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Prudent versus Imprudent Lending to Africa: From Debt Relief to Emerging Lenders

by

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PREFACE

China's lending in Africa has been accused of undermining painstaking efforts to put development assistance to the continent on a sustainable footing. The fear is that emerging donors, such as China and India, are at the same time benefitting from debt-relief efforts while adding to the debt burdens of African countries.

Consequently, China has been encouraged to raise standards of transparency in its lending, amid concerns that a fresh build-up of loans could destabilise economies only recently relieved of long-standing debt. This has also been the objective of the *G8 Action Plan for Good Financial Governance in Africa*, which emphasises the importance of the joint World Bank-IMF *Debt Sustainability Framework* as the framework of choice for the "new" donors and lenders.

This Working Paper evaluates the claim that China is "free riding" on Western debt relief efforts and find it to be unfounded. In order to encourage China and other emerging lenders and donors to co-operate, the paper suggests a broadening of the Debt Sustainability Framework concept of debt sustainability to include both the growth effects of new lending that contributes to better infrastructure, and the improvements in terms of trade and export performance resulting from China's demand.

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ABSTRACT

Over recent years, a number of emerging creditors have increased their aid and lending to Africa's Low-Income Countries (LICs). This has fed worries that new official lenders may be undoing years of international efforts to rein in over-indebtedness in Africa, to reduce the continent's exposure to foreign-currency denominated debt and to encourage good governance by making loans conditional on political and economic reforms. These worries are reflected in the *G8 Action Plan for Good Financial Governance in Africa*, which attempts to include emerging lenders in the DSF framework — the *Joint Bank-Fund Debt Sustainability Framework*.

The empirical analysis of debt dynamics distinguishes three country groups: African HIPC, HIPC-China (High China Presence), and Resource-rich IDA-only. All groups display marked trends of lower debt ratios (in net present value terms, NPV), in most cases below debt-distress level for even the lowest governance groups. Evidence on links between growth and lending may even suggest that African HIPC are currently under-leveraged. Generally, there is very little evidence of “*imprudent lending*” to debt relief beneficiaries in the figures up to 2006. The Asian giants lower debt ratios a little through debt relief, but they do this even more through stimulating exports and growth. This holds in particular for those countries towards which their lending is mostly directed: the resource-rich countries, rather than the debt-relief beneficiaries.

JEL Codes: F21, F34, F35.

Keywords: debt, debt relief

RÉSUMÉ

Ces dernières années, un certain nombre de créanciers émergents ont accru leurs aides et leurs prêts en faveur des pays d'Afrique à faible revenu (LIC). On s'est dès lors inquiété que ces nouveaux prêteurs officiels puissent défaire des années d'efforts internationaux dans le but de ralentir le surendettement en Afrique, réduire l'exposition du continent aux devises étrangères ainsi qu'à la dette en question et encourager une bonne gouvernance en faisant de sorte que les emprunts dépendent des réformes politiques et économiques. Ces inquiétudes transparaissent dans le plan d'action du G8 qui vise une bonne gouvernance financière et tente d'inclure ces nouveaux prêteurs dans le cadre du CSD : le « *Cadre de soutenabilité de la dette du FMI et de la Banque Mondiale* ».

Malheureusement, la DSF n'a pas exactement le profil pour ce type de situation : elle encourage à indiquer dans une moindre mesure les nouveaux prêts, doit s'attacher à des indicateurs opaques de gouvernances diverses, ne parvient pas à atteindre les déterminants économiques généraux de la viabilité de la dette et n'arrive pas à prendre en considération les versements et les biens publics dans ses analyses sur la viabilité de la dette.

L'analyse concrète des dynamiques de la dette distingue trois types de pays : les PPTE africains, les PPTE chinois (pays à forte présence chinoise) et les pays emprunteurs d'IDA uniquement riches en ressources. Tous affichent des tendances claires de faibles taux de dette (en termes de valeur actualisée nette, VAN) et se trouvent dans la plupart des cas, sous un niveau de détresse lié à la dette et cela même pour les pays issus du groupe aux plus faibles gouvernances. Cette indication sur des liens entre la croissance et les prêts semblerait même indiquer que les HIPC africains sont actuellement sous exploités.

En général, il y a peu d'indications quant aux « prêts imprudents » sur les bénéficiaires de soulagement de la dette dans les chiffres allant jusqu'en 2006. Les géants asiatiques réduisent légèrement les taux de dette grâce à des soulagements de la dette, mais surtout grâce à une croissance et une exportation stimulée. Ceci vaut en particulier pour tous ces pays dont les prêts sont le plus souvent destinés aux pays riches en ressources que ceux bénéficiaires d'un soulagement de la dette.

Codes JEL : F21, F34, F35.

Mots clés : dette; allègement de la dette

I. INTRODUCTION

In spring 2005, the World Bank and International Monetary Fund implemented a new *Debt Sustainability Framework (DSF)* in Low-Income Countries (LICs): this seeks to provide guidance on new lending to low-income countries whose main source of financing is official loans. The framework has been developed with the intention of better monitoring and preventing the accumulation of unsustainable debt in the wake of the Initiative for Heavily Indebted Poor Countries (HIPC Initiative) and Multilateral Debt Relief Initiative (MDRI). The total amount of debt relief for African countries is expected to reach \$43 billion, \$31.5 billion of which concerns the 17 African post-HIPC Initiative qualified countries (Djoulfelkit-Cottenet, 2007). According to *Global Development Finance 2007*, the 17 African HIPC-beneficiaries had benefited from almost \$18 billion between end-2000 and end-2005¹.

Over recent years, a number of emerging creditors have increased their aid and lending to LICs. Sketchy evidence indicates that China has become, by a large margin, the largest creditor in this group². This has fed worries that new official lenders may be undoing years of international efforts to rein in over-indebtedness in Africa, to reduce the continent's exposure to foreign currency-denominated debt and to encourage good governance by making loans conditional on political and economic reforms (World Bank 2006a).

Further, government-sponsored export credit agencies (ECAs) have played a significant and important role in lending to developing nations. Loans from export credit agencies (or guaranteed by them) have added to the external debt problems of developing countries in the past. Before the recent debt relief programmes, 30 to 40 per cent of developing countries' debt was owed to ECAs (or guaranteed by them). There are efforts under way to establish a framework for ECA-supported lending to the countries that are most at risk of debt distress. Those countries include HIPC and countries that receive only grants and highly concessional credits from IDA (and not from IBRD) — the so-called IDA-only countries.

¹ China has also granted debt relief (Qi, 2007). By 2007, China had written off total debts of RMB 16.6 billion (\$2.13 billion) for 44 recipient countries (including HIPC), 31 of which are African countries, amounting to a total write-off of RMB 10.9 billion (\$1.40 billion). Another debt cancellation of RMB 10 billion (\$1.28 billion) for African countries is under negotiation and arrangement. The write-offs will total 60% of all debt obligations to China. Unlike Development Assistance Committee (DAC) donors, China does not include debt cancellation in reported aid figures.

² In an effort to cast more light on the activities of new donors, the World Bank, in collaboration with the OECD DAC, the United Nations Development Programme (UNDP), and the United Nations Department of Economic and Social Affairs (UNDESA), conducted a survey of nine developing countries (Brazil, Chile, China, India, Malaysia, Russia, South Africa, Thailand, and Venezuela). Only three countries (Chile, Malaysia, and Thailand) have responded to the survey so far.

In May 2007, G8 Finance Ministers released the *G8 Action Plan for Good Financial Governance in Africa* containing a declaration to “commit to applying responsible practices in our lending decisions. To this end, we urge all borrowers and creditors to share information on their borrowing and lending practices. The *DSF*, developed by the IMF and the World Bank, provides an important guiding tool for decisions on new borrowing and lending and we encourage its broad use by all borrowers and creditors as a way to prevent new lend-and-forgive cycles”. G8 Finance Ministers have thus given a further stimulus to the *DSF*.

The next section will provide a definition of terms related to debt sustainability, along with a capsule summary of the debt overhang literature and the related “free-rider” problem; it is found that current initiatives, such as the *G8 Action Plan for Good Financial Governance in Africa*, are a belated reckoning of the collective action problem that the designers of HIPC and MDRI do not seem to have analysed deeply enough. This paper looks then at the current debt dynamics in Africa by distinguishing three country groups: HIPC, HIPC-HELP (HIPC with High Emerging-Lender Presence) and Resource-rich IDA-only. The empirical work helps to gauge whether and where the debt situation is improving or deteriorating. Special attention will be devoted to export credits from OECD and China. Before concluding, the paper investigates the broader role of China in Africa’s debt dynamics – not just with respect to lending amounts and lending terms, but also to Africa’s growth, exports, currency developments and diversification. The results are mixed; much better than “China bashers” often have us believe, but certainly not without risks to debt sustainability in African LICs.

A word of caution is in order as to the data on which this analysis could be based. Data have not been available with the scope, detail and timeliness necessary to carry out the empirical analysis with confidence. Instead, we have had to arrive at results in an inventive but indirect way, as described later. Moreover, country-by-country analysis does reveal great inconsistencies in the debt data that are available from current mainstream sources.

II. WHAT IS “IMPRUDENT LENDING”?

“*Imprudent lending*” (to a country) escapes any easy definition. The term aims at answering a deceptively simple question: when is lending to a country becoming so large that its debt will not be fully serviced? In other words: when does lending endanger the *debt sustainability* of a country? Debt sustainability in turn encompasses the concepts of *debt solvency*, of *debt liquidity* and of *debt serviceability* (Wyplosz, 2007).

- *Debt solvency* is maintained when current debt does not exceed the present value of future revenues, net of non-interest expenditures. Note the importance of “future revenues”, which is what development is all about: to strengthen debt-service capacity through achieving revenue growth. Government net worth can actually be increased when borrowing serves to build growth-enhancing infrastructure.
- *Debt liquidity* is maintained when liquid financial resources are large enough at any point in time to cover liabilities due; Korea, which in 1997 became victim to a bank run during the Asian crisis despite low external debt (ratios) may demonstrate better than any other country the importance of the *Guidotti Rule* (i.e. to keep official foreign exchange reserves higher than short-term debt at any time) for avoiding illiquidity.
- *Debt serviceability* implies solvency plus liquidity at any moment. This is the strictest definition of debt sustainability, and the one according to which the DSA seems to have been defined, according to Wyplosz (2007).

In the LIC context, debt sustainability concerns have centred on external public debt; such debt is often concessional and carries a grant element. Given the concessionality in loans extended to LICs, the Net Present Value (NPV) of debt is a more relevant metric for evaluation than the face value of debt. NPV is the discounted sum of all future debt-service obligations (interest and principal) on existing debt. The NPV of debt is a measure that takes into account the degree of concessionality present in the stock of debt. Important determinants of concessionality are: the effective interest rate of a loan, the grace (amortisation-free) period, the maturity (repayment duration), and the discount rate at which future payments are reduced to present value. It is defined as the sum of all future debt-service obligations (interest and principal) on existing debt, discounted at market interest rates. Whenever the interest rate on a loan is lower than the market rate, the resulting NPV of debt is smaller than its face value, with the difference reflecting the grant element. The grant element in year t is defined as the difference between the debt stock and the NPV of debt, expressed as a fraction of the debt stock

$$(1) GE_t = (D_t - NPV_t) / D_t \Leftrightarrow NPV_t = (1 - GE_t) D_t.$$

As mentioned, debt solvency considerations require that debt be scaled to country size and economic strength. It is common to relate total debt to the GDP. Public debts are serviced out

of government revenues, so what matters are present and future government revenues. If the debt is external, the appropriate scaling factor is exports, but this assumes that a constant fraction of exports can be used to service the debt. Cohen (2000) develops an empirical method that shows that the debt-GDP ratio is the best predictor of a debt crisis (measured as a debt-rescheduling event) when account is taken of other important country characteristics. (The Sachs-Warner index of trade liberalisation and the liquidity of the economy reduce the likelihood of a debt crisis.)

Any study that tries to disentangle “prudent” from “imprudent” lending has to gauge the impact of lending on GDP growth (and/or exports and public revenues)³. It should also look at subsequent effects on export-client and export-goods diversification that might help withstand price and demand shocks. “Prudent lending” should enhance growth (and ultimately poverty reduction⁴), in particular in African LICs where the infrastructure gap is very important. In a recent study on sub-Saharan Africa, all infrastructure sub-sectors except sanitation are shown to also be statistically significant engines of growth. In other words, they contribute to explain Africa’s GDP growth prospects — in particular, telecommunications, electricity and roads (Estache *et al.*, 2005). The implied GDP growth elasticities obtained from estimating an augmented Solow Growth model are 19% for telecommunications, 50% for electricity, 34% for water and 46% for transport.

