

Hjertholm, Peter

**Working Paper**

## Debt relief and the rule of thumb: Analytical history of HIPC debt sustainability targets

WIDER Discussion Paper, No. 2001/68

**Provided in Cooperation with:**

United Nations University (UNU), World Institute for Development Economics Research (WIDER)

*Suggested Citation:* Hjertholm, Peter (2001) : Debt relief and the rule of thumb: Analytical history of HIPC debt sustainability targets, WIDER Discussion Paper, No. 2001/68, The United Nations University World Institute for Development Economics Research (UNU-WIDER), Helsinki

This Version is available at:

<https://hdl.handle.net/10419/52935>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



United Nations  
University

**WIDER**

World Institute for Development Economics Research

Discussion Paper No. 2001/68

**Debt Relief and the Rule of Thumb:  
Analytical History of  
HIPC Debt Sustainability Targets**

Peter Hjertholm\*

August 2001

**Abstract**

This paper traces the origins of HIPC debt sustainability targets. These targets are interpreted as ‘switching values’, below which countries are expected to avoid debt service problems, but as such, they do not take into account that countries encounter debt problems for a variety of reasons and at different levels of debt. Most likely the ‘true’ switching value of the debt-to-export ratio of many HIPCs lies below or above the present target. Regarding the ‘fiscal window’, the lack of analytical basis for a 250 percent target for the debt-to-revenue ratio is noted, and the problems raised by the ‘openness-tax’ condition are discussed. The paper concludes that sustainability targets, as presently applied, are not well supported in analytical terms.

Keywords: debt relief, debt sustainability targets, HIPC, switching values

JEL classification: O11, F34, F35

Copyright © UNU/WIDER 2001

\* Economist and Research Librarian, Research Department, The Royal Library, Soeren Kierkegaards Plads 1, DK-1016, Copenhagen K, Denmark (peh@kb.dk).

This is a revised version of the paper originally prepared for the UNU/WIDER development conference on Debt Relief, Helsinki, 17-18 August, 2001.

UNU/WIDER gratefully acknowledges the financial support from the Governments of Denmark, Finland and Norway to the 2000-2001 Research Programme.

## **Acknowledgements**

Initial research for this paper was done while the author was Assistant Research Professor in the Development Economics Research Group (DERG) at the Institute of Economics, University of Copenhagen. Comments and suggestions on earlier drafts by Jens Kovsted and Henrik Hansen from DERG are appreciated. The usual caveats apply.

## 1 Introduction

Central to the Heavily Indebted Poor Country (HIPC) debt relief initiative is the concept of debt sustainability. This concept involves targeting a number of debt burden indicators with a view to determine the amount of debt relief needed to bring the foreign debt burden of HIPC countries to manageable levels. Under the present Enhanced HIPC Initiative (HIPC II), the sustainability target for the debt-to-export ratio is set at the uniform value of 150 percent.<sup>1</sup> This means that if an eligible country, after having been helped through traditional debt relief mechanisms, is still expected to have a present value of debt-to-exports above 150 percent, it qualifies for HIPC assistance.<sup>5</sup> In the case of very open economies (i.e. an export-to-GDP ratio of 30 percent or higher) with a high public debt burden, and despite having a strong revenue collection (i.e. a revenue-to-GDP ratio of 15 percent or higher), the present value of debt-to-exports target may be set below 150 percent. In such cases, the target will have be set so that the present value of debt will be 250 percent of fiscal revenues.<sup>3</sup> The debt relief is provided and financed within an overall timeframe covering a number of years, in which debt relief is contingent on a number of conditions relating to the depth, timing and expected poverty impact of economic reforms.<sup>4</sup>

The quantification of these debt sustainability targets, as well as their analytical origins, have been subject to intense debate since the implementation of the HIPC initiative in 1996. The IMF and the World Bank were therefore quite justified in putting them on the agenda of the HIPC Consultative Process initiated in early 1999. The result (which followed the G7 Cologne Summit in 1999) was a downward adjustment in the targets set, though not in the concept itself. Yet, in much of the debate on HIPC debt relief, an element of confusion and misconception seems to persist about these targets in terms of their origins and economic interpretation. It is widely asserted that the World Bank and the IMF has adopted these targets in an *ad hoc* manner without basis in analysis, or that they merely reflect a particular World Bank-IMF style of ‘common sense’. Not so.

---

1 HIPC II was launched in 1999, after the original HIPC Initiative (HIPC I)—launched in 1996—had been extensively reviewed.

2 In the framework of HIPC I, if debt ratios were to have fallen within or above applicable ranges, the country would have been considered for assistance. The ranges were 200-250 percent for the present value of debt-to-exports ratio, and 20-25 percent for debt service-to-export ratio.

3 Under HIPC I, the openness criteria was an export-to-GDP ratio of at least 40 percent, and the fiscal performance criteria was a revenue-to-GDP ratio of at least 20 percent. Under HIPC I, such cases would have allowed a debt-to-export target to be set below the lower bound of the 200-250 percent range, so that the present value of the debt-to-revenue ratio could have been brought down to 280 percent.

4 Other main changes under the Enhanced HIPC framework include fixing debt relief at the decision point instead of the completion point, and determining the amount on the basis of actual numbers instead of projected figures. Also, with regards to the timing of debt relief, there is no generalized shortening, but an introduction of ‘floating completion points’, implying that the completion point is tied to the fulfilment of a set of reforms rather than an interim track record of three years. Finally, there is a strengthening of the link between debt relief and measures to reduce poverty by integrating debt relief with other resources to finance an overall poverty strategy.

However, while arbitrariness is certainly not in evidence, there are good reasons for examining the theoretical and empirical underpinnings of these targets, in order to help evaluate their ability to properly identify needy countries, as well as to identify the debt relief requirements of these countries, which need not only to service foreign debt, but to grow and reduce poverty. This paper seeks to contribute to this evaluative process by investigating the analytical history of debt sustainability targets. In doing so, it aims to trace and assess the analytical roots of the so-called *debt indicator approach*, which serves as the empirical foundation of the HIPC sustainability concept.

Evidently, the extent of debt relief to any given country depends critically on the stance of the key debt burden indicators as compared with the targets stipulated. The economic interpretation of these targets implicitly relies on the debt indicator approach. This approach traces back to a line of economic study termed *debt capacity analysis*. As explained in more detail below, this type of analysis employs a number of proximate measures of ‘real-life’ debt service problems (e.g. debt reschedulings or the accumulation of payment arrears), and the analytical aim is two-fold. One is to determine the factors responsible for debt service problems, in order to design appropriate remedies in terms of policy reform and debt management. The other is to identify the values of these ratios at which the country ‘switches’ from a (debt service) performing to a non-performing debtor, in order to assess the amount of debt relief needed to exit debt service problems. Put differently, what is sought after is the value of the debt or debt service ratio at which countries begin to accumulate arrears and request negotiations for debt relief.

In the original HIPC context, a sustainable debt burden was thus defined by the *switching value* of the ratio in question. As shown below, the target (for the debt-to-export ratio) of the original HIPC Initiative was derived from evaluating the relationship between debt burden indicators and debt service performance. But there was (and is) no explicit link to the investment and growth performance, although it is by now widely accepted that this aspect is an integral part of the concept of debt sustainability. The fiscal target introduced in 1997, however, though it may be said to have been inspired by the indicator approach, was in fact not based on any empirical analysis of the link between the debt burden and the debt service performance of the public sector. And though both are now set at lower levels, neither targets currently serving as *anchors* of debt relief derives from empirical analysis of specific HIPC country debt burdens. While reaching the uniform HIPC II sustainability targets may indeed hold the promise of resulting in manageable debt positions of many low-income debtor countries, in other cases it may not be enough. And at the other end, for some HIPC countries, sustainability may perhaps even be reached without reducing the debt burden to present target levels, as suggested by Cohen (1998). The point made in this paper is that insisting on allocating debt relief on the basis of single values of two debt indicators, to countries, whose debt-related problems are surely more diverse and complex than could possibly be revealed by those two indicators, increases the risk of ending up allocating available funding inconsistent with individual country needs.

The plan of the paper is as follows. Section 2 discusses the theoretical and empirical literature on debt sustainability, with a distinction made between the debt capacity aspect and the development aspect of the problem. With this reference, Section 3 goes back in time, to 1989, to trace how the current debt sustainability approach evolved from the shadows of the appendixes of the World Bank’s *World Debt Tables* to become a primary mover of poor country debt relief. A number of conceptual and

methodological problems in this regard are highlighted. Section 4 examines the empirical rationale for incorporating the sustainability targets into the original HIPC framework, and for adjusting the targets in the amended framework of 1999. Looking at the export-related targets and the ‘fiscal window’ separately, it is concluded that the empirical underpinnings of HIPC sustainability targets are not as strong as one could reasonably expect, given their centrality within the HIPC scheme. While the ‘rule of thumb’ nature of the adopted indicators make them useful for empirical analysis intent on general findings, their lack of accuracy make them less well suited as a universal *anchor* around which the specific amount of debt relief for a specific country with specific economic problems are decided. Section 5 sums up and concludes with a discussion of whether country-specific, as opposed to uniform, debt sustainability targets would be more in keeping with the economics of debt. While offering a way to tailor scarce funding for debt relief more closely to country circumstances, the political feasibility of a shift from group to country targets may be debated.

## **2 Sustainability of foreign debt: theory and evidence**

There are two perspectives to consider when evaluating the sustainability of foreign debt. One relates sustainability to debt capacity problems, involving a disruption of normal debtor-creditor relations in which the debtor is unable (or unwilling) to honour debt service obligations as they come due. Tangible evidence of such problems occurs when payment arrears accumulate and debt is rescheduled or forgiven. Analytical focus is on the determinants of debt service performance and their switching values. The other perspective considers the problem, which occurs when a country’s foreign debt burden is so large as to adversely affect economic development (regardless of whether it is serviced in full or not). Below the theory and evidence on these two perspectives are discussed.

### **2.1 The debt capacity perspective**

The earliest literature on the debt capacity of developing countries dates back to the late 1950s and early 1960s and is mainly associated with a number of multilaterally-sponsored studies.<sup>5</sup> The context from which these studies grew was the rapid growth in (primarily public) international indebtedness in the post-war period (in which the World Bank had played an important part), and a growing concern with the repayment flows associated with this increase in international debt.<sup>6</sup> Since the focus of these studies was on the return flows associated with the capital requirements of poor countries, they can be viewed as a natural extension of the discussion of the macroeconomic rationale for

---

<sup>5</sup> See, e.g. Avramovic (1958), Avramovic and Gulhati (1960), Alter (1961), Avramovic *et al.* (1964) and Gulhati (1967). These studies were all conducted under World Bank sponsorship. Surveys of the early debt capacity literature can be found in Bitterman (1973), Soesastro (1977), Aliber (1980) and McDonald (1982).

