bank lending may have unfolded.

In contrast with the positive growth impact of FDI and cross-border bank lending, the effects of portfolio equity flows are negative and not significant. In other words, they do not produce any significant positive impact on SSA growth. While it cannot be ruled out that this result owes to the scarcity of portfolio equity flows data in our sample, the non-significance of *EQUITY* may be explained by the fact that the bulk of recently increased portfolio equity inflows has been concentrated in very few SSA countries, mainly in South Africa. This is because among all SSA countries, only 22 have established stock markets; of these, only nine markets have more than 20 listings.<sup>17</sup> Therefore, the absence of

<sup>14</sup> We refer interested readers on the ways FDI can affect development to te Velde (2006).

<sup>15</sup> In order to address possible causality issues, the same regression was done using *FDI* and *BANK* as dependent variables. These regressions turned out to be mainly non-significant, and this may be interpreted as a weak evidence, ruling out a double causality relationship between GDP per capita and *FDI* or *BANK*. Therefore, causality seems to be unidirectional, running from *FDI* and *BANK* to GDP per capita. Results are available from the authors on request.

<sup>16</sup> Numerous studies have provided evidence for the close link between more integrated and efficient financial markets and enhanced economic performance. See, among others, Levine (1997).

<sup>17</sup> These nine markets are: Botswana, Côte d'Ivoire, Ghana, Kenya, Mauritius, Namibia, Nigeria, South Africa and Zimbabwe.

equity markets, the lack of depth and liquidity where there are such markets and the absence of a coherent policy approach towards capital account liberalisation still represent significant constraints on portfolio equity flows at the regional level.<sup>18</sup> Moreover, the presence of a negative sign in front of the portfolio equity flows variable may be explained by the fact that, in our analysis, we are looking at the long-term effect of private capital inflows on economic growth and, from the theory and previous empirical evidence, we know that the most illiquid stock markets are the most exposed to the flight-to-quality effect in the presence of financial crises. So, even if in the short term the increase in portfolio equity inflows may have contributed to enhance economic growth in SSA countries with quite well-developed stock markets, in the long term they may expose the overall illiquid region to the risk of capital flight in the case of a financial crisis, thus negatively affecting SSA economic growth.

In line with the existing literature, bonds flows are found to have no significant impact on growth. Moreover, traditional growth variables such as trade openness and government consumption are confirmed to be significant, exerting respectively a positive and negative impact on economic growth.

Our estimates suggest that a drop by 10% in FDI inflows may lead to a 0.5% decrease of SSA's income per capita, whereas a 10% decrease in cross-border bank lending may have a detrimental effect on growth by up to 0.7%. Therefore, in the context of the current global financial crisis, a drop of FDI and cross-border bank lending may represent an additional channel through which the crisis is likely to negatively affect SSA economic growth.

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<sup>18</sup> Degree of capital account liberalisation differs significantly. Uganda and Zambia have no capital control. Kenya, Tanzania and Nigeria still have capital restrictions. Angola, Burundi, Ethiopia and Mozambique are not liberalised at all.

## 5. Conclusions

Over the period 2000-2007, SSA enjoyed robust growth and, in a context of abundant global liquidity, attracted an increasing number of investors in search of high yields. As a consequence, private capital inflows, including FDI, portfolio equity flows and debt flows (i.e. portfolio bond flows and bank lending) experienced remarkable increases. Private equity and debt flows reached a record high of \$53 billion in 2007.

The link between capital inflows and economic growth is still controversial, and the existing empirical literature has devoted little attention to the growth impact of different forms of private capital flows. In this paper, by using a panel cointegration analysis, we examined the long-run relationship between economic growth and cross-border bank lending, FDI, bonds flows and portfolio equity flows on a sample of selected SSA countries over the period 1980-2007. Our results show that both FDI and cross-border bank lending exert a positive and significant impact on economic growth in SSA, whereas portfolio equity flows and bonds flows have been found to have no growth impact.