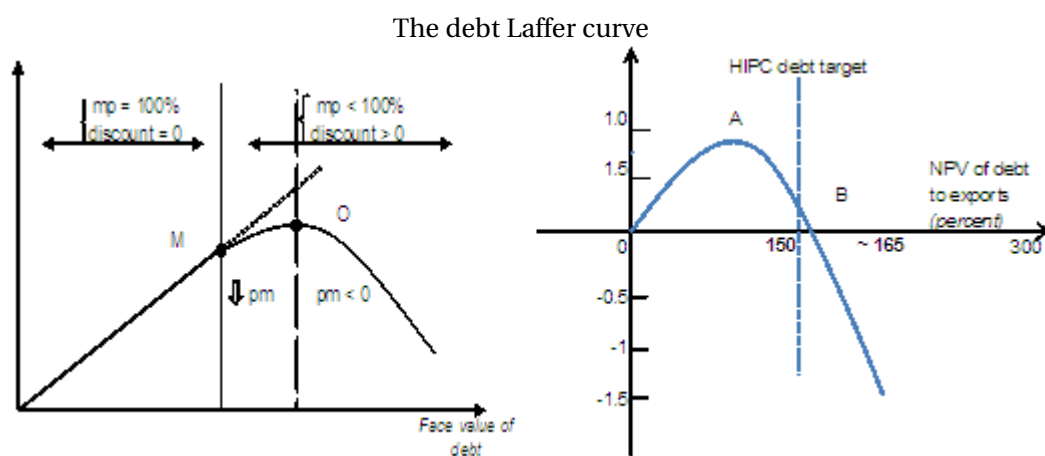
The theoretical literature on the relationship between external debt and economic growth has focused largely on the harmful effects of a country’s “debt overhang” — the accumulation of a stock of debt so large as to threaten the country’s ability to repay its past loans, which, in turn, scares off potential lenders and investors. Pattillo *et al.* (2002) show that the underlying reasoning in the debt overhang theories can enable us to infer the effect of debt accumulation on growth.

In debt overhang models, it is argued that for very large stocks of debt, the probability that a country will repay its debt in the future decreases, thus leading to a loss of confidence of investors, since they consider that if they invest in the debtor country’s economy, they will not entirely reap the benefits. This argument is illustrated by an inverted-U curve (Figure 1, left panel) called the debt “Laffer curve”: in cases where the stock of debt is not excessive (upward slope), the investors expect the country to repay its debt first in full, then at a declining share, which explains the build-up of a secondary market discount for quoted debt.

³ Note that a debt sustainability analysis that overemphasises the over-borrowing problem and underemphasises the growth benefits of (concessional) lending will bias development assistance in favour of grants and discriminate against soft loans. A move toward grants will deprive donors of leverage, reduce incentives for fiscal discipline and efficient financial management, and deprive recipient countries of an aid instrument that can be used to protect against exogenous shocks (Cohen *et al.*, 2006).

⁴ As infrastructure shortages are very pronounced in African HIPC, investment in electricity-generating capacity and paved roads will generate excess social returns above the country’s overall rate of return to capital (Canning and Bennathan, 2000). The impact of infrastructure investment on poverty reduction is maximised when it is focused on rural areas and is complementary to investment in health and education (Bourguignon, 2006).

Figure 1: Debt Overhang, Growth and Debt Thresholds



Source: Pattillo *et al.* (2002).

When the accumulated stock of debt becomes too great (downward slope), the market presumes that the debt owed by the country is larger than its expected repayment capacity, and the secondary market price of the debt starts falling well below its face value. A debt overhang produces perverse incentives for investment and growth: as the proceeds of investment would be absorbed by the creditor, incentives to grow are gone. Hence, debt has a non-linear effect on growth: for moderate level of debt stocks, growth is enhanced when debt is used to finance productive investments, if the macroeconomic situation of the country allows it. The optimal amount of debt (point B in Figure 1, right panel) is reached at a debt/export ratio of about 150 per cent, according to Pattillo *et al.* (2002)⁵; until point A (debt/export ratio of about 75 per cent) is reached, new lending even fosters the growth rate (the second derivative of GDP). However, growth is harmed when the accumulation of debt is on an excessive trend, beyond point B.

Note that this finding clearly supports the growth-enhancing role of *concessional lending* (from 0 to point A in Figure 1). The evidence available so far favours soft loans over both grants and private debt flows. Firstly, soft loans have been utilised more efficiently than grants during the past three decades, despite repeated debt crises. Secondly, global capital markets suffer from herd behaviour among investors in good times, with excessive risk-taking by market participants too big to fail; and, on the other hand, the liquidity needs of global investors, reinforced by prudential regulation, often prevent them from putting small poor countries on their radar screen (Cohen *et al.*, 2007). Thus, reliance on private lending alone runs the risk either of pushing the country quickly beyond point B, or of starving it of debt finance.

Debt relief, in turn, should be expected to stimulate growth (Clements *et al.*, 2005). That is, if a country's debt level is expected to exceed the country's repayment ability with some probability in the future, then expected debt service is likely to be an increasing function of the country's output level. The bulk of the returns from investing in the domestic economy would

⁵ Note that this result has a fairly low level of confidence; one explanation may be that the authors did not distinguish sample countries according to governance scores. For countries with only weak governance scores, the optimal debt/export ratio will be lower than 75 per cent.

then accrue to existing and emerging foreign creditors, thus acting as a disincentive for investment in the over-indebted economy. The debt overhang and the benefits derived from debt relief give rise to the “free-riding” concern, which suggests that debt relief should be viewed as a *collective action problem*.

The collective action problem in dealing with debt reduction, namely that it will facilitate repayment to other creditors, has probably not been given enough serious consideration in the design of HIPC and MDRI debt-relief initiatives, in spite of the lessons from the *Brady Initiative* in the late 1980s (Reisen, 1991). The *G8 Action Plan for Good Financial Governance in Africa* now tries to cope with the consequences of the fact that the debt-relief initiatives failed to *include* potential official and private creditors to the HIPC. Another lesson from the *Brady Initiative* was that it helped reverse a tide of negative private capital flows, which helped to spur private investment and growth. Successful debt relief does imply and attract new lending, both private and official.

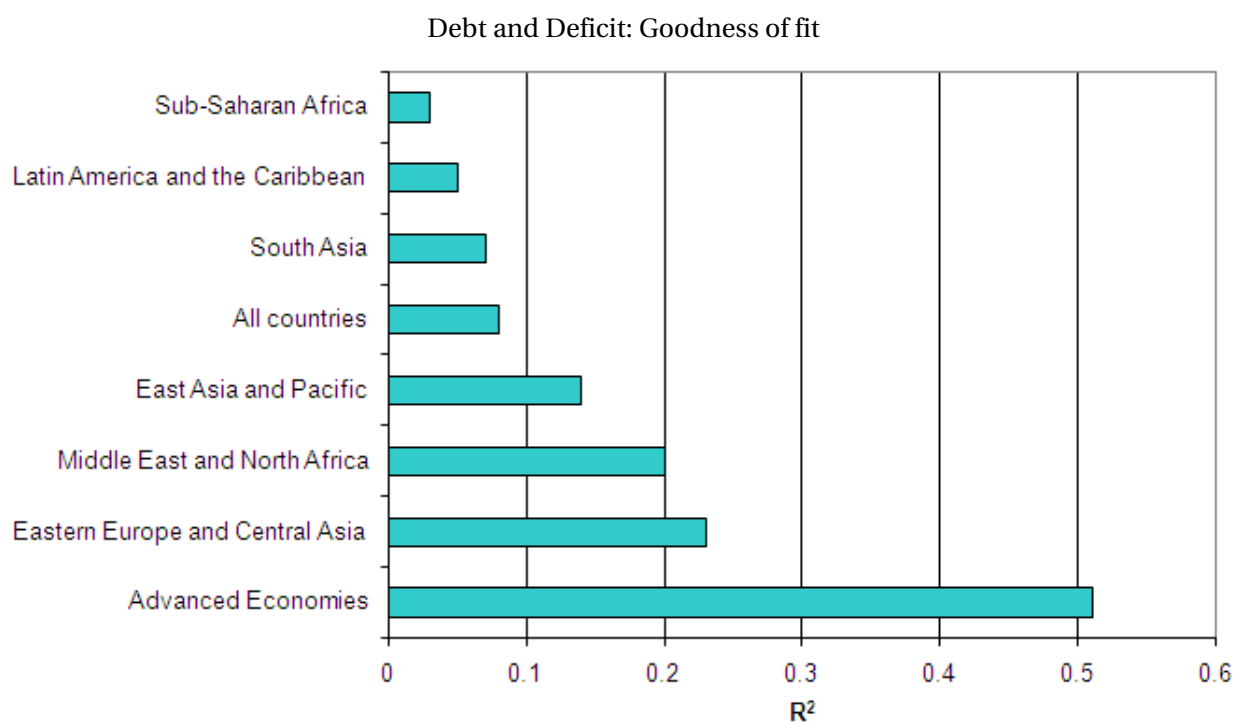
One way to solve the collective action problem is suggested by the *G8 Action Plan for Good Financial Governance in Africa*: promote the systematic use of the DSF among all creditors so that it can serve as the basis for their lending policies. Concretely, for the creditors, that would amount to taking into account the vulnerabilities underlined in the debt sustainability analysis conducted for the borrowing countries, and thus, co-ordinating with their counterparts in order to lend on the most appropriate terms according to the distress risk rating indicated in the DSAs. Creditors targeted by this effort are those who are susceptible to lend to African HIPC on non-concessional terms, such as new emerging official lenders and commercial creditors.

While the analytic foundation of debt thresholds can be debated, it remains true that the HIPC thresholds provided the basis from which the international community agreed to provide debt relief to approximately 40 LICs, and in doing so, judged these countries to have unsustainable debt burdens. A LIC had to fulfil two criteria to become eligible for the HIPC Initiative: to be poor, defined as a per capita income level below a certain threshold, and to have the NPV of external debt in excess of predefined thresholds (150 per cent of exports⁶, and in some cases, 250 per cent of fiscal revenues), as this was deemed to be unsustainable levels of debt. These thresholds were based on early work, by Cohen (1996), among others, who found that the likelihood of debt default climbed rapidly after a country’s NPV of external debt-to-export ratio climbed above the 200-250 per cent range.

Note, however, that Figure 2 suggests clearly that the link between imprudent lending, debt build-up and *non-interest deficit* is weaker than a casual look might suggest. In sub-Saharan Africa, that link is virtually non-existent (for public debt, the bulk of external debt). Campos *et al.* (2006) find, for a sample of 29 sub-Saharan countries for the period 1985-2003, that the public-sector deficit explains only 3% of the variance in the public debt-GDP ratio (while it can explain half of the variance for a sample of industrial countries).

⁶ In view of the rising importance of *remittances* to developing countries, it is important to note that these do not enter into the computation of debt/export (service) ratios in the DSF.

Figure 2: Defecits Don't Explain Much of Public Debt Ratios in Africa

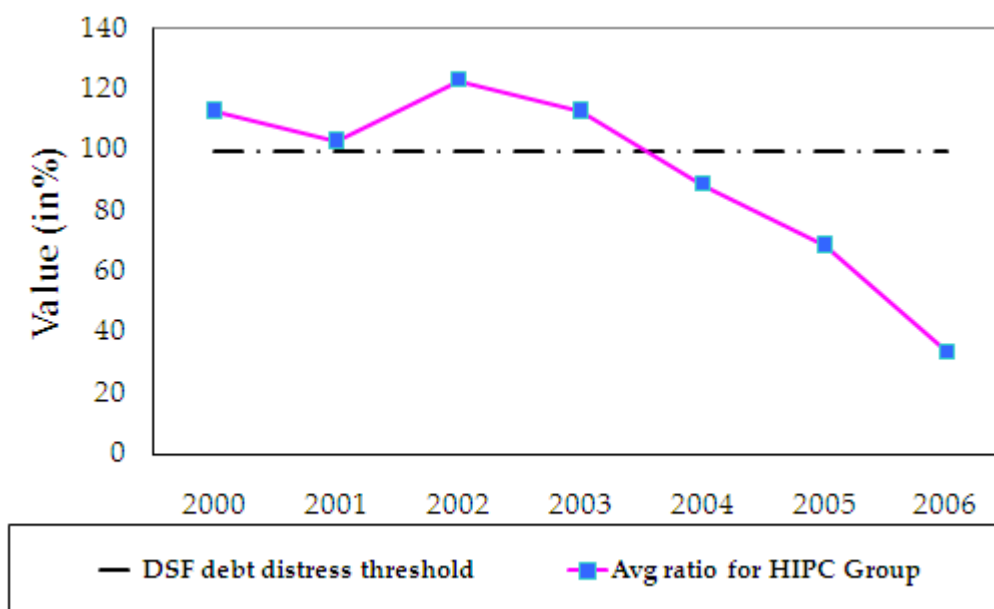


Source: Campos *et al.*

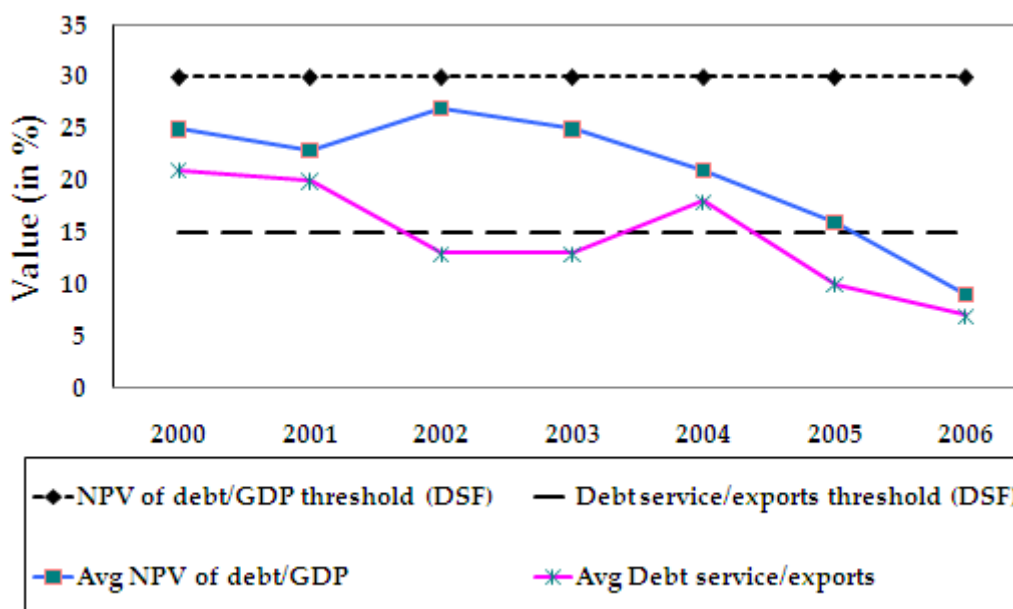
In contrast, *growth implosions*, valuation effects due to *currency depreciations* in the presence of foreign currency debt, default and *debt relief* drive the results for African debt. Figure 2 displays the correlation coefficients between changes in public debt-GDP ratios and non-interest public deficits for the various regional country groupings. There can be no pretence to precision in quantifying the amount of prudent lending; ignoring such endogeneities, however, will amount to setting thresholds that may “kill” warranted lending and growth opportunities. (For a more formal exposition, please see Annex: The Role of Endogenous Debt Dynamics).