<sup>6</sup> The borrowing clientele at that time included all of the war-torn economies of Western Europe and Australia as well as a host of underdeveloped countries throughout Latin America, Asia and Africa.

external resource flows, as set out in the ‘gap’ literature.<sup>7</sup> Since then, and especially after the eruption of the debt crisis in 1982, the literature on debt capacity has expanded considerably.

### 2.1.1 *Theoretical issues*

From a theoretical perspective, following Salop and Spittaller (1980), the issue of debt capacity is concerned with two key questions. The first asks how much money a country should borrow, given the terms and conditions attached to the money available, i.e. what is the optimal level of debt? The other addresses the looser notion of the feasibility of the borrowing process, specifically the sustainability of particular debt situations and policies. According to McDonald (1982), the approach of the *optimising frameworks* has tended to dominate much of the earlier theoretical literature, in part because the optimising approach was seen to be more in keeping with the economist’s approach to problems of choice.<sup>8</sup> The leading suggestion to emerge from this line of work is that the optimal level of debt is that at which the marginal benefit and the marginal cost of foreign borrowing are equalized. However, while this basic idea has subsequently been employed in numerous variations of the optimising model, the approach did not provide a simple formula that would make it possible to ascertain in more operational detail the debt capacity stance of individual countries.<sup>9</sup>

The *non-optimising* models have a different perspective, in that the sustainability of particular debt situations and policies are examined in light of the expected future growth path of the economy. The original non-optimising approach was advanced in the framework of the ‘growth-cum-debt’ literature, in which emphasis has mainly been on foreign borrowing for investment purposes, i.e. for filling the gap between domestic investment and savings (Avramovic *et al.* 1964, King 1968, Solomon 1977). The growth-cum-debt models consider debt capacity in terms of the benefits and costs of borrowing in the process of economic growth. The basic argument is that a country will maintain its capacity to service debt provided that additions to its debt over time contribute (sufficiently) to growth. A ‘debt cycle’ is proposed, in which the behaviour of capital flows may change over a number of stages, which are closely linked to the course of economic growth and development. However, since there is no automaticity in the proposed debt-growth process, progression through the different stages requires that a number of conditions be met. Often these conditions have been merged into one single condition expressed in the context of the Harrod-Domar growth model. The condition states that, to maintain debt service capacity over time (i.e. to remain solvent), the growth rate of output should equal or exceed the cost of borrowing, measured by the rate of interest.

The merit of the growth-cum-debt model lies in its summary of the complexities of the debt-growth mechanics into a simple and readily understandable insight, namely that

---

<sup>7</sup> See, e.g. Rosenstein (1961), Fei and Paauw (1965), Balassa (1964), Chenery and Strout (1966) and Bacha (1984). Easterly (1999) provides a recent critical assessment of the gap approach.

<sup>8</sup> Seminal studies in this tradition have been those by Bardhan (1967) and Hamada (1969), as well as subsequent studies by Hanson (1974), Feder and Regev (1975) and Feder and Just (1979).

<sup>9</sup> For a treatment of more recent developments in the debt optimising literature, see the survey studies by Cohen (1993), De Aghion (1993) and Eaton (1993).

any borrowing strategy will only work, ultimately, if there *is* sufficient economic growth to support it. However, in terms of analysing debt capacity in a more specific manner, the growth-cum-debt framework suffers from a number of conceptual problems relating to its theoretical underpinnings and the rigidity of its basic assumptions (see McDonald 1982). A particular weakness is that the model focuses solely on the savings-investment gap. Yet, given that external financing will have been made available in foreign currency, it must be repaid in foreign currency, and the savings surplus must therefore somehow be converted into foreign exchange. By not considering the performance of the external sector of the borrower's economy, the growth-cum-debt model is silent on this transformation problem.

By contrast, the 'debt dynamics' approach directly addresses the issue of a borrowing country's external solvency (Simonsen 1985, Cooper and Sachs 1985, World Bank 1985, Hernandez Cata 1988). Since debts have to be serviced with foreign exchange, the value of exports gives a more accurate impression of income than for example GDP, as it relates more directly to debt servicing ability. If, for example, there is an increase in the production of non-tradables, there is an increase in GDP, but not necessarily in the ability to service debt. Accordingly, the key feature of the debt dynamics approach is the relationship between export performance and the cost of borrowing, and the solvency condition that emerges is that for the borrower to maintain debt service capacity, the rate of growth of exports must equal or exceed the rate of interest on the borrowed funds.

As in the case of the growth-cum-debt model, the debt dynamics framework also suffers from a number of conceptual shortcomings (see Cassen and Nissanke 1990). Critical among these is that it assumes a time-invariant growth path for exports and the rate of interest. In reality, both variables will follow complicated time paths, and the assumption is certainly at odds with the experience of most low-income borrowers. This limits the use of the debt dynamics model for empirically assessing the sustainability of a borrower's debt path. Moreover, developments in the level of imports are not explicitly considered, a feature that also tends to undermine the applicability of the model when examining debt sustainability (Kamel 1988).<sup>10</sup> This is especially the case when imports play an important macroeconomic role in the growth process of the borrower, as is evident in many low-income countries (López and Thomas 1990).

Yet in spite of the shortcomings of the growth-cum-debt and debt dynamics frameworks, together they provide important insights into the conditions for maintaining debt service capacity. First, in the long-term, the accumulation of foreign debt has to be matched by progress in economic growth to the extent that surplus domestic resources become available for servicing interest payments, and ultimately for repaying the principal of the debt. In addition, performance in the external sector must

---

<sup>10</sup> In an extended debt dynamics model, where imports are treated as an endogenous variable, Kamel (1988) suggests a stronger set of conditions for maintaining debt service capacity. Solvency will only occur if the growth rate of exports is higher than (or equal to) the rate of interest *and* also higher than the growth rate of imports *or*, when export and import growth are both below the rate of interest, if the initial indebtedness of the country is below the country's external financial potential. Applied to the sub-Saharan African experience over the 1980-89 period, Hjertholm (1991) found that the 'extended' model of debt dynamics offered a more robust explanation of actual debt service performance than did the traditional models of growth-cum-debt and debt dynamics.



be such that the increase in domestic surplus is matched by an increase in foreign exchange so that the transfer of debt payments can be effected.

But there are limits to the practical use of these results. While the solvency conditions of the non-optimising literature do offer an opportunity to make general judgements with respect to the sustainability of borrowing policies, it is clear that for the purpose of determining debt capacity more precisely, the term ‘expected path of the economy’ is in practice too broad and vague. Contrary to the implicit premises of the growth-cum-debt and debt dynamics frameworks, the time paths of the main factors involved (i.e. the growth rate of output, exports and imports as well the rate of interest) are inherently difficult to predict with the required operational precision. From this one can perhaps better understand why the fiscal and debt management policies of many developing countries in the 1970s and early 1980s seemed so misguided. The fact is that the theoretical literature has had little solid to offer in terms of operational guidance for the design of public borrowing policies, and utilising the insights of the empirical literature, in an ironic twist, had to await the tangible manifestations of the debt policy failures it was intended to help avoid.

### *2.1.2 Empirical evidence: the debt indicator approach*

The empirical literature on debt capacity has to some extent been shaped by the peculiar analytical nature of the theoretical approaches. The possible uses of foreign borrowing go beyond the role of augmenting investments and imports. Borrowing can also be used to shield consumption from fluctuations in the level of income, or to reduce the costs of adjusting to more permanent declines in income levels. Moreover, with regard to commercial borrowing, supply conditions in international markets are also a matter for concern, specifically as regards lenders’ perception of sovereign risk. As correctly pointed out by McDonald (1982), for a debt situation to be sustainable, both the borrowing country and lenders must view it as such.<sup>11</sup>

The large empirical literature, which has been produced since the early 1970s has not usually been directly applied to the findings of the theoretical literature, as these were not presented in a fashion which facilitated empirical verification.<sup>12</sup> Instead the bulk of the literature went about the issue ‘indirectly’, by observing that the debt capacity of a

---

<sup>11</sup> For instance, a debt situation, which is consistent with the intertemporal budget constraint of the borrower, may still be unsustainable if the supply conditions (e.g. refinancing terms or quantity rationing) are not taken into account. Because borrowers may be able to affect the terms and volume of new external financing by taking into account how their own behaviour affects the behaviour of lenders, debt capacity may be influenced by a better understanding of the decision-making of lenders and of the institutional framework of international finance (Eaton and Gersovitz 1980, 1981a, 1981b, Sachs and Cohen 1982). A recent contribution on the optimal behaviour of creditors that face ‘bad debts’ is found in Cohen (1995). However, taking account of such considerations, as the theoretical literature has increasingly attempted to do, has made the empirical application of this literature inherently more difficult.

<sup>12</sup> One exception is the study by Selowsky and van der Tak (1986) in which, based on a target growth rate, a quantitative framework is developed for identifying a path of critical values for growth in savings and exports for a successful outcome of a growth-oriented debt policy. Another exception is Tarp (1994), who examined the path of the key variables emerging from the growth-cum-debt and debt dynamics frameworks for ten developing countries from 1970 onto the outbreak of the debt crisis in 1982.

borrower can be more easily gauged when there are tangible problems with debt servicing. In the empirical literature debt capacity is thus seen in a context of a country's failure to service its foreign debt, and extensive use is made of a number of debt indicators and other economic variables to explain this failure, and to predict future problems. This applied literature is often referred to as the indicator approach to debt capacity (McDonald 1982, Soesastro 1977).