The spread of the global financial crisis, which originated in the developed world in August 2007, has led to a slowdown of private capital inflows to SSA, thus putting at risk the beneficial growth effects of the recent surge in FDI and cross-border bank lending. In several SSA countries, such as DRC, Liberia and Tanzania, among others, investment plans have been scaled back, postponed or abandoned. Moreover, there are already a few signs of a drop in banks' foreign claims on SSA countries such as Ghana and Zambia. Our estimates suggest that a drop by 10% in FDI inflows may lead to a 0.5% decrease in SSA's income per capita, whereas a 10% decrease in cross-border bank lending may have a detrimental effect on growth by up to 0.7%.

In light of these results, we argue that the global financial crisis is likely to have an important effect on SSA's growth through the private capital inflows channel (half a percent of growth is worth around \$5 billion in lost output).

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## Annex

**Table A1: Sample of SSA countries**

Angola*	Kenya	Tanzania*
Benin*	Lesotho	Togo*
Botswana	Liberia*	Uganda*
Burkina Faso	Madagascar*	Zambia*
Burundi*	Malawi*	Zimbabwe*
Cameroon	Mali*	
Cape Verde	Mauritania*	
Central African Republic	Mauritius	
Chad*	Mozambique*	
Comoros*	Niger	
Congo, Democratic Republic	Nigeria*	
Congo, Republic *	Rwanda	
Côte d'Ivoire	São Tomé and Príncipe*	
Eritrea*	Senegal	
Ethiopia*	Seychelles	
Gabon	Sierra Leone	
Gambia, The*	Somalia*	
Ghana*	South Africa*	
Guinea*	Sudan*	
Guinea-Bissau*	Swaziland	

Note: \* denotes countries included in the econometric analysis.