Figure 3: African HIPC

Avg. NPV Debt/Export Ratio



Avg. Debt/GDP and Avg. Debt Service/Exports



Source: World Bank, GDF (2007) (avg. % grant element per year, per country); IMF, WEO (2007) (GDP, exports, debt stocks, debt service).

III. TRENDS IN FOREIGN DEBT AND LENDING

The following section describes trends in debt ratios during the period 2000-06. Because policy concerns about debt sustainability have focused on very recent developments in 2005 and 2006, the description of trends in foreign lending and external debt build-up had to rely on IMF and Bank for International Settlements (BIS) sources, as Global Development Finance (GDF) data by the World Bank were often not available for 2006. The data are summarised here for three country groups, encompassing 23 countries in sub-Saharan Africa. Table 1 presents the countries and the *three groupings* under study. The selection and grouping were informed by Chaponnière (2007), the Centre for Chinese Studies at Stellenbosch University (2007) and by unpublished work currently being carried out at the World Bank on Chinese infrastructure lending (cited in Bosshard, 2007). We distinguish HIPC, HIPC-CHINA and non-HIPC Resource-rich countries⁷. Note that the distinction HIPC and HIPC-HELP is both somewhat arbitrary and time-bound as it can change from one year to the next, for example, as a result of travel diplomacy.

III.1 Trends in Debt Ratios

As seen in Figure 3, the African HIPC have seen a continuous drop in the ratio of the net present value of their external debt, whether as a fraction of export revenues or of GDP: solvency has greatly improved⁸. Likewise, the ratio of debt service to exports has dropped, indicating improved liquidity. The drop in the debt (service) ratios has occurred steadily since 2003.

The graphs indicate the respective (black line) lowest DSF debt distress thresholds (for weak policy performance, CPIA < 3.5). African HIPC have reported on average NPV debt/export ratios below the distress threshold since 2004; NPV debt/GDP ratios were below debt-distress threshold levels throughout the entire decade; and debt service/export ratios have been below the lowest debt-distress threshold levels since 2005. Moreover, since 2005, debt ratios have dropped below levels that might indicate under-leverage for African HIPC if the results presented in Figure 1 hold. How these significant improvements in average debt (service) have come about will be discussed in the following section. It is sufficient to note here the improvements in African HIPC debt ratios.

⁷ Due to a lack of reliable debt reporting, Equatorial Guinea has been excluded from the sample.

⁸ 2006 values have been computed on the assumption that the grant elements in 2005 and 2006 were equal, as GDF data do not yet display the 2006 data.

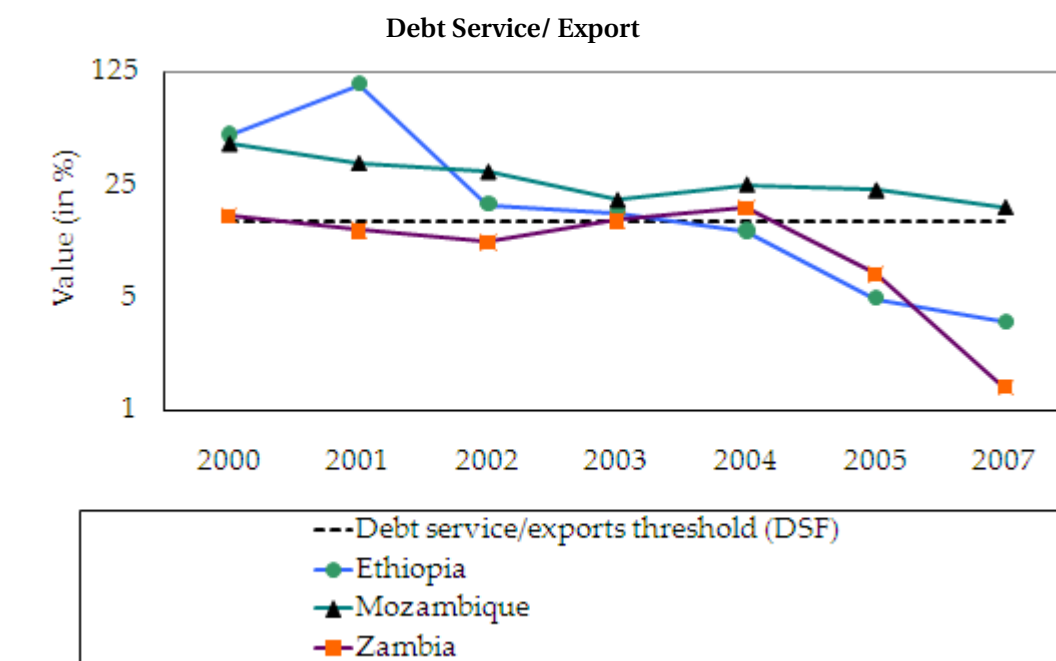
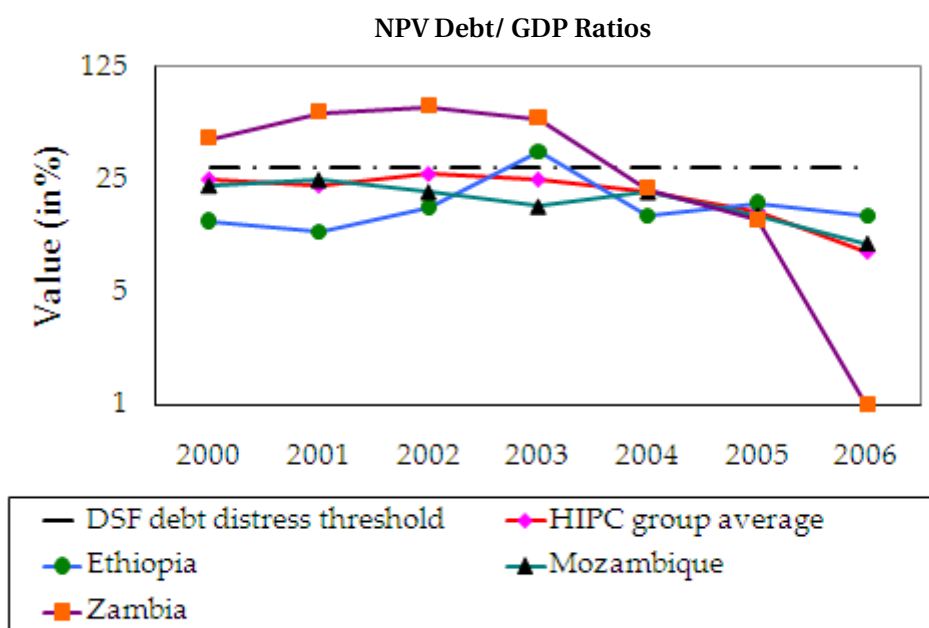
Table 1: Country Selection and Country Groupings

COUNTRY GROUPS	HIPC STATUS	CPIA 2005	FY 07 / DSA-based Traffic Light	NPV / GDP ratios 2004
HIPC				
Benin	Completion point	Medium	Green	20
Burkina Faso	Completion point	Strong	Green	19
Cameroon	Completion point	Medium	Green	16
Ghana	Completion point	Strong	Green	28
Madagascar	Completion point	Medium	Green	41
Malawi	Completion point	Medium	Yellow	60
Mali	Completion point	Medium	Green	27
Mauritania	Completion point	Weak	Green	60
Niger	Completion point	Medium	Red	22
Rwanda	Completion point	Strong	Red	14
Senegal	Completion point	Strong	Green	19
Sierra Leone	Completion point	Medium	Red	33
Tanzania	Completion point	Strong	Green	21
Uganda	Completion point	Strong	Green	30
China-heavy HIPC				
Ethiopia	Completion point	Medium	Yellow	26
Mozambique	Completion point	Medium	Green	15
Zambia	Completion point	Medium	Green	28
Resource-rich/ IDA only				
Angola	Not eligible	Weak	Yellow	43
Rep. of Congo	Decision point	Weak	Red	205
Nigeria	Not eligible	n.a.	n.a.	11
Sudan	Pre- Decision point	Weak	Red	129
Zimbabwe	Not eligible	n.a.	n.a.	72

Source: <http://go.worldbank.org/4IMVXTQ090> (HIPC list); World Bank (2006b), *Debt Dynamics and Financing Terms: A Forward-Looking approach to IDA Grant Eligibility*.

Those African HIPC that we classify as HIPC-CHINA display the same trends for both their NPV debt/GDP ratios and their debt service/export ratios. Figure 4 provides country detail and enables comparison with the African HIPC average debt ratios. While Zambia has seen the biggest drop in debt and debt service ratios, Mozambique still displays a debt service/export ratio slightly above the debt-distress thresholds set for weak CPIA scores; however, as Mozambique actually enjoys medium CPIA scores, the appropriate debt-distress threshold would lie at 20, not 15. Overall, any alleged China-induced deterioration of debt ratios is not (yet) visible in the broad values.

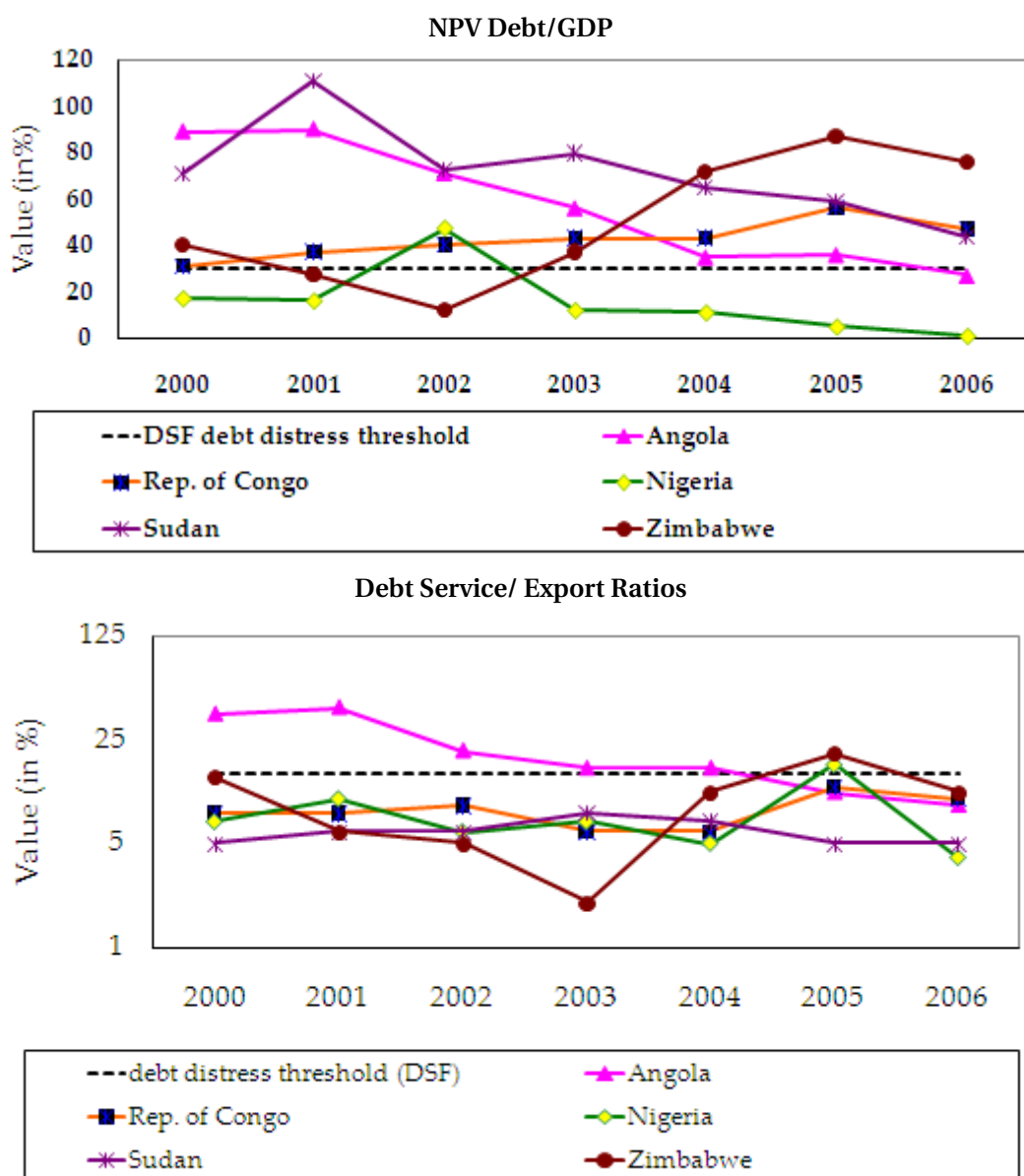
Figure 4: HIPC – China



Ratios

Source: World Bank, GDF (2007) (avg. % grant element per year, per country); IMF, WEO (2007) (GDP, debt stocks).