Within the empirical literature, two basic perspectives exist on the issue of debt capacity, namely that of the borrower and that of the creditor. In case of the former, attention is on the characteristics of the debtor country's economy as they relate to the ability to service foreign debt (i.e. debt sustainability). The latter is concerned with the supply of external financing to developing countries, and as such looks at the matter from the perspective of creditors. The creditor perspective mainly derives its relevance *vis-à-vis* borrowing from international capital markets. Much of the literature on the loan supply issue has therefore been generated in response to the growing presence (in the eighties) of commercial debt, and the associated notion of credit rationing. The lender is taken to be a commercial lender, not an official one such as governments or multilateral aid agencies. As this approach examines the solvency issue from the viewpoint of the market, it introduces, in addition to the issue of payment capacity, a concern for the *willingness* of the debtor to sustain repayment of debt, using the concepts of 'creditworthiness' and 'country risk'.<sup>13</sup>

The evolution of the empirical literature has been further shaped by the expansion in the explorable history of debt problems, which followed the increase in the volume, coverage and availability of debt statistics from, in particular, the *Debtor Reporting System* of the World Bank. Many of the early studies relied only on a relatively few cases of debt renegotiations for data input, while in the late 1980s and 1990s, much more data on debt reschedulings became readily available, as did more detailed data on payment arrears. Because the ultimate manifestation of a debt service problem occurs when a country requests its creditors for a debt renegotiation, a large part of the literature has focussed on the incidence of (or request for) debt reschedulings as a proxy measure for debt capacity problems.<sup>14</sup> However, debt problems may be manifest well ahead of debt reschedulings. In fact, a request for debt rescheduling will usually have been precipitated by the accumulation of payment arrears. Thus, looking at changes in the magnitude of payment arrears over a period of time, in conjunction with debt reschedulings, provides an opportunity for more nuanced assessments.<sup>15</sup>

---

<sup>13</sup> See van Wijnbergen (1989) and van Wijnbergen *et al.* (1992) for a discussion of the difference between the concepts of solvency and creditworthiness.

<sup>14</sup> The studies that have used debt rescheduling as a proxy measure are numerous, including the early work by Frank and Cline (1971), Dhonte (1975), Feder and Just (1977), Saini and Bates (1978), Feder, Just and Ross (1981), Taffler and Abassi (1984), Kharas (1984), McFadden *et al.* (1985), and Morgan (1986). More recent contributions include Kutty (1990), Savvides (1990), Rahnama-Moghadam and Samavati (1991) and Hajivassiliou (1993).

<sup>15</sup> In addition, in a context of commercial credit rationing, a number of studies have directly used the extent of the borrowers access to international capital markets as a proxy for creditworthiness, e.g. by looking at the supply of borrowing relative to total debt. References to this line of work include Lensink and Bergeijk (1991), Savvides (1990), Hajivassiliou (1987) and McFadden *et al.* (1985). In a similar credit rationing context, some studies have used a measure of the secondary debt market

Looking at the findings of the debt capacity studies, and even considering the differences in approaches and methods, there appears to be agreement as to the core factors that determine the incidence of debt capacity problems. It is beyond the scope of this review to provide a complete and detailed listing of all relevant factors, as they relate to the conceptual set-up of each individual study. They include, however, the familiar debt burden indicators (such as the debt and debt service-to-export ratios), other balance-of-payments indicators (e.g. various current account and reserve ratios), general development indicators (e.g. GDP growth rates), as well as other economic and political indicators (including the rate of growth of the money supply, the inflation rate, the share of exports and domestic investment in GDP, and different measures of political organization and stability). In addition to these general results, some studies have found evidence that debt capacity problems in low-income countries (notably in sub-Saharan Africa) are also determined by structural factors emerging from a higher level of import and agricultural dependence (Taiwo 1991, Odedokun 1995, 1993) and also by fiscal distress (Hjertholm 1997, Ngassam 1991).

In short, the indicator approach has been firmly established as the main vehicle of traditional debt capacity analysis. The approach is based on relating observed debt service problems—not development problems as such—to a broad range of aggregate macroeconomic (and other) indicators, of which, incidentally, only a few are integrated in the HIPC Initiative.

### *2.1.3 Policy implications*

The insights derived from the standard approach to debt capacity, in particular those that relate to the balance-of-payments, have (until fairly recently) been pivotal in shaping the understanding of international policymakers with respect to the debt crisis. The nature of policy responses to the debt problems of developing countries bears testimony to this. The problem has been perceived as one of external insolvency (or, as initially thought by many, of illiquidity), and the key aggregate variables to monitor, and on which to focus for a solution, were conveniently provided by the indicators identified in the empirical literature; and the data for these indicators were readily available from the annual statistical publications of such institutions as the World Bank and the IMF.

The international debt strategy that evolved in the 1980s and early 1990s thus had two principal components. The first, to which creditors attached primary importance, concerned the need for debtor countries to adjust the external sector of their economies so that a return to a solvent path could be effected. Conditional on adjustment performance, the second component, initially intended as a discrete supportive device, involved addressing immediate servicing problems through renegotiating problem debt in the creditor clubs in London and Paris, as well as mobilizing increased financial support through the facilities of the IMF and the World Bank and from the international donor/creditor community. In a word, maintaining debt service became the objective, and balance-of-payments adjustment became the key.

Hence, with the objective of preserving debt service capacity, the stabilization component of the adjustment policy packages that were promoted and widely adopted,

---

values as reflecting either past debt servicedifficulties or anticipation of future problems (Hajivassiliou 1989, Alford and Lussier 1993).

emphasized efforts to reduce or convert trade deficits. The aim was, in part to reduce the need for further external borrowing, and in part to free foreign exchange for debt service, and the vehicle of adjustment was usually the level of imports. The proposed mechanism for achieving this outcome rested on the suggestion of stabilization theory that there exists a casual link between inflation and imports.<sup>16</sup>

To help turn around trade deficits, but also for other reasons of development policy, the structural part of the adjustment packages aimed at removing or alleviating distortions and bottlenecks in the tradables sector, thereby seeking to increase export earnings, and thus reducing trade deficits. Both the stabilization and structural reform part of the policy packages have in most cases encouraged devaluation of the home currency with a view to promoting the competitiveness of debtor countries, a policy which in fact may or may not have helped countries overcome debt capacity problems (Rodrik 1993). However, since the international debt strategy of the past has been cast in an aggregate context in which debt capacity was primarily understood as a balance-of-payments issue, debt problems at the level of the government budget have been relegated at best a subordinate role.

#### *2.1.4 Fiscal aspects of debt capacity*

In the mid-1990s debt analysts and policymakers began looking beyond the traditional balance-of-payments perspective to debt problems, by adopting a fiscal approach. This shift in emphasis rested on the empirical observation that the bulk of poor country debt was (and is) a public sector liability. At the heart of the debt capacity of the public sector is what has become known as the 'internal transfer problem'. One early theoretical formulation of the fiscal problems involved in foreign debt is found in Kharas (1981a, 1981b, 1981c).

Kharas considered the problems facing a government engaged in foreign borrowing to finance public expenditures, and which is constrained in its ability to collect revenue to service the acquired debt. If the government uses most of the borrowed funds for investments in such areas as infrastructure, education, health services, etc., the sustainable level of debt that the government can take on will depend, not only on the relationship between the marginal social return on these investments and the marginal cost of borrowing, but also on the governments ability to appropriate sufficient domestic

---

<sup>15</sup> The argument is that by eliminating inflation through fiscal and monetary austerity, excessive imports will also be eliminated because of the contraction in aggregate demand. Only if wages are sticky will this lead to reductions in output, but the stabilization theory, as embraced by the IMF, does not attach primary attention to wage-price rigidities. In order to avoid that the correction of the external imbalance leads to output contraction, the IMF approach advocates the employment of exchange rate policies (i.e. devaluation), whereby, it is argued, prices in the tradable sector will become more attractive than in the non-tradable sector. A diversion of resources from the non-tradable to the tradable sector will thus take place, which will improve the balance-of-payments and help solve the debt service problem (Tarp 1993). While fiscal policy measures were thus part of the policy packages, they were primarily designed to accommodate the adjustment needs, as perceived by the IMF, at the level of the balance-of-payments. They were not as such designed to assure a long-term sustainable debt position of the public sector, as this would have required more detailed considerations of the effects of the rather sweeping expenditure cuts that were recommended for the future public debt servicing capacity. Also, the relative merit of across-the-board expenditure cuts would have had to be more closely analysed *vis-à-vis* the alternative of increased taxation.

resources (through more tax revenue) for debt service. The fiscal source of debt service problems is thus evident if taxation is not expanded commensurately with maturing public debt service obligations. A crucial point to emerge from this line of argument, and one that departs from traditional debt analysis, is that the link between debt service and government taxation makes it possible for debt problems to occur even if all inflows of foreign resources are used for investment, and if the marginal product of capital is greater than the real rate of interest.

Later Reisen and van Trotsenburg (1988) empirically analysed the internal transfer problem in the wider context of the theory of international transfers. They uncovered that the fiscal transfer problem had been one of the main obstacles to a return to international creditworthiness for most of the major (commercial) debtors in the first half of the 1980s. This result suggested that the fiscal burden of debt exacerbated debt capacity problems and helped explain why earlier projections, by e.g. Cline (1983), of the anticipated return to creditworthiness could not be realized, despite achievement of projected improvements in industrial country growth and reductions in LIBOR.

With respect to the indebted low-income countries in sub-Saharan Africa, a study by Hjertholm (1997) similarly found that fiscal debt burden indicators played a significant role in explaining the poor debt service performance of a large number of sub-Saharan African countries.<sup>17</sup> Such contributions together suggest that the issue of debt service capacity cannot be separated from the issue of the government budget constraint. The inclusion of a fiscal target in the HIPC debt initiative is thus a reflection of a legitimate concern for the fiscal sustainability of poor country debt. It is less clear, however, how the original sustainability target of 280 percent and the present target of 250 percent (for the public debt to revenue ratio) is empirically related to debt service performance (see below).

## **2.2 The development perspective**

Empirical evidence suggests a relatively strong statistical relationship between high debt burdens and poor economic performance, such as low growth, investment and human development.<sup>18</sup> A main channel for these adverse effects of debt are fiscal effects, of which two are particularly important: (i) cash-flow effects arising from reduced public expenditures, and (ii) disincentive effects associated with a large debt overhang.

### *2.2.1 Cash-flow effects*

Public expenditures may crowd-in private investment, especially where the latter is impeded by structural bottlenecks such as weak infrastructure (e.g. Taylor 1993, 1983, Díaz-Alejandro 1981). The generally poor state of infrastructural, educational and health facilities in low-income countries therefore provide considerable scope for realizing the potential positive externalities from government expenditures (e.g.

---

<sup>17</sup> Analysis of the fiscal dimension of foreign debt in developing countries can also be found in Bevilaqua (1994) and Dittus (1989).

<sup>18</sup> See, e.g. Cohen (1996), Ojo and Oshikoya (1995), Oshikoya (1994) and Greene and Villanueva (1990).

Hadjimichael and Ghura 1995, Hadjimichael *et al.* 1995). But these opportunities will be missed, and so economic growth foregone, if expenditures are squeezed by public debt service, which empirical evidence suggests has been the case in sub-Saharan African countries (e.g. Fielding 1997, Gallagher 1994, Sahn 1992, 1990).