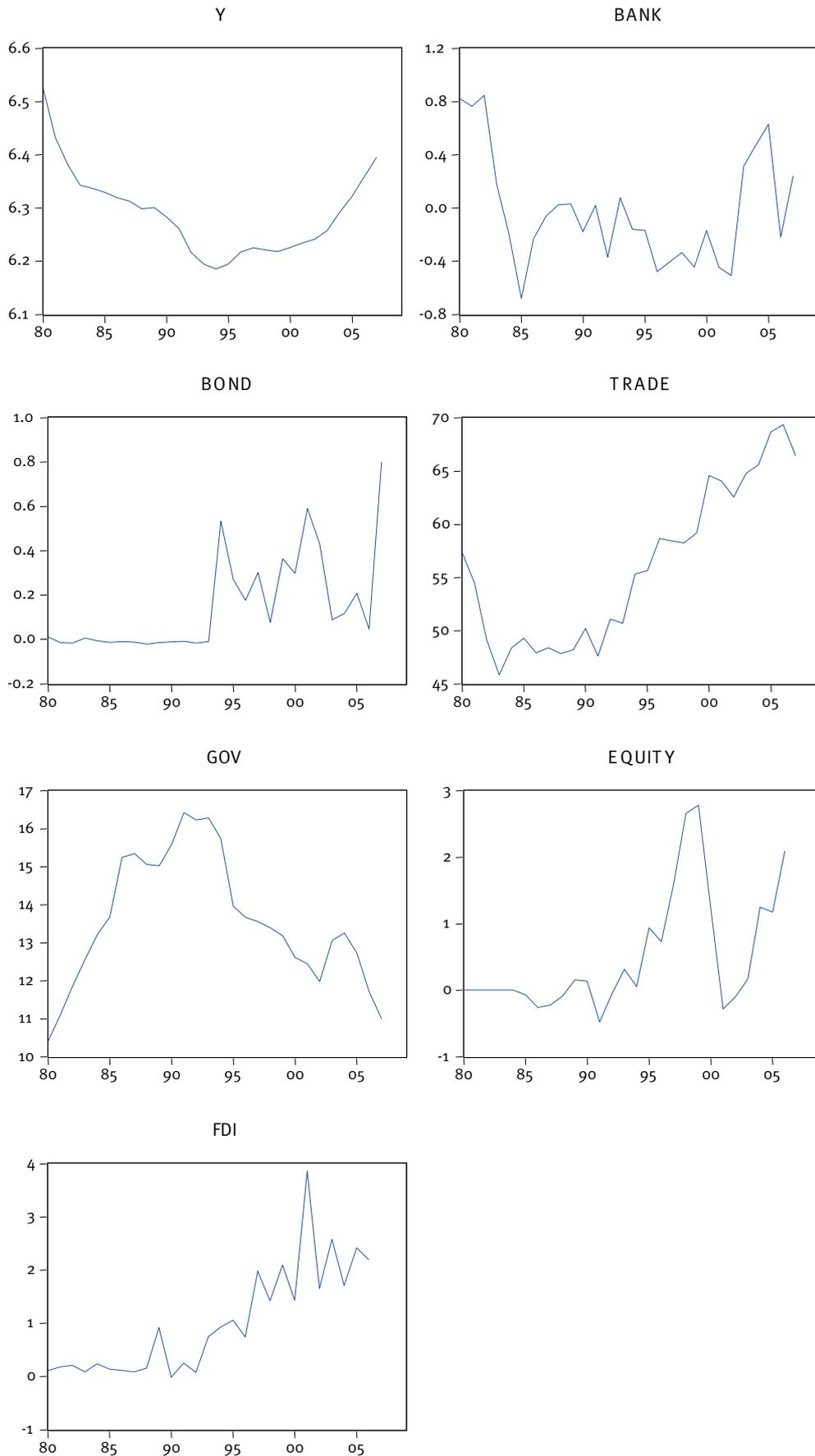
**Table A2: Unit root tests**

Panel	<i>BANK</i>	<i>BOND</i>	<i>FDI</i>	<i>EQUITY</i>	<i>Y</i>	<i>GOV</i>	<i>TRADE</i>
Breitung	-6.46253***	0.14480	3.52223	-1.90345**	5.23180	-2.66789**	0.12462
Levin et al.	0.21053	-3.81973***	-10.6957***	-8.79178***	0.86693	-6.57224***	-2.23590**
Time Series	<i>BANK</i>	<i>BOND</i>	<i>FDI</i>	<i>EQUITY</i>	<i>Y</i>	<i>GOV</i>	<i>TRADE</i>
Augmented Dickey-Fuller	-2.629986	-3.073120	-2.294630	-10.09987***	0.755008	-2.113972	-4.470078**
	$\Delta$ <i>BANK</i>	$\Delta$ <i>BOND</i>	$\Delta$ <i>FDI</i>	$\Delta$ <i>EQUITY</i>	$\Delta$ <i>Y</i>	$\Delta$ <i>GOV</i>	$\Delta$ <i>TRADE</i>
Augmented Dickey-Fuller	-3.609053**	-3.854317**	-4.544867***	-21.32609***	-2.891861	-3.285917*	-3.698617**
	<i>BANK</i>	<i>BOND</i>	<i>FDI</i>	<i>EQUITY</i>	<i>Y</i>	<i>GOV</i>	<i>TRADE</i>
Phillips-Perron	-2.633792	-3.969238**	-1.928605	-2.405280	-1.276370	-1.920717	-0.326019
	$\Delta$ <i>BANK</i>	$\Delta$ <i>BOND</i>	$\Delta$ <i>FDI</i>	$\Delta$ <i>EQUITY</i>	$\Delta$ <i>Y</i>	$\Delta$ <i>GOV</i>	$\Delta$ <i>TRADE</i>
Phillips-Perron	-6.108729***	-5.985152***	-16.69646***	-3.594446**	-3.921051**	-3.707951**	-4.613187***

Notes: We report the *t*-statistics for each test. *BANK*, *FDI*, *BOND*, *EQUITY*, *GOV* and *TRADE* in percentage of *GDP*. *Y* in natural logarithm. Null hypothesis: variable has a unit root. The time series tests were done adding up each variable to its regional level.

Source: Authors' calculations.

**Figure A1: Variables at the regional level for SSA**



*Notes:* GDP per capita in logarithm; all the other variables in percentage of GDP. Regional series are built using 45 SSA countries.

*Sources:* World Bank's Global Development Finance Database and authors' calculations.