Figure 5: Resource-Rich Countries



Source: World Bank, GDF (2007) (avg. % grant element per year, per country); IMF, WEO (2007) (GDP, debt stocks).

Except Nigeria⁹, which is now clearly below debt-distress threshold levels for both the NPV debt/GDP and for the debt service/exports ratios, the Resource-rich non-HIPC countries (shown in Figure 5) have not benefited from debt relief. By 2006, without any debt relief, Angola too managed to drop through the relevant threshold that signals debt distress. Sudan is not there (yet), but likewise shows an important drop in both debt and debt service ratios. The Republic of Congo and, clearly, Zimbabwe, by contrast, were characterised by trends of rising NPV debt/GDP ratios during 2000 and 2006. As for debt service/export ratios, they deteriorated in 2005, except in oil-exporting Angola and Sudan, while they improved in all five resource-rich countries in 2006.

III.2 Accounting for Changes in Debt Ratios

Several parameters, and not debt relief alone, explain the observed drop in external debt ratios in the three country groups. In principle, if underlying data sets were consistent, it would be easy to decompose changes in external debt ratios. As was done for African HIPC in Tables 2 and 3, for several countries, we tried to decompose the changes in NPV debt/GDP ratios into changes of:

- *NPV debt in dollars*: the sum of changes in the face value of external debt in dollars (+), of debt reduction through HIPC and MDRI (-) and of changes in implicit grant elements (-);
- *GDP growth effects* (-);
- *currency effects* that result from changes in the real local exchange rate against the dollar (-).

The sign given in parenthesis denotes the relationship of the specific debt-dynamic determinants to the net present value of debt. Unfortunately, the Global Development Finance (GDF) and World Economic Outlook (WEO) data are not consistent enough to carry out the decomposition above at specific country level; more detailed country analysis would be required. As the World Bank's 2007 Global Development Finance Yearbook (GDF 2007) data still did not allow us to investigate developments in the year 2006, we had to rely on IMF data from the 2007 World Economic Outlook (WEO 2007) for external debt values, exports and GDP; grant elements are taken from GDF 2007, and are available for up to 2005.

The importance of GDP growth and inflation-adjusted local-currency appreciation against the dollar is clearly visible, as together they account for a reduction in NPV debt/GDP ratios of 9 percentage points. This finding confirms earlier debt-ratio studies (e.g. Campos *et al.*, 2006) for other developing-country regions. It also confirms Clements *et al.* (2005), who had conjectured that the substantial reduction in external debt projected for the countries participating in the HIPC Initiative would directly add 0.8-1.1 per cent to their per capita GDP growth rates. Likewise, the fact that the debt-ratio reduces the currency (appreciation) effect is consistent with changes in the fundamentals, especially the anticipated and actual improvements in the net foreign assets position stemming from assistance under the enhanced HIPC Initiative

⁹ In 2005, Nigeria secured significant debt relief from the Paris Club amounting to \$18.0 billion debt relief. With the payment of the balance of \$12.4 billion to its creditors, Nigeria exited the Paris Club debt in March 2006. Nigeria also exited the London Club debt on 4 April 2007 after paying off outstanding Par Bonds and Promissory Notes.

(Buffie *et al.*, 2006). With a debt overhang gone in African HIPC, we witness the magic of a virtuous circle where debt reduction endogenously improves debt-ratio determinants.

Table 2: African HIPC: Decomposing changes in NPV debt/ GDP ratios, 2006 versus 2000 (%)

Africa HIPC	2000	2006	Change 06 vs 00
NPV debt/ GDP	25.0	9.0	- 16.0
+Δ FV debt, US \$ (of which: debt relief)		(17.5)	- 7.5
+Δ Grant element		(25.5)	+ 0.5
=Δ NPV Debt, US \$		18.0	- 7.0
Avg. accumulated GDP growth, 2000-06 (34.6%)		(18.5)	- 6.5
Residual, accumulated 2000-06		(22.5)	- 2.5

Source: Author's calculations based on World Bank, GDF (2007); debt relief from OECD/DCD, Creditor Reporting System (www.oecd.org).

Table 3: African HIPC: Decomposing changes in NPV debt/ GDP ratios, 2006 versus 2004 (%)

African HIPC	2004	2006	Change 2006 versus 2004
NPV Debt/GDP	21.0	9.0	-12.0
+Δ FV Debt, \$		(11.9)	-9.1
+Δ Grant Element		(25.5)	-0.5
=Δ NPV Debt, \$		11.4	-9.6
Avg. accumulated GDP growth, 2004-06 (12.0%)		(18.8)	-2.2
Residual, Accumulated 2004-06		(21.6)	-0.2

Source: Authors' calculations based on World Bank, GDF (2007).

Focusing on the period end-2004 to end-2006, Table 4 highlights the impact of the enhanced HIPC and MDRI initiatives (direct observations from GDF for 2006 were not yet available), demonstrated by the reduction of the face value of external debt (in dollars). This table gives rise to another observation: in the past two years, the grant element has risen for the average African HIPC, and hence debt ratios have been lowered further. This observation, however, does not hold for countries classified here as *HIPC-HELP*; there, *we do observe a significant reduction of grant elements on a mix of remaining and new debt*, translating into less concessionality (Table 4). This observation may confirm the concerns about the terms at which China provides loans to African HIPC.

A strong appreciation of the real effective exchange rate (REER) — exceeding 50 per cent during that period — can be noted for Zambia in particular, reflecting not just higher commodity prices but also simultaneous debt relief and renewed capital inflows. The fundamental equilibrium exchange rate may have appreciated correspondingly: an appreciation (of the REER)

should not be entirely equated to real effective overvaluation, as Collier (2007) has done¹⁰. Currency appreciation trends in recent years were not Zambia-specific, however.

Table 4: Grant Elements, % of Debt Face Value

	2000	2005
Ethiopia	79.1	69.0
Mozambique	83.0	80.1
Zambia	80.0	75.5
Avg. HIPC Africa	74.3	75.0

Source: World Bank, GDF (2007).

Table 5 does not display the REER as such, but rather the annual inflation-adjusted currency appreciation against the dollar. The real currency appreciation accumulated over the period 2004-06 made an important contribution to bringing debt/GDP ratios down, most strikingly in Zambia.

Table 5: Annual Real Exchange Rate Effects
HIPC-CHINA, 2004-06

	2004	2005	2006
Ethiopia	5.1	8.7	9.7
Mozambique	14.8	4.0	1.3
Zambia	19.2	27.1	42.0

Note: Real Exchange Rate Effects denote the implied annual effect of local currency appreciation against the \$, as computed as the annual rise in \$ GDP corrected for annual real GDP growth.

Source: World Bank, GDF (2007); IMF, WEO (2007); authors' calculations.

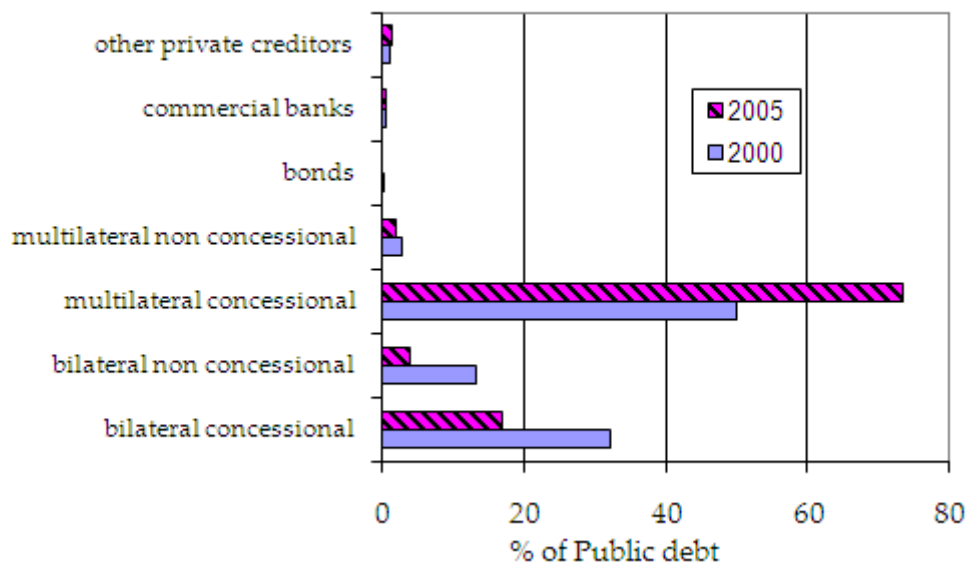
III.3 Changes in the Composition of External Debt

This section sets out to decompose the external debt stocks according to official multilateral/bilateral/DAC versus non-DAC/private lenders¹⁰. The mix of debt outstanding and any changes of that mix may indicate a deterioration of the concessionality of debt and hence risks to debt sustainability. Figures 6 to 9 provide a snapshot of the composition of external debt stocks.

¹⁰ Zambia's currency was probably overvalued in 2006, and this was subsequently corrected in 2007. According to Collier (2007), dramatic contrasting examples of the consequences of different public savings strategies for the real exchange rate are Chile and Zambia during 2005, a period when the world price of their common commodity export, copper, was exceptionally high. The Government of Chile followed a savings rule that meant that all the incremental revenue was saved, whereas the Government of Zambia continued to run a fiscal deficit.

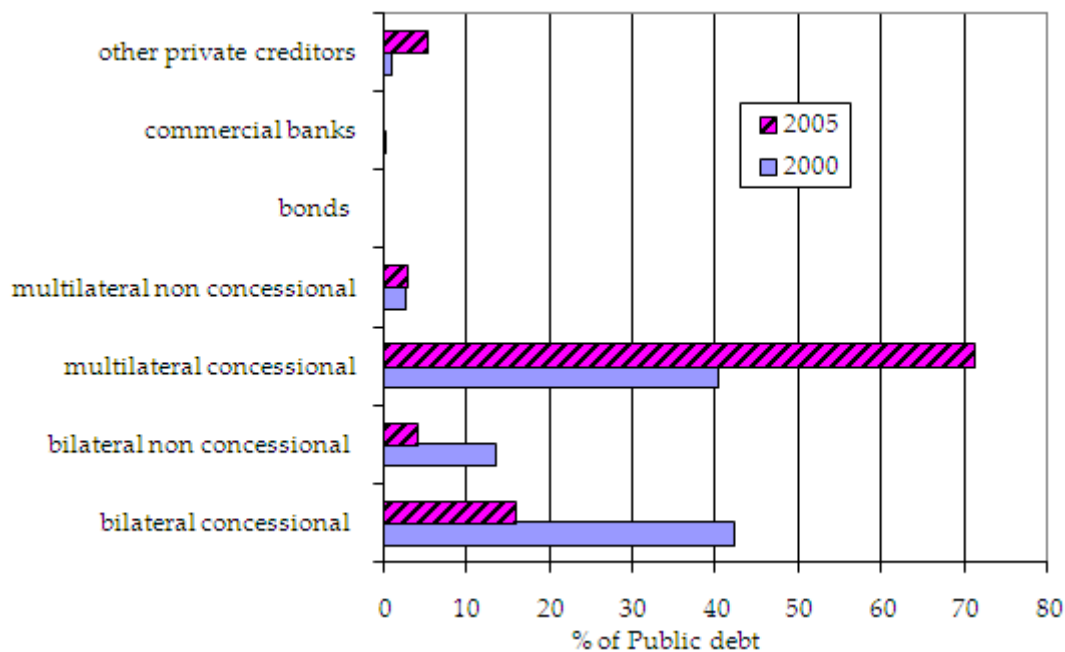
¹⁰ As mentioned, GDF data were not yet available for 2006.