A closely related cash-flow problem associated with public debt service is import compression, which can occur for two reasons (Ndulu 1991). First, if the ability of the economy to substitute between imported and home produced capital goods is limited, a cut in capital goods imports will lead to a decline in investments and growth.<sup>19</sup> Second, following Hemphill (1974) and Moran (1989), import compression can occur in cases where import volumes are determined by import capacity rather than relative prices. Clearly the magnitude of debt service matters for import capacity in such instances. Import compression can occur both at the balance-of-payments level and at the budgetary level (through the effects of public debt service on the import-content of government expenditures). Reductions in the import capacity of the government, as a result of debt service, can thus reduce government investment activity, whereby the complementary effects mentioned above are lost. That such cash-flow effects have indeed been at work in indebted low-income countries, is confirmed (for 23 sub-Saharan African countries) in the study by Hjertholm (1997).

### 2.2.2 *Disincentive effects*

In addition to these direct effects from reduced public investment and lower imports, a high debt burden may undermine economic performance on account of the debt overhang. Debt overhang effects may be classified in two ways: (i) the ‘narrow’ approach focussing on tax disincentives, and (ii) the ‘broad’ approach related to macroeconomic instability. The fundamental notion of the narrow debt overhang theory is that the future debt service burden of a country will weigh heavily on the increase in the country’s future economic output, of which a large part will be expected to have to go to foreign creditors (through higher taxes). Hence there will be a tax on investment returns, which will discourage investors.<sup>20</sup>

Besides the possibility of disincentives working through taxation, there may be further disincentives through general macroeconomic instability, which is seen as particularly bad for private investment.<sup>21</sup> A public debt overhang can affect macroeconomic stability through several channels: (i) an increase in the fiscal deficit, (ii) exchange rate depreciation, (iii) monetary expansion and inflation from monetising debt service obligations, and (iv) recourse to exceptional financing (such as payments arrears and debt rescheduling), which tends to maintain uncertainty about the future debt service profile of the public sector. Public debt-induced fluctuations in such macro variables as the inflation rate, exchange rates, and exceptional financing may thus signal fiscal

---

<sup>19</sup> Since some substitution away from imports may take place, the decline in investment will probably be proportionally less than the decline in imports. And yet, the remarkable stability of the relationship between real capital imports and real investments observed in low-income countries in the 1980s, suggests that the fixed proportional relationship is not that far off, and the imperfect substitution phenomenon is indeed partly responsible for the import compression observed in these countries.

<sup>20</sup> For a theoretical presentation of this idea, see Borensztein (1990).

<sup>21</sup> See Hjertholm (1997) for an elaboration of the adverse effects that may result.

distress and an inadequate ability on the part of the government to control fiscal events. Such signals may in turn heighten investor uncertainty about the future direction of the macroeconomy and thus reduce the incentive to invest. In sum, the broad debt overhang hypothesis asserts, and is supported by available evidence, that one or more of the macro stability indicators discussed are likely to capture part of the investment disincentives of a large public debt burden.<sup>22</sup>

### 3 History of indicators of debt-distress

The previous section presented the theoretical and empirical underpinnings of the concept of debt sustainability. The review showed that a sustainable debt position requires an adequate capacity to service a foreign debt (so that actual and scheduled payments are equalized) and that the burden of debt is low enough so as to ensure that resource constraints and disincentives are not introduced *vis-à-vis* investment activity. Neither aspect can be excluded from assessments of sustainability. With this backdrop, we now turn to the historical origins of the World Bank's aggregate indicators of debt-distress.

#### 3.1 Classification of debtor countries

##### 3.1.1 Origins: World Debt Tables 1989-90

The story begins in 1989, when the World Bank published its 1989-90 edition of *World Debt Tables* (WDT), i.e. the Bank's annual report on debt and external finance in developing countries (since 1997, the report is called *Global Development Finance*, GDF). Here, for the first time, the Bank attempted to classify debtor countries according to the depth of their debt problems. Previously, the summary tables of the WDT had only included debt data for a number of geographical groups, two analytical groups (namely 'oil exporters' and 'middle-income oil importers') and the group of 17 'highly indebted countries' (HICs), also known as the 'Baker 17 countries'.<sup>23</sup> Realizing that 'debt burdens varies across developing countries,' the WDT 1989-90 asserted that while foreign debt did 'not place stress' on some countries, for others 'the burden is so large that it hampers their efforts to pursue a sensible, growth-oriented policy' (p. 50).

---

<sup>22</sup> The study by Hjertholm (1997) for 20 sub-Saharan African countries, while not generating strong evidence for the narrow debt overhang hypothesis, showed clear evidence of the broad hypothesis in that public debt burdens had several (indirect) effects that were transmitted through macroeconomic variables, such as the inflation rate, exchange rates and exceptional financing.

<sup>23</sup> In September 1985, spurred by the unsolved debt problems of Mexico and other countries with heavy commercial debt burdens, James Baker, the newly appointed US Treasury Secretary, put forward a plan, which aimed at 'broader attack on the debt problem.' The plan involved 17 highly indebted middle-income countries (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Côte d'Ivoire, Ecuador, Jamaica, Mexico, Morocco, Peru, Philippines, Uruguay, Venezuela, former Yugoslavia, and Nigeria, which only later become a low-income country), later known as Baker 17 countries. Largely unsuccessful, the Baker plan was reformulated in 1989 as the Brady plan, named after (then) US Treasury Secretary Nicholas Brady, and thereafter met with considerable more success in terms of solving the commercial debt crisis of middle-income countries (Cline 1989).

Following the implicit logic of this assertion, the aim of the new system of classification was thus to provide a procedure for singling out those countries where the debt burden posed a problem for economic growth, i.e. for development. To the outside observer, it would therefore appear that the new system would be driven by a concern for the development implications of the debt burden. Though this may well have been the intention (at least on the part the report team), the method adopted in the report was not based on linking the debt burden directly to measures of economic performance, but on linking the debt burden to debt service performance, which is a different (although related) matter. The classification system presented in the WDT 1989-90 adopted the indicator approach, as embedded in the traditional debt capacity literature: the countries singled out were *not* those where the debt burden adversely affected economic development, but those where the debt burden adversely affected debt service performance. So, at the outset, the WDT exercise only dealt (directly) with *one* aspects of debt sustainability.

Seeking to diversify the topology of debtors by evaluating their debt service capacity problems, the WDT 1989-90 went on to consider the relevant debt burden indicators and their relationship with the problem at hand, namely the deteriorating debt service performance of debtor countries. In order to avoid some of the problems inherent in using a single debt burden indicator, the report decided on using four indicators. These were:

- i) the ratio of debt to GNP
- ii) the ratio of debt to exports
- iii) the ratio of (next year) scheduled debt service to exports
- iv) the ratio of scheduled interest to exports

The ratios to exports relate the debt burden to the availability of foreign exchange earnings of the economy, while the ratio to GNP relates the debt burden to the broadest measure of the income-generating ability of the economy. To be classified as a debt-burdened country, the value of three of these ratios had to be greater than 'empirically observed critical values'. The reason for requiring that three of four ratios have critical values followed from experiencing sometimes anomalously low values for one ratio even though the country in question was obviously having trouble servicing its debt. To avoid such cases where a seriously debt-distressed country is excluded, three critical values therefore had to be observed. Debtor countries were subsequently classified into the following four groups:<sup>24</sup>

- i) Severely indebted low-income countries (SILICs)
- ii) Severely indebted middle-income countries (SIMICs)
- iii) Moderately indebted low-income countries (MILICs)
- iv) Moderately indebted middle-income countries (SIMICs)

---

<sup>24</sup> Low-income countries were those in which 1987 GNP per capita was less than 480 US dollars, and middle-income countries were those in which 1987 GNP per capita was higher than 480 US dollars but less than 6,000 US dollars.



But what was meant by ‘empirically observed critical values’? These critical values of the indicators were based on information from the April 1989 edition of *World Economic Outlook* (IMF 1989). The WEO regularly publishes debt data for a sub-group of net debtor countries ‘with recent debt-servicing difficulties’. This analytical group includes debtor countries (as many as 73 reported in April 1989), which had recently incurred payment arrears or entered official or commercial bank debt rescheduling agreements during a specified three-year period (in this case during 1985-87). The IMF used information on such occurrences from the Fund’s *Annual Report on Exchange Arrangements and Exchange Restrictions*.<sup>25</sup> WDT 1989-90 applied the 1988 unweighted average value of each of the four indicators for the 73 problem countries as the critical values. The critical values were (critical values for SIMICs in brackets):

- i) Debt-to-GNP ratio: 50 percent (for SIMICs: 30-50 percent)
- ii) Debt-to-exports ratio: 275 percent (for SIMICs: 165-275 percent)
- iii) Scheduled debt service-to-exports ratio: 30 percent (for SIMICs: 18-30 percent)
- iv) Scheduled interest-to-exports ratio: 20 percent (for SIMICs: 12-20 percent)

The notion was that countries could not avoid debt service difficulties if these indicators were allowed to rise above these critical levels, since recent history had shown that they had not been able to do so. As noted, if values (for poor countries) were above critical values for three of these indicators, the country was classified as a ‘severely indebted low-income country’ (a SILIC). If a country was not a SILIC, but at least three of the observed values exceeded 60 percent of the critical values, then it was classified as a ‘moderately indebted low-income country’ (a MILIC). In WDT 1989-90 this classification produced 27 SILICs (24 in sub-Saharan Africa, plus Vietnam and Myanmar in Asia and Guyana in Latin America). Nine countries were identified as moderately indebted low-income countries, including Uganda, which, although having a debt-to-export ratio above 700 percent and scheduled debt service payments (mainly principal) amounting to nearly half of exports, had low interest payments and a relatively low debt-to-GNP ratio. A further 19 countries were identified as SIMICs, including later HIPC countries like Bolivia, Honduras and Nicaragua.

Acknowledging that this procedure could not be expected to provide a perfect identification of debt-distressed countries, the report conducted an informal sensitivity analysis, which did not, however, lead to any substantial shifting of countries among the debtor categories. If, for example, the critical values were lowered with 10 percent, only three countries (Ethiopia, Indonesia and Yemen) would move to the SILIC group. A 10

---

<sup>25</sup> Upon consulting the relevant editions of the said IMF publication, the author found that only countries that had accumulated payment arrears were clearly reported (there was 64 of them). As regards countries that rescheduled official or commercial debt, only the total number of countries having done so were reported, not the individual countries. The remaining nine countries (73 less 64) that rescheduled without having accumulated arrears during 1985-87 could thus not be identified from this source, although this appears to have been possible in 1989. Instead information on rescheduling countries was obtained from editions of *World Debt Tables*, but only seven additional countries could be identified, thus arriving at a total of 71 countries. Curiously enough, however, as many as 12 countries were identified in WDT as having accumulated payment arrears at one point in time during 1985-87, but which were not reported in the IMF publication as having experienced debt service difficulties. What accounts for this discrepancy is not clear.

percent lowering of the critical value of the debt service ratio may have captured many of the borderline cases, if there had been any (notice that most of the 73 problem countries had scheduled ratios above 20 percent anyway). This is different for the debt-to-export ratio, since lowering the critical value by 10 percent, from 275 to 265 percent, would not have made much of a difference, since there were a lot less countries below than above the 265-275 range anyway.

Be that as it may, of particular interest for the current discussion on the HIPC sustainability targets, is that the report staff was quite explicit in stressing the informal ‘rule-of-thumb’ nature of the new classification system. Stating (pp. 50-51) that ‘the methodology used here should simply be taken as one of a set of tools for making informed judgements in identifying countries with heavy debt burdens’, the report went on to assert that, given the static nature of the indicators, the tool ‘should be used in conjunction with data on other economic variables and projections pertaining specifically to the country’. The ‘projected trend [of the indicators] would [not] be a determinant of the pervasiveness or depth of debt problems’. The report finally noted that:

The methodology used here is not useful in identifying the degree to which debt and debt service reduction increases growth and adjustment prospects in one country relative to another.

Such cautionary statements may, of course, be interpreted in several ways, but it is hardly unfair to perceive them as reflecting the view that high debt burdens are a problem, not only in terms of debt service capacity, but also in terms of their wider development implications.<sup>26</sup>

In passing, it is interesting to note that the international donor community, when it launched the *Special Programme of Assistance for Africa* (SPA) in the late eighties, did exactly what the WDT 1989-90 warned against. Besides being poor and pursuing policy reforms, the eligibility criteria for SPA assistance was that countries had to be debt-distressed, and the approach adopted for such assessments was based on the indicator approach as embraced by WDT, or rather part of it, since only the critical value of 30 percent for the debt service ratio was used as a benchmark for assistance. On this basis, it is doubtful whether the SPA programme originally succeeded in reaching all debt-distressed countries.

### 3.1.2 *The net present value of debt: World Debt Tables 1992-93*

In 1992, with the publication of the WDT 1992-93, the World Bank in a certain respect considerably refined the classification system of previous editions. This followed the introduction of the net present value of debt burdens as a basis for classifying debtor

---

<sup>26</sup> It was also noted that since the indicators presented the debt situation in a particular reference year, it may not provide a representative picture. A temporary rise, for example, in export earnings will lower the debt-to-export ratio without having increased long-term solvency. One way of correcting for this was to use a three-year average rather than a single-year value, and this was indeed done in the 1991-92 and subsequent editions of WDT (incidentally, the WDT edition in-between (1990-91), did not develop the classification system any further, indeed it wasn't even mentioned, although the classification results of the previous year was re-reported (with minor alterations).

countries. Since debt indicators based on the nominal value of debt does not adequately reflect a country's true solvency position, they do not provide a true picture of debt service capacity, especially in the longer-term perspective. This is because no account is taken of the term structure and the concessionality mix that characterizes developing country debt, and yet this is of critical importance for the actual cash-flow burden of the debt.<sup>27</sup> In order to account for this deficiency, the WDT 1992-93 classification system was based on the present value of scheduled debt service payments, using the interest rates charged by OECD countries for officially-supported export credits as discount rates.<sup>28</sup> Whether the present value is higher or lower than the nominal value of the debt depends on the interest rates of loans and the discount rate (see WDT 1992-93, p. 127-128, for details). Usually the present value of poor country debt is lower than its nominal value, since interest rates are usually low and fixed.

Two present value debt burden indicators were used by the WDT 1992-93 to classify debtor countries: total debt service-to-GNP and total debt service-to-exports.<sup>29</sup> The critical values chosen were the '1989-91 averages of the mean ratios for the countries identified in World Debt Tables 1991-92 as severely and moderately indebted: a PV-to-GNP ratio of 80 percent and a PV-to-exports ratio of 220 percent' (p. 128). As noted, because of the high grant element of poor country debt, the present value of debt of these countries is usually significantly lower than its nominal value. But if this was case, it seems curious that the critical value for the present value debt-to-GNP was set *higher* (80 percent) than the nominal critical value (50 percent) used in earlier classifications.

A country was classified as a SILIC (or SIMIC, if middle-income) if either one of the ratios were above the critical values, and a MILIC (or SIMIC, if middle-income) if one of the ratios exceeded 60 percent of the critical values. The application of the net present value method yielded a similar number of SILICs as in previous editions (27). The customary sensitivity analysis, however, though taken by the WDT report to affirm that the method was 'relatively robust to the choice of critical values', nevertheless showed that a 5 percent lowering of critical values would add another ten countries to the SILIC group. Curiously, the sensitivity analysis did not try a 10 percent lowering of critical values (as was done in previous editions), so the extra ten SILIC countries must be regarded as a minimum addition; this can hardly be considered a 'relatively robust' method.

---

<sup>27</sup> For instance, a country receiving a large amount of concessional (i.e. soft) loans will experience much less difficulty in subsequently servicing its debt than a similar country with the same loan amount contracted on commercial (i.e. hard) terms. The nominal debt stock indicators could be similar in the two cases, but the severity of the debt service burden is very different. See Chaudhuri and Zhu (1998) for a more detailed discussion of nominal versus present value debt analysis.

<sup>28</sup> These rates are seen as representing, on average, the most favourable term of fixed-rate, non-concessional debt developing countries are able to obtain in international markets.

<sup>29</sup> The inclusion of the interest-to-exports ratio, used in previous editions as a measure of the cost of using externally-borrowed resources under varying degrees of concessionality, was discontinued since this dimension was captured by using the present value of debt (i.e. the impact of the rate of interest is accounted for).

## 3.2 Methodological issues

### 3.2.1 *Determining critical values*

Despite the immediate evaluative usefulness of the original WDT classification system, the use of average indicators to capture the debt service problems of a large number of countries with dissimilar economies raises some methodological questions relating to the procedure of determining critical values. As noted earlier these values can be interpreted as switching values, above which countries (on average) turn from performing to non-performing debtors in debt service terms. Implicit in this notion is the assumption that there exists a universal and time-invariant set of switching values (or at least a narrow range of values), which is applicable to all debtor countries at all times. But this was a dubious assumption. For one thing, universality was compromised by the presence of extreme observations (of which there were quite few among the 73 problem countries used as reference group) in the calculation of switching values. These extreme observations (e.g. debt-to-export ratios of 1000 percent and even higher) tend to raise the average value, which is used as the switching value, but without any concurrent deterioration in debt service performance having been observed.

It must be remembered that the 73 countries reported by the WEO were identified as problem debtors because they had rescheduled or accumulated payment arrears regardless of the *size* of the amounts involved. This meant that no link was established between the size of the debt burden indicator and the severity of debt service problems. For instance, if the debt-to-export ratios of Sudan, Guinea-Bissau, Mozambique, Somalia and Nicaragua (all above 1000 percent), were to have been hypothetically cut in half, they would without doubt still have had major debt service problems (thus would still have been on the WEO problem list), but the average debt-to-export ratio would have been considerably lower, and so would the (critical) switching value. The point is that the adopted switching values, as they were reported in WDT 1989-90, did not account for the presence of countries with abnormal debt situations.

This raises the question of whether the WDT 1989-90 was justified in simply using the 1988 *unweighted* average as a summary switching value. What should have been done was to first look at the distribution of the 73 observations (i.e. combinations of country and indicator value) for each of the four indicators. If the distribution is non-normal, because of extreme values, considerations as to the appropriate summary indicator would be warranted. To see if this was the case, data for the debt-to-export ratio of 63 of the problem countries (for which data could be found) listed in the WEO were examined (Table 1). The number of countries in each interval is given, to see whether the distribution is normal or skewed in one way or other. It seems that it was, with a right-hand tail of several high values above average. Using an unweighted average as summary indicator in this case does certainly not appear to have been the most appropriate. There are several ways (none of them perfect though) to remedy the influence of the abnormal cases. A weighted average could be used (based e.g. on GNP values). The median value could also have been used. Or the extreme observations (e.g. the five aforementioned countries) could have been cleansed from the sample. In any case, while acknowledging the trade-off between operationality and precision, it seems that some considerations about the appropriate summary indicator should have been included in the original WDT exercise.

Table 1

Distribution of debt-to-export ratios, 1988.

(63 WEO problem countries; number of countries in each interval)

0- 100%	100- 200%	200- 300%	300- 500%	500- 1000%	1000- 1500%	1500- 2000%	> 2000%
4	10	13	18	13	1	1	3

Source: WDT 1989-90.

The other problem, that of time-invariance refers to the use of a specified time-period (1985-87) as the genesis of debt service problems. Many of the problem countries listed were also problem countries in the years prior to the reference years, with indicator values sometime far below those of 1988 (on this, see also Verhagen 1997). The point here is that the 'true' switching values may not have coincided with those accidentally observed in 1988.

To sum up, since the switching values adopted in WDT 1989-90 may have been set to high, in part due to the influence of abnormal debt burdens, and in part due to having been calculated on the basis of an arbitrarily selected reference year, it may be doubted whether they were appropriate approximations of the 'true' switching values governing the debt service performance of debtor countries. Moreover, given the whole range of explanatory variables determining debt service performance (as discussed in Section 2), it may be doubted whether all relevant information determining debt service performance was contained in the four indicators used, and it is certainly debatable whether the difference in the 'true' switching values among countries could lie within the +/- 10 percent boundaries suggested by the sensitivity analyses.<sup>30</sup>

### 3.2.2 Methodological problems unresolved

Despite the justified introduction of the net present value of debt (in WDT 1992-93), and an initial explicit acknowledgment of the still unattended fiscal aspects of the debt problem, the method of determining critical values remained a weak spot. What was done in WDT 1992-93 was to lump together all countries classified as severely and moderately indebted in WDT 1991-92, calculate for each countries and each ratio the values for 1989, 1990 and 1991, and then adopt as the critical switching value the three-year average of the country average for each ratio. Apart from losing universality, due to the continued inclusion in the summary indicator (i.e. the unweighted average) of extreme debt burdens (which were still in evidence, in spite of the present value

---

<sup>55</sup> In passing, an alternative (and more direct) way of classifying countries would be to simply group (if IMF data allowed) the 73 countries on the WEO list according to the severity of debt service problems. For example, SILICs could be defined as those countries that rescheduled and/or had arrears in excess of, say, 20 percent of total debt, MILICs could be those with arrears between 10-20 percent of total debt, and so on.

approach), the critical values adopted lost further credibility due to the legacy of past imprecision.<sup>31</sup>

The debtor classification from which the new present value system was created was, as argued above, based on linking 1988 debt indicators to 1985-87 debt service problems, a procedure which in the first place is unlikely to have generated ‘true’ switching values. Unfortunately, this somewhat mechanistic approach to debt capacity analysis appears to also underlie successive editions of *World Debt Tables/Global Development Finance*, and also to underlie the debt sustainability targets guiding HIPC assistance.<sup>32</sup>

#### **4 HIPC application of sustainability targets**

Under the HIPC Initiative, the debt relief effort of creditors aims to bring down selected debt burden indicators to their perceived switching values. Under HIPC I, the present value of the debt and debt service-to-export ratios were to be brought down to the 200-250 and 20-25 percent range, respectively (the exact values depending on a number of vulnerability factors), and the present value of the debt-to-fiscal revenue ratio down to 280 percent. Since an unsustainable debt was said to be in evidence if just one of these switching values were not reached, ‘perfect’ sustainability required that all three targets were satisfied. Under HIPC II, only two targets are set: a present value debt-to-export ratio of 150 percent, and a present value debt-to-revenue ratio of 250 percent. We will consider export-related and fiscal targets in turn.