Figure 6: Composition of External Debt, African HIPC



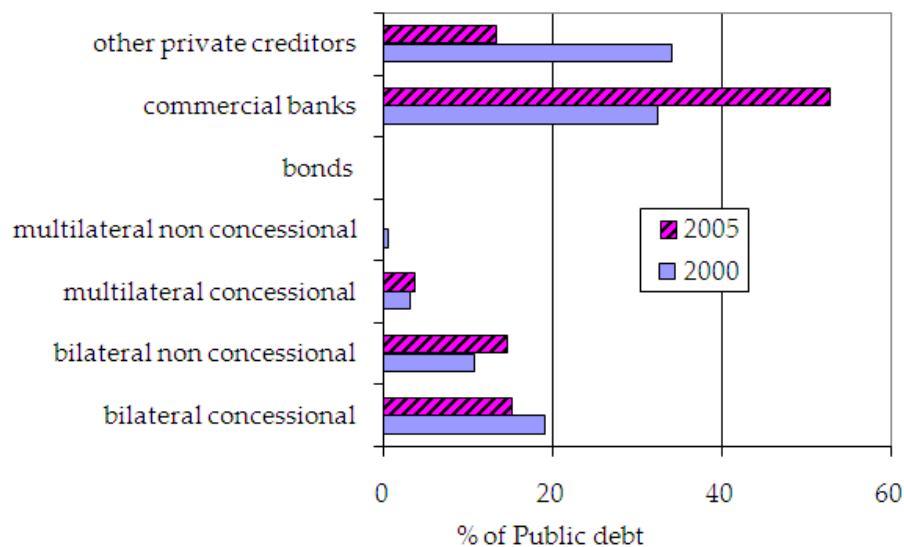
Source: World Bank, GDF (2006) (<http://www.worldbank.org/>).

Figure 7: Composition of External Debt, HIPC-HELP



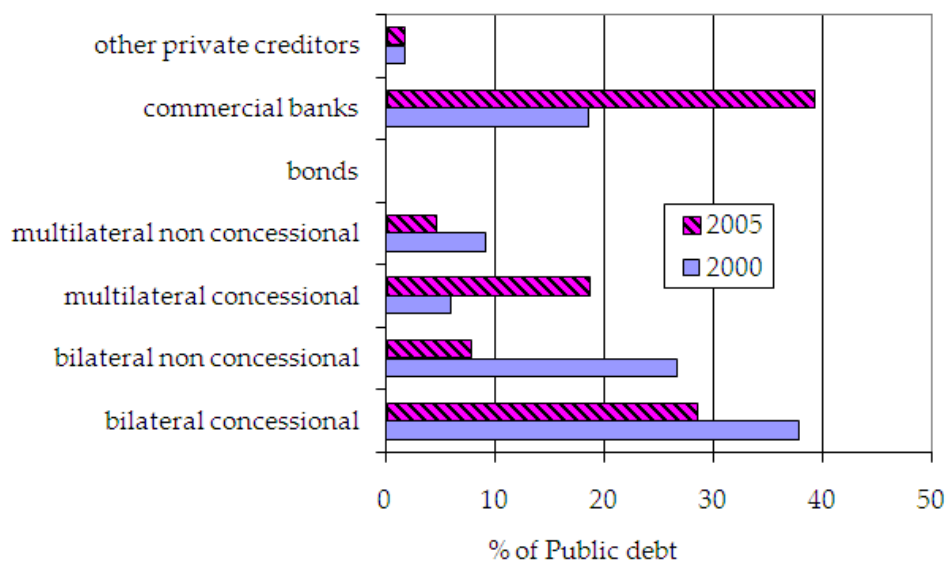
Source: World Bank, GDF (2006) (<http://www.worldbank.org/>).

Figure 8: Composition of External Debt, Angola



Source: World Bank, GDF (2006) (<http://www.worldbank.org/>)

Figure 9: Composition of External Debt, Republic of Congo



Source: World Bank, GDF (2006) (<http://www.worldbank.org/>)

It may be recalled that Table 5 had signalled a significant reduction of grant elements on a mix of remaining and new debt in HIPC-HELP between 2000 and 2005, translating into less concessionality; by contrast, the grant element had generally risen further in African HIPC, indicating more concessionality beyond debt relief. Figure 6 confirms the observation that the terms and structure of debt looks much healthier for African HIPC in 2005; notably, the share of bilateral non-concessional debt is down markedly. Data on locational asset positions were provided to the Bank for International Settlements (BIS) by commercial banks in 40 BIS-reporting countries (mostly industrial countries and offshore centres: see www.bis.org/statistics/bankstats.htm) to which, e.g. China, India and Arab countries do not belong. These data confirm that there has been no marked rise in bank credit towards any of the African HIPC for 2006.

A debt structure with an increased share of concessional debt is also notable in HIPC-HELP (Figure 7). Note, however, that, already in 2005, the share of private creditors has started to rise in the GDF data (which are based on a Debtor Reporting System). This suggests that the HIPC classified as HIPC-HELP have also incurred new debt with private banks; this rise can only be due to lending that is not reported to BIS. This may, but ought not to, indicate an increased presence of non-concessional lending by Chinese and other emerging-lender sources.

Figures 8 and 9 display the composition of external debt in those resource-rich countries for which a notable change in the mix of liabilities could be observed. Clearly, debt against commercial banks rose strongly between 2000 and 2005, from 32.5 to 52.8 per cent in Angola. Moreover, bilateral non-concessional official lending rose from 10.8 to 14.7 in the same period. Similarly, commercial bank lending to the Republic of Congo rose from 18.9 to 39.2 per cent over 2000 and 2005. Unlike in Angola, however, the percentage share of bilateral non-concessional lending shrank from 26.7 to 7.7 during that same period.

In order to find out whether the rise in commercial bank lending comes from the 40 BIS-reporting countries (essentially industrialised countries and bank offshore centres) or from outside this group of countries, it might be useful to compare commercial bank asset data between the 2007 GDF data based on the debtor reporting system with the BIS-reporting data. In principle, with full reporting by the developing countries to the World Bank, one should expect the GDF data to exceed the BIS data in all cases. The positive difference would then point to commercial bank lending outside the BIS-reporting area.

Table 6 selects only those African sample countries for which at least one of either statistical database reports non-negligible amounts of commercial bank debt. The table shows, however, that the commercial bank debt of Cameroon, Ghana and Nigeria reported to the World Bank is lower than the corresponding claims reported from banks in 40 countries to BIS¹¹; also, Zimbabwe does not report to the World Bank. Is commercial bank debt under-reported in these countries? As noted earlier, there is a build-in incentive for HIPC beneficiaries to under-report

¹¹ However, adjusting for under-reporting of bank credit claims did not materially change debt ratios in these countries.

their liabilities to the IDA for fear of “penalties”. The difference may also be due to incomplete coverage of short-term lending in the World Bank’s GDF statistics.

Table 6: Comparing Foreign Commercial Bank Loan Assets between GDF and BIS Data,

\$ million

Country	31-12-2004	31-12-2005	31-12-2006
Angola			
GDF	3437	4980	n.a.
BIS	1636	3328	3396
difference	1801	1652	
Cameroon			
GDF	43	38	n.a.
BIS	2633	2227	1894
difference	n.a.	n.a.	
Republic of Congo			
GDF	2111	2022	n.a.
BIS	493	358	366
difference	1618	1664	
Ghana			
GDF	250	261	n.a.
BIS	1460	1140	1578
difference	n.a.	n.a.	
Nigeria			
GDF	20	11	n.a.
BIS	3096	3693	4940
difference	n.a.	n.a.	
Sudan			
GDF	1819	1583	n.a.
BIS	223	297	361
difference	1596	1286	
Zimbabwe			
GDF	n.a.	n.a.	n.a.
BIS	816	749	825
difference	n.a.	n.a.	n.a.

Source: author’s calculations based on World Bank, GDF (2007) and BIS Banking Statistics (www.bis.org).

The resource-rich countries Angola, Republic of Congo and Sudan, by contrast, are characterised by commercial bank debt data that suggest at least some data consistency. Only for those sample countries does it make sense to compute the difference between GDF and BIS data in order to gauge the extent and dynamic of commercial bank lending outside the BIS-reporting banks. While the differences exceed the \$ billion mark by far in all three countries, there seems to be no dynamic trend from 2004 to 2006. In fact, in Sudan, the commercial bank debt outside the BIS-reporting area has come down significantly since 2005.

It should be noted that some oil-rich countries have established asset positions in BIS-reporting banks that hugely exceed their bank liabilities. It is an open question whether those assets would be repatriated in case of threat to debt sustainability, as they may constitute capital

flight. Nigeria's Central Bank, which does not report its official reserves to the IMF, showed that its official foreign exchange reserves (www.cenbank.org/IntOps/Reserve.asp) stood at almost \$42 billion at end 2006.

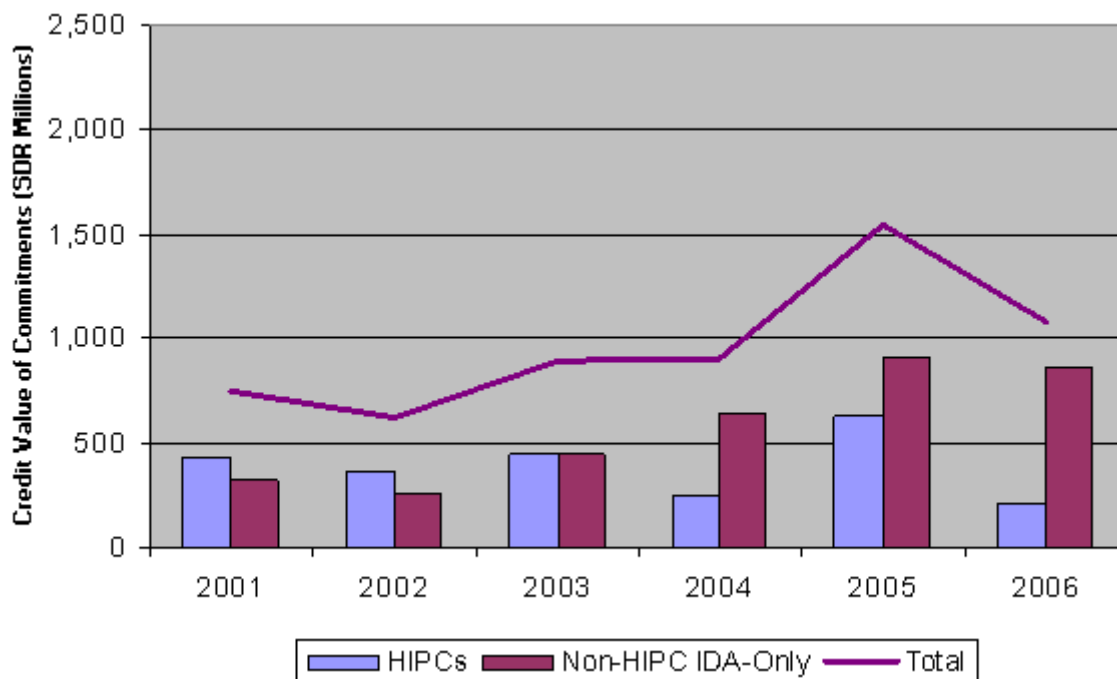
IV. FOCUS ON EXPORT CREDITS

Besides commercial bank lending, government-sponsored export credit agencies — particularly from emerging countries that are not *Participants to the OECD Arrangement on Officially Supported Export Credits* — are a source of concern for renewed lending at unfavourable terms to HIPC beneficiaries. Before the recent debt relief programmes, 30 to 40 per cent of developing countries' debt was owed to export credit agencies (ECAs), but most of that debt has been forgiven, thanks to the large-scale debt relief provided under the debt relief initiatives. The OECD Arrangement prescribes, inter alia, minimum risk premium rates and interest rates, and maximum terms for the support provided by OECD official export credit agencies, in order to curb subsidy practices and to instil better discipline against trade-distortive practices. The Arrangement also distinguishes between “export credits”, which are subject to “maximum” terms and conditions, from “aid credits”, which are subject to “minimum” concessionality levels and to rules regarding country and project eligibility. The Arrangement has also resulted in increased transparency for export credit commitments from OECD countries. However, the *Participants to the OECD Arrangement* are OECD member countries, and emerging lenders are not necessarily prepared to participate in the Arrangement for the moment — although some apply its terms and conditions in practice.

Finally, in the framework of the OECD Export Credits Group, members have agreed to apply some common principles to avoid supporting “unproductive expenditure” in HIPC. More recently, in the context of the latest G8 statements and the IMF/World Bank DSF, they have been considering how to improve their policies towards “responsible lending” and how to share data with the International Financial Institutions (IFIs).

OECD ECAs provided approximately \$3.05 billion of official export credit support to IDA-only countries from 2001 to 2006, with total commitments in 2006 (\$1.65 billion) amounting to about two-thirds of 2005 levels (out of a total of around \$60 billion annually). Figure 10 shows that the credit value of official export credit commitments to all IDA-only countries increased significantly in 2005 after a four-year period characterised by almost no change at all in commitment levels (when transactions involving the sale of large commercial aircraft are excluded). Commitment levels fell off in 2006 in comparison with 2005, especially in relation to business with HIPC; however they were still higher than the levels recorded from 2001 to 2004.