##### **4.1 The debt-to-export targets**

The original rationale for adopting the (200-250 and 20-25 percent) target values for the debt-to-export ratios rested partly on the successive WDT exercises and in part on the findings of a number of other empirical investigations (notably Cohen 1998 and Underwood 1990) which were interpreted as being supportive of targets adopted. Before considering the empirical evidence, it is worth noticing at this point the absence of the debt-to-GNP (or GDP) ratio among the targets adopted. As mentioned earlier, the GNP ratio relates the debt burden to the broadest measure of the income-generating ability of the economy, and the ratio has been used for numerous years in the WDT/GDF as part of the debtor classification system. However, in 1994, a World Bank publication on poor country debt (World Bank 1994) signalled the demise of the debt-to-GNP ratio on grounds that its usefulness was compromised by the influence of ‘erratic changes arising from real exchange rate changes’ in SILIC countries. However, similar problems relate

---

<sup>31</sup> The present value debt-to-export ratios of the five most indebted SILICs were (1990-92 average): Nicaragua (2798.5 percent), Sudan (2727.1 percent), Somalia (2557.5 percent), Mozambique (1156.9 percent) and Guinea-Bissau (916.6 percent) (Ahmed *et al.* 1994).

<sup>32</sup> For example the WDT 1993-94, which reported 29 SILICs (no sensitivity analysis carried out in this or later editions), the WDT 1994-95, which reported 32 SILICs, the WDT 1996, which reported 35 SILICs, the GDF 1997, which reported 37 SILICs, and the GDF 1998, which reported 36 SILICs. In GDF 1998, in order to account for debt relief in 1996-97, the debt-to-GNP and export ratios used were no longer based on three-year average ratios, as done before, but by holding the present value of debt in 1996 against 1994-96 averages of GDP and exports.

to the debt-to-export ratios, since export earnings may also fluctuate widely in SILIC countries. This problem was accounted for in the WDT exercise by using three-year averages of the debt-to-export ratio, and in the HIPC I context, export fluctuation was (to some extent) accommodated, by including export earnings among the risk factors. It is not clear why exchange rate-induced fluctuations in GNP could not have been dealt with in a similar manner.

As noted, a couple of studies have been frequently cited in the HIPC I context (e.g. in Claessens *et al.* 1996, Chaudhuri and Zhu 1998) as lending empirical support to the notion of a sustainability threshold of 200-250 percent for the present value of the debt-to-export ratio as being ‘about right.’ An investigative note by Underwood (1990) attempted to identify the upper bound of the value of the debt-to-export ratio (adjusted for the grant element) at which debtor countries would still be considered sustainable and creditworthy. This was done by grouping 111 debtor countries into those that had rescheduled since 1982 or had accumulated extensive payment arrears (not defined) during 1980-87 (56 countries) and those which had had no debt service problems (55 countries). With few exceptions, all countries without debt service problems had (adjusted) debt-to-export ratios below 200 percent, as correctly reported by Claessens *et al.* (1996).

It is more difficult, however, to go along with the subsequent assertion that ‘most countries with a history of rescheduling or interest arrears had debt-to-exports ratios above 200 percent.’ Inspecting the Underwood data reveals that as many as 17 of 56 problem countries in 1987 had debt-to-export ratios *below* 200 percent, a fact that prompted Underwood to argue that the 200 percent should be considered as a necessary but *not sufficient* condition for sustainability. Moreover, counting the number of problem countries with below 200 percent debt-to-export ratios for the other years yielded some interesting numbers (see Table 2). As one goes back in time, the number of countries with ‘extensive’ debt service problems below the 200 percent threshold increases markedly. In all years during 1980-84 over half the countries had ‘extensive’ debt service problems even though their debt burdens were lower than what was considered sustainable. This suggests that the Underwood study proposed a 200 percent debt to export ratio only as an *upper* bound (but it was used as a *lower* bound under HIPC I). Reflecting on the reason as to why so many countries with below 200 percent debt-to-export ratios could not avoid arrears and rescheduling, Underwood argued that the fiscal burden of debt had been the binding constraint.

Table 2  
Number of debt problem countries with below 200% debt-to-export ratio, 1980-87.  
(Percent share of total number of problem countries in brackets.)

1980	1981	1982	1983	1984	1985	1986	1987
46	37	31	31	32	20	20	17
(82.1)	(66.1)	(55.4)	(55.4)	(57.1)	(35.7)	(35.7)	(30.4)

Source: Underwood (1990).

Another more recent study by Cohen (1998) for sub-Saharan African countries had a similar aim. Cohen suggested a number of ways to assess the sustainability of African debt. For instance, sustainability can be roughly assessed by determining the share *b* of a country’s national resources that would be required for debt service if the debt-to-

export ratio were to be stabilized. If  $D/X$  is the debt-to-export ratio,  $r$  the rate of interest, and  $n$  the rate of export growth, the share  $b$  would be determined by  $(r-n)(D_t/X_t)$  for any given period  $t$ .<sup>33</sup> If the country is willing (and capable) of paying more than  $b$ , the debt-to-export ratio will fall, leading eventually to a sustainable debt position, while repayments below  $b$  would lead to an indefinite rise in the debt-to-export ratio, an unsustainable debt position *per se*.

Since the upper value of the share  $b$  can be theoretically interpreted as the cost of debt repudiation, that is, the share of national resources that would be foregone in the event that the country was to 'go to war with its creditors', its value can be indirectly inferred by reference to countries that have been pushed to the 'limit' by their creditors. Using as this limit the situation where countries begin to reschedule their debts, the associated value of the debt-to-exports ratio ( $D/X$ ) indicates the sustainability threshold, and can then be used to calculate the value of  $b$  (given information about interest rates and export growth). Calculating these values for sub-Saharan SILICs during the 1985-93 period reveals that an average of 12.8 percent of African resources would be required to stabilize the debt-to-export ratio (compared with Mexico's average transfer on 'only' 4.7 percent in that country's crisis years of 1984-89).

An alternative method was to conduct a Laffer-style analysis, based on 'reconstructed' secondary market prices for a large number of African countries. Since only few sub-Saharan African countries are actually quoted on secondary markets, Cohen econometrically constructed the price value of each country's debt, as if it had been quoted on grounds similar to other debtors in the market. Calculating also the threshold price at which the elasticity of the secondary price with respect to the debt was (in absolute value) smaller than unity (0.31 cents to the dollar in African case), it was possible to compare the actual (though 'fictitious') price quotations of each sub-Saharan debtor with the threshold price to arrive at the number of countries on the 'wrong' side of the debt Laffer curve. The study showed that in 1988 and 1992, about a third of sub-Saharan African countries had debt burdens that, had they been commercially quoted, would have invited pareto-improving debt reductions. Cohen then proceeded to calculate the debt-to-export ratio that would have brought the secondary market price up to, say, 0.75 cents to the dollar, and the *average* debt-to-export ratio for the African countries arrived at was 211 percent, suggesting that a sustainability target within the 200-250 percent range would be largely correct.

However, apart from the question of whether a 25 percent discount on African debt could be considered to reflect a wholly sustainable debt situation, the HIPC I application of the Cohen analysis remained problematic because it implicitly suggested that the average switching value of 211 percent for the debt-to-export ratio could be used as a universal threshold applicable to all countries. Yet, examining the Cohen data on the (implied) sustainable debt-to-export ratios of individual sub-Saharan African countries, reveal very large variations indeed (Table 3).

Only a few of the 28 African countries examined conformed to the notion of switching values in the range of 200-300 percent. The majority of the countries could only become sustainable (defined by a 0.25 cents discount to the dollar) at below 200 percent debt-to-export ratios, and eight of these would have to get their debt-to-export ratios down

---

<sup>33</sup> Cohen uses the debt to GDP ratio as sustainability indicator, but this does not alter the results.



below 100 percent. On the other hand, the data also shows that a number of countries could achieve sustainability at rather high values of the debt-to-export ratios. This finding, and those of the Underwood study, suggests that the differential treatment of debtor countries in the HIPC I context within the 200-250 percent boundaries could not have been expected to have adequately dealt with the sustainability problem of quite a number of countries. Nevertheless, this target range determined HIPC I debt relief for three years (1996-99).

Table 3

Sustainability of African debt, based on estimated secondary market prices for 1988 and 1992 (sustainable debt-to-export ( $D/X$ ) ratios for African countries at 25% discount).

0-100%	100-200%	200-300%	> 300%	> 400%
Côte D'Ivoire	Benin	Burundi	Kenya	Burkina Faso
Guinea	Cameroon	Ghana	Zimbabwe	Mauritius
Madagascar	C.A.R.	Guinea Bissau		Rwanda
Niger	Chad	Malawi		
Nigeria	Gambia	Mozambique		
Senegal	Mali	Tanzania		
Togo	Mauritania	African average		
Zambia	Sierra Leone			
	Uganda			

Source: Cohen (1998).

The revised sustainability target of 150 percent for the debt-to-export ratio adopted in 1999 was a welcome lowering of the target, which is certain to bring deeper debt relief to a wider group of countries. But from the point of view of economic analysis, it seems that the analytical problems discussed above are still present. Although by now institutionalised within the HIPC mechanism, the export-related sustainability targets adopted were not originally perceived as 'targets', but as switching values, above which the average (but fictitious) country typically had debt service problems. At the outset, these switching values were devised as rules of thumb, for the express purpose of being able to distinguish countries with unsustainable debts. They were not as such devised for determining how much debt relief each of these countries would need in order to reach manageable debt levels, but they have been so applied under the HIPC Initiative. This concern about the analytical legacy of debt sustainability is not assuaged by the change of the debt-to-export target from 200-250 to 150 percent.

## 4.2 The 'fiscal window'

### 4.2.1 *The fiscal targets*

As regards the fiscal dimension of the HIPC Initiative, the procedure for opening the fiscal window appears to be unsatisfactory. Many have argued that both the original threshold of 280 percent for the debt-to-revenue ratio, and the present one of 250 percent, are much too high. This may very well be so, but it may in fact also have been set too low for some countries. We don't really know, since the fiscal target do not

appear to have been generated from economic analysis of the problem at hand.<sup>34</sup> Despite the reported methodological flaws of the export-related sustainability targets, they were at least based on an initial analysis of the relationship between debt indicators and debt service performance and, while imperfect, could be interpreted as switching values. The fiscal target cannot be interpreted as such; it does not tell us with any certainty whether values below the target signifies countries that can be expected to avoid budget-related debt service problems in the future. For the fiscal target to be perceived (and employed) as a switching value, its value would have had to be determined in the same manner in which the export-related sustainability targets were determined.

One way to show the inherent inconsistency of the fiscal target is to combine it with the revenue collection rate stipulated as a condition for opening the fiscal window. If the original fiscal target of 280 percent is combined with the original 20 percent revenue rate, we arrive at the implied (and sustainable) debt-to-GDP ratio of 56 percent (line 1 in Table 4). This was, as correctly pointed out by Eurodad (1998), near equivalent to the EMU convergence criteria of 60 percent, and in passing we may note that this value differs by a wide margin from the sustainable level of 80 percent adopted earlier in WDT. In Table 4, for sake of experiment, other combinations of the three indicators—the revenue ratio  $GR/Y$ , the debt-to-revenue ratio  $D/GR$  and the (implied) debt-to-GDP ratio  $D/Y$ —are presented in percentage terms.

Line 2 holds the  $D/Y$  ratio constant (since the original fiscal window, by implicitly perceiving the  $D/GR$  ratio of 280 percent as a ‘true’ switching value, in effect ‘saw’ this  $D/Y$  value as a sustainable one) and sets  $D/GR$  at the lower target of 250 percent (currently applied). The implied revenue ratio  $T/Y$  then goes up to 22.4 percent. But assuming that it is inconceivable that the stipulated revenue condition will be increased to this implied level, a lowering of the  $D/GR$  target to 250 percent will no longer be consistent with a sustainable  $D/Y$  ratio of 56 percent. Rather, a 250 percent  $D/GR$  target with the original 20 percent  $GR/Y$  condition yields the lower sustainable  $D/Y$  ratio of 50 percent (line 3).

---

<sup>34</sup> This view is confirmed by a HIPC report (IMF and World Bank 1997b), in which the staff in effect indicted the apparent politics of matter by dryly noting that it was ‘not aware of any firm analytical basis’ for the 280 percent fiscal target.

Table 4

Inconsistency of HIPC fiscal targets: combinations of fiscal targets, revenue ratios, and (implied) debt-to-GDP ratios (percent).

Line	Revenue ratio	Debt-to-revenue ratio	Debt-to-GDP ratio
	GR/Y	D/GR	D/Y
1 (HIPC I)	20	280	56
2	22.4	250	56
3	20	250	50
4	15	373	56
5	15	280	42
6 (HIPC II)	15	250	37.5

In a similar vein, if the  $D/Y$  ratio is again held constant and the stipulated revenue rate is lowered to 15 percent (as currently applied), the implied  $D/GR$  target increases to 373 percent (line 4). Again, assuming that it is inconceivable that the stipulated  $D/GR$  target will be increased to this implied level, a lowering of the  $GR/Y$  condition to 15 percent will no longer be consistent with a sustainable  $D/Y$  ratio of 56 percent. Rather, a (maintained) 280 percent  $D/GR$  target with a lowered 15 percent  $GR/Y$  condition yields the lower sustainable  $D/Y$  ratio of 42 percent (line 5).

If both the  $D/GR$  target and the  $GR/Y$  condition is lowered to present levels of 250 and 15 percent, respectively (line 6), the implied sustainable  $D/Y$  ratio is only 37.5 percent, that is, considerably below the level seen through the HIPC I fiscal window as sustainable. It is also curious to compare this low sustainability threshold with the high critical value of 80 percent for the present value debt-to-GNP ratio introduced in WDT 1992-93 for singling out severely indebted low-income countries. It appears that the combination of the revenue condition and a fiscal  $D/GR$  target de-linked from 'true' fiscal switching values introduces some inconsistency within the HIPC framework about the sustainable level of debt in relation to GDP, a consistency problem that would have been clearly in evidence if a HIPC target for this ratio had been included at the outset.

#### 4.2.2 *The twin-conditions*

Equally unsatisfying is the attached twin conditions that only very open economies with a strong government tax effort are allowed to benefit from the fiscal window. There are several reasons for this. First, the 15 percent minimum tax rate looks suspiciously like a form of double-conditionality, since improved tax collection is (usually) already part of the attached policy reforms. The reason for asking for policy reforms before extending debt relief is to ensure that the financial resources (whatever the amounts) freed up is put to the best possible use. So what is important is that the debtor country is seen as moving in the right direction in terms of the macro environment. Usually part of such policy reforms are attempts to increase the tax collecting ability of the government, as a basis for more sustainable fiscal policies. However, by (simultaneously) stipulating a minimum tax rate of 15 percent as a precondition for additional debt relief, such relief hinges, not only on policy reform, but on the *results* of such reforms. Lowering the tax criteria from the previous 20 to the present 15 percent under HIPC II has not substantially weakened this concern.

Secondly, it is still clear that many HIPC countries are not going to benefit from the HIPC II fiscal window, since their tax efforts are often well below the threshold stipulated; indeed that is one of the reasons why they have a fiscal problem in the first place. In the *First Decision Point Document* for Uganda, the tax effort of a sub-group of 24 HIPC countries was reported (IMF and World Bank 1997a). The data (given in Table 6a) show that under HIPC I, only two countries had tax revenue-to-GDP ratios on the safe side of the 20 percent threshold, namely Guyana (31.6 percent) and Congo (24.8 percent), with Nicaragua just making it with 20.3 percent. Four countries (Côte d'Ivoire, Honduras, Mauritania and Zambia) had tax ratios relatively close to the threshold (i.e. above 15 percent), while the remaining 17 countries had tax ratios below 15 percent, seven of them even below ten percent. Similarly, looking at more recent data *vis-à-vis* the present threshold of 15 percent (Table 6b), 15 out of 38 HIPC countries have revenue-to-GDP ratios below the new threshold. So for many HIPC countries, despite severe fiscal debt burdens, even the most determined reform efforts in the area of taxation is not likely to bring them additional debt relief on a account of the fiscal burden of debt.

This assertion follows from observing the wide differences between developing and developed countries in terms of the constraints on taxation. As noted by Tanzi and Blejer (1988), a number of tax constraining factors, be they political, structural, administrative or purely social, tend to be more inflexible and limiting in developing than in developed countries. Consequently, experience shows that it is very difficult to substantially raise the level of taxation in the short or medium term. Tanzi and Blejer reports from that experience that, unlike in industrial countries, no developing country had (until then) been able to raise the tax ratio by ten or twenty percentage points in a matter of one or two decades, or, for that matter, by just several percentage points in a few years. But this is precisely what is asked for in the HIPC context. For a number of HIPC countries, if they were to be eligible for additional debt relief at the completion point through the fiscal window, a very substantial rise in the tax rate would be required in a matter of just a few years (see Table 6b), an enterprise likely to be out of reach for any developing country and many developed too.

Thirdly, there is the added complication that some HIPC countries, opting for the fiscal window, may be tempted to increase government revenue through a hasty rise in tax rates. This scenario may then contradict the advice usually given to developing countries about the criticality of expanding the tax base as the primary source of higher government revenue. This advice is based on the experience that higher tax rates, even if their initial values are relatively low, often act to discourage investment activity.

A case in point is Uganda, where the whole tax system was reformed in the early 1990s (*inter alia* by the establishment of the *Uganda Revenue Authority*, URA, in 1991). Concern with the adverse implications for private investment when tax rates increase when the tax base does not, prompted a World Bank country report to assert that domestic revenue in Uganda could only increase in a gradual manner (World Bank 1995b). This suggest that broadening the tax base, which is an undertaking with a long gestation period, is the appropriate way to increase the revenue needed to sustain future fiscal policy. The short-term hunt of some countries for a 15 percent tax rate, in order to get to the fiscal window may (if the target rate is reached, and if the economy is open enough) provide some additional debt relief, but this relief may come at the cost of a discouraged investment community. So the final development outcome of this amendment to the HIPC scheme remains uncertain.

Fourthly, while it is widely recognized that the gap between external and fiscal sustainability may be larger in export dependent debtor countries, it is not clear why only very open countries (of which there are only about 15 in the HIPC group, see Table 6b) should be recognized as having a fiscally unsustainable debt, since this may certainly also be in evidence in less export dependent countries (see also Underwood 1990). As argued by Esquivel *et al.* (1998), the application of the *joint* tax-openness criteria tends to produce an undesired biased treatment of HIPC countries. It does so by penalizing those countries that are undertaking a substantial tax effort since the implied target value of the debt-to-exports ratio (in present value terms) tends to increase as the tax rate increases, and by rewarding countries that are highly export dependent since the implied target value of the debt-to-export ratio tends to fall as the export-to-GDP ratio rises (see Table 5a and 5b).<sup>55</sup>

Table 5a  
Debt-to-export ratios implied by the fiscal target (280 percent)  
and tax-openness thresholds under HIPC I.  
 $D/X$  is given by  $2.8((T/Y)/(X/Y))$ .

	$X/Y=40$	$X/Y=38$	$X/Y=36$	$X/Y=34$	$X/Y=32$	$X/Y=30$	$X/Y=28$	$X/Y=26$
$T/Y=20$	140	147	156	165	175	187	200	215
$T/Y=18$	126	133	140	148	158	168	180	194
$T/Y=16$	112	118	124	132	140	149	160	172
$T/Y=14$	98	103	109	115	123	131	140	151
$T/Y=12$	84	88	93	99	105	112	120	129
$T/Y=10$	70	74	78	82	88	93	100	108
$T/Y=8$	56	59	62	66	70	75	80	86
$T/Y=6$	42	44	47	49	53	56	60	65

Note: Procedure adopted from Esquivel *et al.* (1998).