Figure 10: Official Export Credit Commitments to IDA-Only Countries, SDR billion, 2001-06



Source: OECD (2007b), *Unproductive Expenditure: Review of officially supported export credit commitments to IDA-Only countries (2001-2006)*, TAD/ECG(2007)6/FINAL.

In terms of the number of commitments and the credit value for African HIPC (Table 7), the more active buyer countries in 2005 and 2006 were:

- Cameroon, though on a strongly declining trend, with 33 projects totalling \$312.7 million;
- Ethiopia, which received support for five big projects in 2003 and 2005, accounting for almost \$451.32 million;
- Ghana, with 69 projects and a total contract amount of more than \$872.5 million during 2001 and 2006;
- Mozambique, like Cameroon, on a strongly declining trend, with twelve projects worth \$400 million.

Among Africa's non-HIPC, throughout 2001 and 2006, Kenya was an active buyer of export credits with a total of \$852.99 million. Nigeria received a comparatively modest amount of export credit from OECD sources: \$455.8 million between 2003 and 2006. A significant increase in commitments to Angola was noted from 2005, adding up to \$613.79 million in the last two years. On the whole, commitments to IDA-only countries, and even more so to HIPC, have accounted for a very modest share of official OECD export credit activity from 2001 to 2006. However, activity in these countries seems to be increasing, especially in connection with the re-emergence of several countries as significant recipients of official export credits, notably Angola (where a US export credit for large commercial aircraft 2006 of the order of \$346 million was booked in 2006).

Table 7: Official Export Credit Commitments to HIPC by Buyer Country, 1 January 2001 — 31 December 2006

Buyer Country	Number of Transactions							Credit Amount (US \$ Millions)						
	2001	2002	2003	2004	2005	2006	Total	2001	2002	2003	2004	2005	2006	Total
Benin	1	1	0	0	1	1	4	12.47	0.23	0	0	3.05	0	15.75
Bolivia	9	9	5	19	2	0	44	12.50	19.44	4.39	12.11	0.75	0	49.19
Burkina Faso	0	0	3	0	1	0	4	0	0	11.31	0.00	24.18	0	35.49
Burundi	0	0	0	1	0	0	1	0	0	0	7.93	0	0	7.93
Cameroon	4	8	15	2	3	1	33	192.16	50.53	19.02	17.09	33.47	0.53	312.78
Central African Rep.	0	1	0	0	0	0	1	0	0.89	0	0	0	0	0.89
Chad	1	0	0	0	0	0	1	38.29	0	0	0	0	0	38.29
Comoros	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Congo	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Congo, Dem. Rep.	1	0	1	0	0	0	2	32.69	0	4.51	0	0	0	37.19
Côte d'Ivoire	11	3	1	0	0	0	15	25.00	1.52	14.64	0	0	0	41.15
Eritrea	0	1	0	0	0	0	1	0	11.61	0	0	0	0	11.61
Ethiopia	0	0	2	0	3	2	7	0	0	253.88	0.00	193.51	0.84	448.25
Gambia	1	0	1	0	0	0	2	0.60	0	0.53	0	0	0	1.13
Ghana	17	10	8	11	11	12	69	70.14	47.78	97.58	74.17	399.22	184.06	872.94
Guinea	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Guinea-Bissau	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Guyana	1	2	1	1	0	0	5	1.44	1.78	0.68	1.41	0	0	5.33
Honduras	5	4	14	21	8	13	65	24.03	34.81	104.45	113.13	4.12	13.48	294.00
Kyrgyzstan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Laos	0	2	0	0	3	0	5	0	145.93	0	0	207.14	0	353.07
Liberia	0	0	1	0	0	0	1	0	0	22.76	0	0	0	22.76
Madagascar	0	3	2	1	0	1	7	0	1.08	0.65	0.65	0	30.25	36.11
Malawi	0	1	0	0	0	0	1	0	1.31	0	0	0	0	1.31
Mali	1	4	2	5	1	4	17	3.20	5.21	9.42	54.22	0.35	2.83	75.22
Mauritania	0	1	0	0	0	0	1	0	10.02	0	0	0	0	10.02
Mozambique	2	3	1	3	2	1	12	153.82	168.28	18.43	26.85	19.84	13.04	400.29
Myanmar	0	0	0	0	0	0	0	0	0	0	0	0	0	0

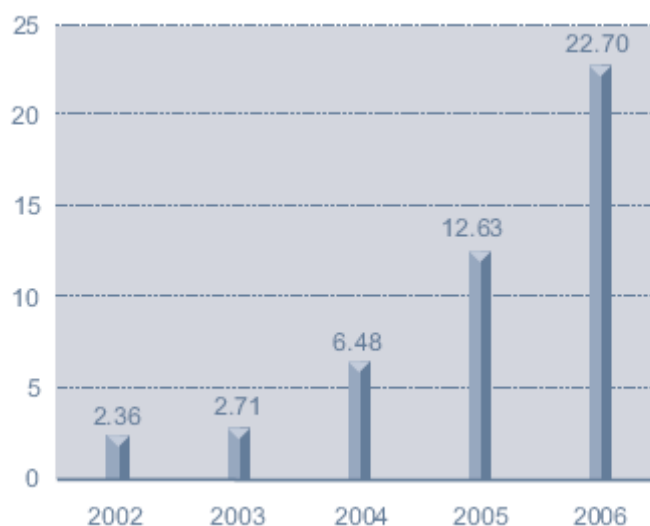
Table 7 continued...

Buyer Country	Number of Transactions							Credit Amount (US \$ Millions)						
	2001	2002	2003	2004	2005	2006	Total	2001	2002	2003	2004	2005	2006	Total
Nicaragua	15	14	6	0	2	2	39	13.78	9.45	3.93	0	11.03	1.75	39.93
Niger	0	0	0	1	0	1	2	0	0	0	0.89	0	0.80	1.68
Rwanda	0	0	1	1	0	2	4	0	0	19.44	10.73	0	0	40.69
Sao Tome and Principe	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senegal	9	12	4	4	2	1	32	50.59	20.50	7.46	8.64	53.66	0.05	140.90
Sierra Leone	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Somalia	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sudan	0	0	0	0	0	12	12	0	0	0	0	0	28.03	28.03
Tanzania	0	1	1	3	0	0	5	0	3.78	4.26	40.47	0	0	48.64
Togo	1	1	1	0	0	0	3	1.43	0.50	40.03	0	0	0	41.96
Uganda	3	2	3	2	0	1	11	2	2.95	21.69	1.25	0	0.75	28.66
Zambia	1	1	1	2	1	2	8	3.84	1.96	4.60	13.54	2.47	45.36	71.76
TOTAL	83	84	74	77	40	56	414	637.99	539.54	664	383	952.80	322	3512.94

Source: OECD (2007), 2001-2006 Summary Table of Official Export Credit Commitments to IDA-Only Countries by Sector (www.oecd.org/dataoecd/42/59/36945707.pdf).

The world's potentially largest export credit agency is China's Exim Bank¹², which aims to expand its loans by 15-20% per year. A growth rate of 15% would increase its lending to approximately \$40 billion in 2010 – considerably more than the lending of any other export credit agency or the World Bank. What is of interest with respect to debt sustainability in Africa, however, is not the entire credit portfolio, but the *export buyer credits* that China extends to Africa. Export credit agencies provide the bulk of credits to their own country's companies, and not to foreign buyer companies. According to the 2006 Annual Report released by the Export-Import Bank of China, the bank signed globally \$4.24 billion export buyer credits in 2006, and actually disbursed \$2.27 billion (see Figure 11), bringing the corresponding bank assets to \$4.39 billion. The biggest African clients were Angola, Ethiopia, Mozambique, Nigeria, Sudan and Zambia¹³.

Figure 11: China Exim Bank: Export Buyer Credits -- Actual Disbursements, \$100 million



Source: Export-Import Bank of China (2007), 2006 Annual Report.

The Bank's activities are not reported regionally, but there is clear evidence of significant and expanding operations in Africa. Some examples (with limited reliability, and with little distinction between announced, committed and realised; from separate *confidential* country notes and from Moss and Rose, 2006):

¹² China Exim Bank is not the only Chinese policy bank which supports trade and investment in Africa. With outstanding loans of \$256 billion, the portfolio of the China Development Bank (CDB) in December 2006 was more than eight times larger than the portfolio of China Exim Bank. Of this, only \$1 billion was outstanding in Africa, however.

¹³ Often, studies fail to distinguish total loans by the China Exim Bank from export buyer credits; only the latter are crucially important for debt sustainability in Africa. Bosshard (2007), for example, cites much higher figures, from an unreleased World Bank study: "The World Bank estimates that all China Exim Bank loans to Sub-Saharan Africa in the infrastructure sector alone amounted to over \$12.5 billion by mid-2006" (p. 2).

- *Angola*: between 2002 and 2006, more than 10 infrastructure projects, commitment for those projects worth more than \$4.5 billion;
- *Ethiopia*: in 2006, to expand and upgrade Ethiopia's telecommunications network, Chinese commitment worth \$1.5 billion;
- *Ghana*: \$1.2 billion, half of which for the Bui Dam;
- *Mozambique*: \$2.3 billion for electricity projects;
- *Nigeria*: between 2004 and 2006, \$8.8 billion committed by China for natural-resource (oil-) related infrastructure;
- *Sudan*: country with the highest level of oil-related financing by China in Africa, for 12 projects. Between 2001 and 2005, infrastructure investment amounted to nearly \$1.9 billion.

There are fears that the Chinese do not lend according to the financial terms and conditions set by the OECD *Arrangement on Officially Supported Export Credits*. More precisely, Chinese export credits could belong to the “forbidden loans” category under the Arrangement. “Forbidden loans” are loans that are neither “export credits” as defined by the Arrangement, nor sufficiently concessional: they are between these two different categories. Also, such loans may, in principle, endanger debt sustainability in countries with low debt tolerance.

The 2007 GDF data provide another approximate source for non-concessional bilateral lending (mostly, presumably, from export-import banks). By comparison with the OECD data provided in Table 7, we can disentangle new lending to African HIPC and IDA-only. Table 8 indeed points to considerable non-concessional bilateral lending from outside of the OECD area, but rather more in 2001 than in 2005. It is important to note that OECD and Chinese export credits can be highly concessional.

Table 8: Bilateral Non-Concessional Lending (GDF) and OECD Export Credits, \$ million

	2001		2005	
	GDF	OECD	GDF	OECD
Angola	837	0	1385	101
Cameroon	2267	162	933	32
Rep. of Congo	967	28	397	0
Ethiopia	208	0	239	185
Mozambique	1082	130	214	20
Nigeria	22571	0	6000	118
Sudan	3560	0	3363	0
Zambia	682	3	120	2

Source: World Bank, GDF (2007); OECD (2007), UNPRODUCTIVE EXPENDITURE: review of officially supported export credit commitments to IDA-Only countries (2001-2006), TAD/ECG(2007)6/FINAL.

V. SPOTLIGHT ON CHINA'S ROLE

Besides the 22 DAC donors, other countries have re-emerged as new donors and lenders in the present decade. It is difficult to quantify the volume, allocation and composition of aid provided by most new donor countries, because their activities are not reported in a comprehensive manner. Former DAC Chairman Richard Manning (2006) raised the question: "Will DAC members continue to be vastly the predominant source of aid finance, or will others now start assuming a much larger share than hitherto? Let us look at four main groups." (p. 373). Among the so-called new donors, he distinguished:

- OECD members which are not members of the DAC – countries such as Turkey, Korea, Mexico and several European countries;
- new EU member states which are not members of the OECD;
- Middle East and OPEC countries and funds;
- non-OECD donors which provide aid but fall outside the second and third groups identified above, including the "heavyweights", China and India.

The six largest non-Paris Club bilateral creditors to LICs are Brazil, China, India, Korea, Kuwait and Saudi Arabia, according to the IMF/World Bank (2006b). In Africa, it is really mostly China that may matter for debt sustainability. At the current pace, China's income is doubling every seven years. As a result of intensified trade links with China, Africa has enjoyed higher growth rates, better terms of trade, increased export volumes and higher public revenues (Goldstein *et al.*, 2006). To sustain this growth, China needs, first and foremost, natural resources – oil, industrial metals – and also, increasingly, agricultural resources. Resource-rich Africa can deliver¹⁴. By investing massively in Africa's infrastructure, China clearly contributes to a dampening of the price effects on oil and other raw materials that would arise if China bought on raw material spot markets alone; from that perspective, China does a great favour to the world economy at large.

There are three forms of aid provided by China: *i*) grant aid (Ministry of Commerce, or MOFCOM): mainly aid in kind; *ii*) zero-interest loans (MOFCOM): Chinese authorities consider that more than 90% of these loans are written off over time; *iii*) concessional loans (China Exim

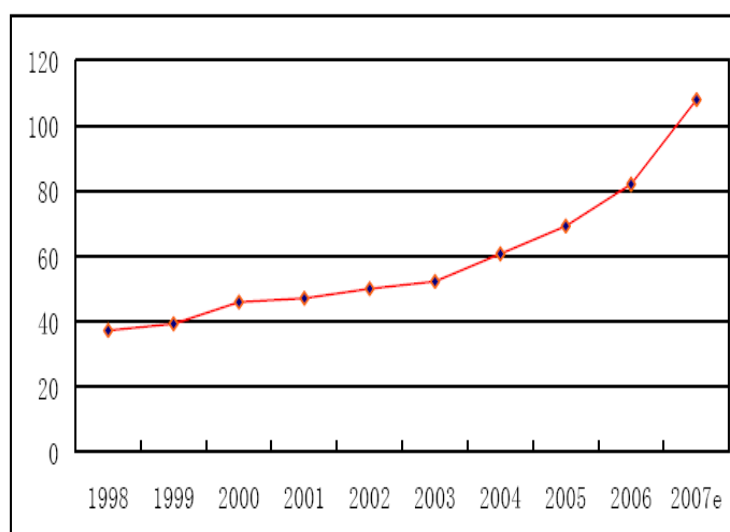
¹⁴ Martyn Davies, Director of the Centre for Chinese Studies at Stellenbosch University, provided four rationales to the Governing Board of the OECD Development Centre on 22/10/2007 for why China intensified engagement in Africa for raw-material security: 1) the Iraq war started in 2003 and its impact on oil prices and oil availability; 2) the aborted attempt in 2005 by the China National Offshore Oil Corporation (CNOOC) to bid for US oil and gas company UNOCAL; 3) Russia's East Siberia-Pacific oil pipeline that pumps its Siberian crude toward Japan rather than China; 4) the avoidance of "inefficient intermediaries" such as the London Metal Exchange.

Bank): these loans are given an interest subsidy by MOFCOM: this subsidy is the difference between China's central bank base rate and the preferential loan rate. Chinese aid can be considered as an investment made by the Chinese government to promote the prosperity of the Chinese economy. As a consequence, the Chinese look to finance projects with limited, circumscribed risk and high potential profitability, or else they seek African countries that can provide them with solid collateral guarantees.

The data provided in Figure 12 cover aid in the forms of grants, interest-free loans, preferential loans, co-operative and joint venture funds for aid projects, science and technology co-operation, and medical assistance, on a bilateral basis. Note that, unlike DAC donors' reported Official Development Assistance (ODA), Chinese aid figures do not include debt relief. Preferential loans enter China's aid statistics only as an implicit interest subsidy – the difference of the central bank benchmark lending rate and the concessional rate. China's accounted aid is relatively small, RMB 11 billion (less than \$1.5 billion) in 2007, but it is rising strongly.

Figure 12: **China's foreign aid expenditure increases, 1998-2007**

Unit: RMB 100 million



Source: Qi, G. (2007).

At the African Development Bank (AfDB) summit in Beijing attended in May 2007 by nearly 50 African heads of state and ministers, China pledged to double its aid to Africa and provide \$5 billion in loans and credits over the next three years. Further, the Chinese have put in place a China-Africa Development Fund that will eventually reach \$5 billion. This fund encourages China's own firms to invest in Africa, in a host of activities ranging from manufacturing to telecommunications to agriculture, alone or in joint ventures. According to the Ministry of Commerce/World Trade Organization (WTO) Study Centre, Beijing, in 2007 China had *circa* 800 (state) companies operating in Africa on 900 projects in 52 countries.

A lack of transparency on the part of China's authorities has encouraged "China bashing". A leading expert on Chinese aid policies recently published the pointedly titled

“China’s Foreign Aid in Africa: What Do We Know?” (Brautigam, 2007). And she cites some “fantasy numbers”:

“Journalists threw figures around loosely, and rumors of a huge new aid program ran through the major papers and magazines. Some described figures as high as US\$9 billion in ‘aid’ for just one project in Nigeria, or claimed that China had ‘given’ US\$1.8 billion to Africa in 2002, or US\$2.7 billion in aid to Africa in 2004. One oft-quoted report announced that with US\$8.1 billion in foreign aid offered to Africa for 2007, the Chinese were nearly tripling the assistance offered by the World Bank”. (p. 2).

There is also confusion between the terms technical co-operation, investment and aid¹⁵. The China Statistical Yearbook reports the value of revenues earned by these economic co-operation projects (“value of business fulfilled”) on a country level, without specifying how they are financed. In Mauritius, for example, the figure for labour co-operation is the highest in Africa; this is because Chinese companies contract to provide Chinese labour for Mauritian (and Chinese) manufacturing firms in Mauritius. These are totally paid by the private-sector companies that hired Chinese work teams. A further difficulty arises from sloppy distinctions in press reports on China-Africa technical co-operation, between “proposed”, “agreed”, “under construction”, “concluded”, “realised”, “(un)confirmed”.

As business is often operated in barter mode, financial transparency is difficult to establish. Take the *Angola Mode*, where funds are not directly lent to the recipient country; instead, the Chinese government will mandate a Chinese construction company (that usually receives a support credit from the China Exim Bank) to undertake the construction works, following the approval of the recipient country. Then, in exchange for the infrastructure provision, the borrowing government will give the right to mine natural resources to a Chinese company operating in the field of natural resources (mostly oil or minerals), through the acquisition of equity stakes in a national oil company or through acquiring licences for production. The *Angola Mode* illustrates well the way in which the Chinese have chosen to implement their foreign economic co-operation policy, i.e. by using the Chinese companies as the spearheads of this policy¹⁶.

Other financial flows from China to Africa seem to take mainly the form of commercial loans –neither the sizes nor the terms of these loans are currently being revealed – and investment, mostly in natural resources, through joint ventures or acquisition of licences for

¹⁵ We owe the following clarifications to e-mail exchanges with Deborah Brautigam (American University, Washington, DC) and Jean-Raphaël Chaponnière (AFD, Paris).

¹⁶ This procedure may explain the tied nature of Chinese aid in a period when DAC donors have been untying aid. However, it should not be overlooked that the competitiveness of Chinese construction companies may not imply any need for tying aid. One motive for investing people and capital abroad is that China has both surplus labour (the result of unproductive rural labour in remote areas) and surplus capital (the result of a huge surplus of savings over investment). Consequently, the labour and capital shadow costs of engaging in Africa are relatively low.

production. FDI flows may at times be the counterpart of the provision of loans, a phenomenon observed in Angola, Nigeria and Sudan. The main arm of the Chinese government for bilateral aid to Africa is the China Exim Bank, which is involved in the financing of almost all the most important projects (Brautigam, 2007).

China engages mostly in infrastructure for resources extraction, telecommunications and transport. In sectoral percentage terms of confirmed financing commitments, 28% are currently in the energy sector, 19% in telecommunications, and 13% in transport (mainly rail and road projects), according to unpublished World Bank data. The same unpublished source ranks African countries for the geographical distribution of “Chinese finance” as: 40 per cent to Angola; a further 40 per cent to a group of three countries: Nigeria, Ethiopia and Sudan; and then Ghana and the Republic of Congo, with 3 per cent each.

The IMF recently published an estimate of China's financial assistance to Africa (Jacoby, 2007): as of 2006, existing loans and credit lines are estimated to total about \$19 billion.¹⁷ The beneficiaries of the largest flows are Angola, Equatorial Guinea, Gabon, the Republic of Congo, and Nigeria – with Angola and Equatorial Guinea alone having credit lines totalling about \$14 billion. The proportion of grants is small, but China recently cancelled an estimated \$260 million in debt for the Democratic Republic of Congo, Ethiopia, Mali, Senegal, Togo, Rwanda, Guinea and Uganda.

The concessionality of loans varies widely (Jacoby, 2007). Some large loans and credit lines have not been fully concessional, although they are on more favourable terms than the market. The degree of concessionality of a project also depends on other aspects, such as the requirement that only Chinese companies using Chinese products bid for the projects (70 per cent of Chinese credit lines in Angola have been used in this way). Also, repayment of loans has sometimes been tied (as in Angola) to the supply of oil.

What the West is to the HIPC, China is to the Resource-rich countries, but the channels through which lower debt ratios are achieved are very different. There, China impacts on debt ratios through stimulating exports and growth. To be sure, debt vulnerability is still a concern for African raw material exporters, in view of their low governance scores and their exposure to real external shocks, such as a major drop in oil prices. However, even Angola and Sudan, the two African countries where the presence of China is most strongly felt (and which have not benefited from debt relief), show big improvements in their debt indicators (Table 9). Note also that both countries have recently been building official foreign-exchange reserves at a rapid pace, so that their net debt exposure is even lower. Even ignoring foreign-held assets, Angola is now below debt-distress levels in the absence of any debt relief (although it remains on yellow-light

¹⁷ Further requests with the author clarified that this IMF staff estimate is based on a survey among country-desk officers. As the article states, the data are rather sketchy, since not all loans may be clearly identifiable as such, or may not have been reported as loans by country authorities. In addition, data reflect IMF regional definitions: IMF data are based on the countries covered by the IMF's African Department (sub-Saharan Africa, excluding Sudan, Mauritania and Somalia), which are different from those covered by the World Bank's African Department. This explains the absence of Sudan in the IMF list of main beneficiaries of Chinese loans. The absence of Zimbabwe in the IMF list might reflect incomplete reporting.

classification in the DSF). Sudan is still above debt-distress levels, but here too, debt ratios have come down markedly.

Table 9: Debt-Distress Indicators in Angola and Sudan, 2000 versus 2006

	Angola		Sudan	
	2000	2006	2000	2006
Total debt / Exports (%)	111	41	1056	466
NPV of debt / Exports (%)	99	36	463	273
Total debt / GDP (%)	100	30	162	75
NPV of debt / GDP (%)	89	27	71	44
Debt service / Exports	36.5	9.4	5	4.5
Annual external debt growth (in %)		5.47		5.06
Implicit grant element (in %)	11	10	56	41

Source: IMF, WEO (2007); authors' calculations.

Table 10: China's "Contribution" to Export and Income Growth, 2000-05

	Annual growth rate of Exports (in %)	Annual growth rate of GNP (in %)	China share in exports (in %)	China's contribution to:	
				Exports growth	GNP growth
Angola	19.8	9.9	34	29	24.4
Sudan	15.8	7.5	90	74	17.1

Note: The China "effect" on exports results from isolating exports to China from total exports growth during 2000-05; the income effect results from multiplying the China "effect" on exports times the country's exports share. Export and GNP growth rates are compound annual rates. Data for exports 2000-05 are from COMTRADE.

Source: World Bank, GDF (2007) and COMTRADE; authors' calculations.

The next issue that should be addressed is how China is impacting on the parameters of debt sustainability indicators; to our knowledge, this has not yet been done, so some back-of-the-envelope calculation may be useful. What matters equally for debt sustainability and debt dynamics is the push that China gives to exports and income growth. To provide an example, Table 11 again focuses on Angola and Sudan. Both countries have seen rapid export and income growth in the present decade. While Angola has an export share of GDP of 84%, Sudan is more "closed", with a corresponding share of 23%. But as China is almost the only client for Sudan's exports, China's demand for oil has contributed to income growth fairly similarly, at around a fifth.

Africa's trade reorientation toward China may also imply an important drawback: it may derail the endeavours by African commodity producers to diversify away from traditional exports. *Diversification trends* – the inverse of the Herfindahl index – are depicted for African HIPC, HIPC-HELP and Resource-rich IDA-only countries in Table 11. Note that China's presence in Africa may lower export diversification in three ways: *a*) through raising raw material prices; *b*) through stimulating the quantity demanded of traditional exports; and *c*) through crowding out non-traditional exports. (For a detailed analysis of Dutch Disease and the Leamer Triangle, see Goldstein *et al.*, 2006.) These effects have clearly played out in African HIPC, and even more so, in HIPC-HELP: on (unweighted) average, the index is at the bottom, signalling a trend to heavy mono-good dependence. The Resource-rich IDA-only countries have seen a slight export

diversification in the Republic of Congo and in Zimbabwe, but not in Angola, Chad, Equatorial Guinea or Sudan.

Table 11: Export Goods Diversification in Africa

	2001	2005
African HIPC	6.4	4.9
HIPC-HELP	4.1	2.8
Resource-rich IDA-only	3.0	3.8

Source: OECD (2007a), African Economic Outlook 2006/2007.

While China has a positive impact on debt sustainability through stimulating exports and GNP (and a negative impact through reducing product diversification), many argue that it lowers standards, undermines democratic institutions and increases corruption, particularly in oil-rich countries that suffer traditionally from this type of resource curse (Collier, 2007). If true, this would clearly undermine debt tolerance, as shown by Kraay and Nehru (2006).

The scores provided by *Transparency International* for perceived corruption reveal, for countries in which China is relatively strongly engaged (Table 12, shaded countries) that: these countries are perceived as being relatively corrupt; also, according to the CPIA index, except for Mozambique and Zambia, they have low governance standards; China's presence seems to have fostered perceived corruption in Ethiopia and Zimbabwe, but on the other hand, Angola and Nigeria show improvements. The *Bertelsmann Transformation Index* confirms even more thoroughly that countries in which China is engaged have higher scores in all countries except Zambia and Zimbabwe. The *Worldwide Governance Indicators* (for "Voice and Accountability") released in July 2007 reveal a picture partly at odds with the *Bertelsmann Transformation Index* and the *Transparency International Corruption Perceptions Index*. Angola, Sudan, Zambia and Zimbabwe show deteriorated scores, while Ethiopia, Mozambique and Nigeria do better. In any case, China will have to reconsider also governance issues in partner countries, and it has started to do so: in February 2007, the Chinese government deleted Nigeria and Sudan from its list of resource-rich countries in which it is encouraging companies to invest.

One issue for concern has not been discussed widely, if at all: the currency denomination of China's lending. As a rapidly growing economy, China is bound to experience trend appreciation of her currency in inflation-adjusted terms, due to the *Balassa-Samuelson* effect¹⁹. Nominal appreciation is sure to be enforced through pressure by the US treasury, just as happened two decades earlier in the case of Japan and the Asian Newly Industrialised Countries (NICs). There is no way to hedge against long-term real appreciation of the *renminbi*; there are no future markets for the *renminbi*, and should they exist, the hedge cost for 10-15 year maturities will be exorbitant. However, it should be kept in mind that China-Africa financial co-operation is often on a barter basis, as described above; this may dampen any effects on debt sustainability arising from *renminbi* appreciation. Moreover, countries such as Angola and Sudan have been growing in tandem with, and at a rate close to, China: this should contain any Balassa-Samuelson effect.

¹⁹ The rapid rise in the relative prices of non-tradables as a result of income growth.

Table 12: Governance Scores in Africa

COUNTRY	SCORE 2002/03			SCORE 2006			CHANGE		
	T.I. (CPI)	BTI	WGI (voice and account.)	T.I. (CPI)	BTI	WGI (voice and account.)	T.I. (CPI)	BTI	WGI (voice and account.)
ANGOLA	1.7	2.8	13.9	2.2	3.57	11.5	0.5	0.77	-2.4
BENIN		5.7	50.5	2.5	5.68	57.2		-0.22	6.7
BURKINA FASO		3.6	37	3.2	4.42	38.9		0.82	1.9
CAMEROON	2.2	2.9	18.8	2.3	3.26	20.7	0.1	0.36	1.9
ETHIOPIA	3.5	2.5	13	2.4	4.12	16.8	-1.1	1.62	3.8
GHANA	3.9	6	48.1	3.3	6.76	60.1	-0.6	0.76	1.2
MADAGASCAR	1.7	4.2	42.3	3.1	6.31	49	1.4	2.11	6.7
MALAWI	2.9	2.7	31.3	2.7	4.73	39.4	-0.2	2.03	8.1
MALI		7.5	55.8	2.8	6.44	57.7		-1.06	1.9
MAURITANIA			29.3	3.1		23.1			-6.2
MOZAMBIQUE		5	45.7	2.8	6.05	47.6		1.05	1.9
NIGER		4.4	39.4	2.3	6.13	42.3		1.73	2.9
NIGERIA	1.6	4.4	25	2.2	5.33	26	0.6	0.93	1
RWANDA		3.2	8.7	2.5	4.44	14.4		1.24	5.7
SENEGAL	3.1	5.5	53.8	3.3	6.77	49.5	0.2	1.27	-4.3
SUDAN		2	4.8	2	3.43	3.8		1.43	-1
SIERRA LEONE		2.8	24	2.2	5.73	33.2		2.93	9.2
TANZANIA	2.7	5.6	40.9	2.9	5.92	40.4	0.2	0.32	-0.5
UGANDA	2.1	5	20.2	2.7	5.55	30.3	0.6	0.55	10.1
ZAMBIA	2.6	4.5	37.5	2.6	5.52	37	0	1.02	-0.5
ZIMBABWE	2.7	1	8.2	2.4	2	6.7	-0.3	1	-1.5
AVG. HIPC	2.7	4.4	35	2.7	102.16	38.7	0	5.48	3.7

note: Indices: Corruption perception index (CPI) from Transparency International (TI) - lowest score:0 / highest score: 10

Management Index from Bertelsmann Transformation Index (BTI) - lowest score:0 Voice and Accountability from the World Governance Indicators - Percentile Rank (0-100).

Source: Transparency International (www.transparency.org/policy_research/surveys_indices/cpi); Bertelsmann Transformation Index (www.betelsmann-transformation-index.de/46.0.html?&L=1); World Bank, Worldwide Governance Indicators (http://info.worldbank.org/governance/wgi2007sc_country.asp).

VI. GAUGING THE DEGREE OF “IMPRUDENT LENDING”

In its 2006 evaluation update of the HIPC Initiative, the Independent Evaluation Group of the World Bank (2006b) was concerned that, for “11 of 13 post-completion point countries for which data are available, the key indicator of external debt sustainability has deteriorated since completion point. In eight of these countries, the ratios once again exceed HIPC thresholds. Changes in discount and exchange rates have worked to increase debt ratios. The effect of improved exports and revenue mobilisation on debt ratios has been offset by new borrowing.” (p. xi).

This assessment is in striking contrast with assessments by the sovereign rating industry¹⁸, which perceives African debt as more sustainable than in the past¹⁹. To quote a recent report released by Fitch Ratings (2007, p. 1):

“With most of the external debt written off and greater entrenchment of macroeconomic stability, attention is turning to developing local debt markets as a cost-effective, sustainable source of long-term financing for governments. In addition, there is increased interest by foreign investors in the region’s local debt capital markets and a trend towards international bond issuance for the first time by some sovereigns and private-sector companies. These developments are ratings positive from the point of view of transparency and market discipline.”

The World Bank assessment is also at odds with the findings of this study, though with all due caution, as the underlying data are not good enough to arrive at policy conclusions with a high degree of confidence. Data on the new debt contracted by the countries that have benefited from HIPC and MDRI are very poor. With this qualification in mind, we can arrive at and defend the following conclusions:

- Generally, we find very little evidence of “*imprudent lending*” to debt-relief beneficiaries in the data up to 2006. Their debt (service) ratios have been declining below the debt-

¹⁸ A counterpart to this improved investor assessment may be the ratio of non-performing loans (NPL) held by China’s Exim Bank. The 2006 Annual Report states that the “year-end on-sheet NPL ratio” fell for the eighth consecutive year, to 3.47% at end 2006.

¹⁹ According to the Fitch report, debt relief rounds have “greatly enhanced debt sustainability, thereby mitigating the downside risk to the ratings.” The ratings of three MDRI countries have been upgraded: Ghana’s rating progressed from “B/Positive” outlook at the end of 2003 to “B+/Positive” in 2006/2007; in 2007, it was the first sub-Saharan country (except for South Africa) to tap the global bond market; Cameroon’s Long-term Local Currency debt was upgraded from “CCC” to “B-” in 2007, and Malawi’s ratings were upgraded to “B-” in 2007. Fitch also upgraded the Country Ceiling for the Common Monetary Area (CMA) to “A” in August 2006.

distress levels set by the DSF, and there is even some evidence that the HIPC-only countries might now be *under-leveraged*. Two qualifications are in order: firstly, those countries grouped here as HIPC-HELP (Ethiopia, Mozambique, and Zambia) did experience a deterioration of grant elements recently; and secondly, new lending by some countries is under-reported, as a result of disincentives built into the DSF.

- “Free riding” by emerging lenders on the debt relief granted through bilateral and multilateral initiatives is hardly visible. The major beneficiaries of new lending, mostly through official export credits (from both China’s and OECD agencies) are the resource-rich countries (Angola, Nigeria, Sudan) that did not (directly) benefit from HIPC and MDRI. Moreover, China too has granted debt relief (mostly to HIPC beneficiaries), and its subsidised export buyer credits would be considered as concessional by current DAC reporting standards.
- Nonetheless, the lack of *reporting transparency* on external lending and debt remains an important issue; a Debt Transparency Initiative would help poor countries to avoid sliding back into debt problems, and would stimulate mutual trust between old and new donors and lenders active in sub-Saharan Africa. To be realistic, the nature of China’s co-operation with Africa does not lend itself easily to transparency, since it results from decentralised investment decisions and is often carried out in barter mode. Clearly, China’s bad press results also from the opaqueness of its lending operations.
- In order to encourage China and other emerging lenders and donors to co-operate with the “international community”, a broadening of the DSF concept of debt sustainability is not only required, but also sensible. The growth effects of new lending (that is contributing to better infrastructure), as well as terms of trade and export performance, have to be weighed against higher debt, worsened grant elements and less export diversification. Crucially, a view has to be integrated as to what extent China’s broad economic impact is purely temporary, or whether it is of longer duration (the so-called raw material *super-cycle*).
- Debt management remains important, not least because the currency composition of new lending by China and other countries may imply future debt-servicing pressures. Low-income countries have, however, the option of minimising the currency mix of their exchange risk exposure by matching the currency mix of their debt with the currency mix of their cash flows. An optimal debt portfolio can be defined as a portfolio which has maximum correlation with the changes in the terms of trade; this can be operationalised by a debt-currency mix which matches the currency mix of net exports. For oil exporters, this calls for US dollar debt exposure.
- Concerns about debt sustainability in shock-prone low-income countries can be smoothed out by counter-cyclical facilities, such as recently advocated and introduced by the *Agence Française de Développement*. One idea is, to transform the grace period of a typical concessional loan into a fixed initial grace period and a floating grace period, which the country can draw upon when a bad shock occurs (Cohen *et al.*, 2007).

Ultimately, bringing about more transparency on, and less debt vulnerability from, foreign capital movements must be achieved by African governments and regional organisations such as the African Union (AU) and the New Partnership for Africa's Development (NEPAD). Arguments that originate outside of Africa – whether coming from the G8, the Bretton Woods institutions or the OECD donors grouped in the DAC – will not alone tilt the balance toward more transparency and higher debt tolerance.

ANNEX: THE ROLE OF ENDOGENOUS DEBT DYNAMICS

Considering endogenous debt factors and the emphasis of the policy community on debt-GDP ratios, we can write a *debt dynamics equation* for the *net present value of external debt* which lays emphasis on economic growth and currency effects. The fact that the equation is formulated for the net present value of debt means that it incorporates interest rates, grace periods, repayment duration and other concessionality elements.

Let us first consider a post-HIPC economy in a steady state, with the NPV of liabilities that respect prudent debt thresholds and that foreign lenders are willing to hold in equilibrium expressed as a fraction of the country's GDP, denoted by d . For our purposes, d is defined as the debt threshold above which debt sustainability is at risk. In equilibrium, i.e. with d held constant, the country can accumulate net liabilities NL equal to the current account deficit, *plus* the net accumulation of international reserves FX , *minus* foreign equity investment FDI , all as fractions of GDP, in proportion to its long-run GDP growth, γ ,

$$(A1) \Delta NL = \gamma d + \Delta FX - FDI.$$

The right-hand side of the equation stands for the *endogenous debt dynamics* and the *grant element* (recall that d is NPV/GDP), and the left-hand side for the amount of "*warranted borrowing*". Obviously, the term for annual GDP growth, γ , can easily be replaced by terms denoting annual export growth or revenue growth (Reisen, 1998).

Long-run GDP growth also exerts two indirect effects on the steady-state current account that is consistent with a stable NPV-to-GDP ratio, d . The first effect is that, as the economy expands, the desired level of international reserves also grows. The literature on the demand for international reserves has empirically identified two important determinants. The first is the level of imports, still the most important determinant for African LICs. The second, becoming increasingly important for countries with financial market access, is the variability in the balance of payments which, by creating uncertainty, increases the demand for reserves. In the following, uncertainty in the balance of payments is ignored. In principle it can be incorporated into the analysis, by making predictions about the coefficient of variation from the time trend in the foreign reserve ratio. Denoting real annual import growth by η , the change in the desired reserve ratio can be written as

$$(A2) \Delta FX = [(1 + \eta) / (1 + \gamma)] FX - FX.$$

Incorporating (A2) into (A1) yields

$$(A3) \Delta NL = \gamma d FDI + [(\eta - \gamma) / (1 + \gamma)] FX.$$

Secondly, consideration must be given to foreign-currency effects in the African context, as Campos *et al.* (2006) so clearly demonstrate. One channel through which GDP growth indirectly impacts on debt dynamics is the Balassa-Samuelson effect. In the long run, *relative* growth leads to real exchange rate appreciation, largely driven by the evolution of productivity differentials between traded and non-traded goods in the domestic economy and in the rest of the world. In turn, if African debt were to be denominated in *renminbi* and China continued to grow faster than African LICs, this would amount to a relative depreciation of African currencies. Further, export receipts are often denominated in dollars for raw material exporters, and much of Western Africa remains pegged to the Euro. Real exchange rate changes scaled to GDP growth, ε , have thus to be incorporated in any debt-dynamics equation; this yields

$$(A4) \Delta NL = (\gamma + \varepsilon)d - FDI + (\eta + \gamma + \varepsilon)/(1 + \gamma)FX.$$

Equation (A4) emphasises the important role that GDP growth and exchange rate developments play in defining the amount of prudent lending with a given debt-GDP threshold; it is important to explore, therefore, to what extent lending stimulates GDP and export growth, and relative currency appreciation.

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