So only highly open countries with a moderate tax effort are going to benefit from this amendment to the HIPC scheme, although it was intended (or so one would like to think) to deal with the fiscal aspect of the debt of all HIPC countries. Whether the tax criteria is 20 or 15 percent, or the openness criteria 40 or 30 percent, does not change the fundamental flaw of the joint criteria, as indicated in Table 5a and 5b (calculated in the same way as is done in Esquivel *et al.*, but focussing on below-present-criteria combinations of the tax and export ratios). In Table 5b, moreover, the shaded area signifies combinations of openness and revenue efforts where the implied debt-to-export ratios are actually higher (and so prospective debt relief lower) than under original HIPC terms. The best treatment will still be accorded to export dependent countries with

<sup>55</sup> Following Esquivel *et al.*, this can be shown by calculating the mathematically implied debt-to-export ratio of various combinations of the export-to-GDP ratio and the tax-to-GDP ratio, under the modification of the 280 and 250 percent sustainability threshold (respectively, under HIPC I and II) of the debt-to-revenue ratio (thus, the implied debt-to-export ratio  $D/X$  under HIPC I is given by  $2.8((T/Y)/(X/Y))$  and under HIPC II by  $2.5((T/Y)/(X/Y))$ , where  $T/Y$  is the tax ratio and  $X/Y$  is the export ratio.

a moderate (just-above-criteria) tax effort, clearly contradicting the rationale for the fiscal window.

Table 5b  
Debt-to-export ratios implied by the fiscal target (250 percent)  
and tax-openness thresholds under HIPC II.

D/X is given by  $2.5((T/Y)/(X/Y))$ .

	$X/Y=30$	$X/Y=28$	$X/Y=26$	$X/Y=24$	$X/Y=22$	$X/Y=20$	$X/Y=18$	$X/Y=16$
$T/Y=15$	125	134	144	156	170	188	208	234
$T/Y=14$	117	125	135	146	159	175	194	219
$T/Y=13$	108	116	125	135	148	163	181	203
$T/Y=12$	100	107	115	125	136	150	167	188
$T/Y=11$	92	98	106	115	125	138	153	172
$T/Y=10$	83	89	96	104	114	125	139	156
$T/Y=9$	75	80	87	94	102	113	125	141
$T/Y=8$	67	71	77	83	91	100	111	125

Note: The shaded area indicates combinations of openness and revenue efforts that would yield debt-to-exports ratios higher than the 150 percent sustainability target under HIPC II. Procedure adopted from Esquivel *et al.* (1998).

By way of experiment, it would be interesting to see the implied sustainability target for the debt-to-export ratio of HIPC countries under the assumption that the original 280 and the present 250 percent sustainability targets for the debt-to-revenue ratio were indeed *bona fide* switching values, but without the tax-openness criteria attached. This is done in Table 6a for 24 HIPC countries for which data was available for 1995, and in Table 6b for 38 HIPC countries for which more recent data is available. The calculations in Table 6a show that the target debt-to-export ratio of most HIPCs (19 of the 24) would lie below the lower bound of the 200-250 percent range, in fact below 150 percent for 16 countries, and below 100 percent for five countries (Chad, Guyana, Guinea, Madagascar and Mauritania). Three countries (Ethiopia, Uganda and Burkina Faso) would arrive at ‘fiscally-corrected’ targets within the boundaries then applied, while two countries (Sierra Leone and Bolivia) would arrive at targets above the boundaries. Looking the latest available data for an expanded group of 38 HIPCs, Table 6b shows that if fiscal sustainability can indeed be achieved at debt-to-revenue ratios of 250 percent, then 22 of the 38 HIPC would have implied debt-to-export targets below the present 150 percent (and seven of these below 100 percent). Given this inconsistency, it would appear that external and fiscal sustainability will not be easily reconciled within the HIPC framework.

To sum up, as presently applied, the fiscal window seems too narrowly and inconsistently defined and is unlikely to adequately deal with the fiscal dimension of HIPC debt. From the perspective of which countries gain most from this amendment, it would be more accurate to describe it as an ‘export window’ rather than a ‘fiscal window’. Creditor politics seems to have been the principal leitmotif of this extension.

Table 6a

Country debt-to-export ratios implied by the fiscal target under HIPC I.  
24 HIPCs ranked by size of  $D/X$ ; assuming no tax-openness conditions;  
data for 1995.  $D/X$  is given by  $2.8((T/Y)/(X/Y))$ .

Country	Export ratio X/Y	Tax ratio T/Y	Debt-to-export ratio D/X
Chad	29.7	7.3	68.8
Guyana	100.0	31.6	88.5
Guinea	21.7	7.3	94.1
Madagascar	23.3	8.2	98.4
Mauritania	50.5	17.9	99.2
Cameroon	25.9	9.3	100.7
Zambia	42.4	15.5	102.4
Honduras	43.3	16.5	106.7
Togo	34.4	13.3	108.2
Niger	16.8	6.6	109.8
Congo, Rep.	59.7	24.8	116.4
Côte D'Ivoire	41.1	17.5	119.2
Senegal	31.7	13.6	120.1
Benin	26.4	11.9	126.1
Mozambique	27.4	12.5	127.7
Mali	21.8	10.5	134.8
Guinea-Bissau	11.7	6.9	165.8
Nicaragua	33.9	20.3	167.7
Tanzania	20.5	13.1	178.9
Ethiopia	14.5	11.8	228.4
Uganda	11.8	9.8	233.0
Burkina Faso	13.0	10.9	234.4
Sierra Leone	12.1	11.0	255.0
Bolivia	20.2	19.5	270.2

Sources: World Bank (1998) and IMF and World Bank (1997a).

Table 6b

Country debt-to-export ratios implied by the fiscal target under HIPC II. 38 HIPCs ranked by size of  $D/X$ ; assuming no tax-openness conditions; latest data available by July 1999.  $D/X$  is given by  $2.5((T/Y)/(X/Y))$ .

Country	Export ratio $X/Y$	Tax ratio $T/Y$	Debt-to-export ratio $D/X$
Equatorial Guinea	95	19	50,0
Myanmar	8	2	62,5
Guyana	103	33	80,1
Laos	34	12	88,2
Sierra Leone	19	7	92,1
Honduras	47	18	95,7
Congo, Rep.	67	26	97,0
Vietnam	48	21	109,4
Chad	18	8	111,1
Angola	73	33	113,0
Togo	34	16	117,6
Côte D'Ivoire	44	21	119,3
Congo, Dem. Rep.	26	13	125,0
Madagascar	22	11	125,0
Niger	16	8	125,0
Senegal	46	23	125,0
Benin	26	14	134,6
Guinea	20	11	137,5
Nicaragua	43	25	145,3
C.A.R.	17	10	147,1
Sao Tomé & Príncipe	34	20	147,1
Zambia	32	19	148,4
Cameroon	25	15	150,0
Malawi	26	16	153,8
Ghana	27	18	166,7
Mauritania	42	28	166,7
Mali	22	15	170,5
Mozambique	26	20	192,3
Uganda	12	10	208,3
Tanzania	15	13	216,7
Yemen	40	35	218,8
Kenya	28	28	250,0
Guinea-Bissau	32	33	257,8
Ethiopia	16	19	296,9
Bolivia	19	23	302,6
Burkina Faso	8	12	375,0
Burundi	8	13	406,3
Rwanda	6	10	416,7

Source: IMF and World Bank (1999).



### 4.3 The development aspect

Given the analytical origins of debt sustainability targets, how are considerations about the economic development of indebted countries accommodated within the sustainability concept underlying HIPC debt relief? More specifically, since the notion of a sustainable debt is recognized in the literature as consisting of restored debt service capacity (i.e. exit debt relief) *as well as* an un-compromised development process, how are present sustainability targets (and how were previous targets under HIPC I) related to economic performance?<sup>36</sup> How to determine whether a country striving for a sustainable debt position must do so at investment and growth levels below what is considered socially desirable? Given the limited range of indicators used to target sustainability under HIPC, and given that the targets adopted were originally derived from narrowly assessing debt service performance, it may be fair to say that the growth and investment implications of the pursuit for a sustainable level of debt remains a weak spot. In practice, the overriding aim of using sustainability targets, as presently applied, appears to be the restoration of debt service capacity. Indeed that was root problem from which these targets derived their analytical rationale. The analytical origins of the sustainability targets therefore tend to limit their immediate use for adequate considerations about growth and poverty reduction.

Since the prospects for economic growth and poverty reduction for any given country is not directly related to the sustainability targets stipulated, these issues are for all practical purposes dealt with *after* the level of sustainable debt has been decided on. This means that resources for the promotion of growth and poverty reduction have to be consistent with the overall financing envelope determined by the debt relief granted and other concessional financing as well as by the macroeconomic assumptions underlying the *Debt Sustainability Analysis* (DSA) of eligible countries. This in turn implies a limit on the target growth rate of real GDP. This is so because a more ambitious target will increase the gap between the sustainability target and the projected debt path, since future borrowing requirements will increase. But the additional financing required cannot be expected to be forthcoming from donors and creditors. Assumptions about future growth therefore have to be in line with assumptions about future financing and about expectant debt relief.

These concerns are strengthened by the assumption of only (relatively) modest growth targets in the external financing projections underlying the debt sustainability analyses of HIPC countries. In the case of Uganda, for example, the *First Decision Point Document* (IMF and World Bank 1997a) assumed an annual average real GDP growth rate of 7.0 percent during 1996/97-1998/99 and 5.0 percent thereafter. The *Second Decision Point Document* (IMF and World Bank 2000a) assumed a 7.0 percent average real GDP growth rate for 1999/00 to 2002, and then a gradual lowering of the growth target to 5.0 percent after 2004/05. Such growth targets are of course not as such 'modest' by the usual standards of low-income countries, but the low starting point of these countries in terms of per capita GDP must be kept in mind.

---

<sup>36</sup> In a HIPC background paper prepared by the staffs of the Fund and the Bank, debt sustainability was perceived to be a situation where a country 'is expected to be able to meet its current and future external obligations in full, without recourse to relief or rescheduling of debts or the accumulation of arrears, and without unduly compromising economic growth' (IMF and World Bank 1996).

Also, given the multitude of factors determining economic growth, there is always the risk that income growth falls short of expectations. In the case of Uganda, for instance, the 7.0 percent growth targets for fiscal years 1996/97 and 1997/98 assumed in the *First Decision Point Document* were not reached. According to the *Second Decision Point Document* for Uganda (IMF and World Bank 2000a), the growth rate was 4.5 percent in fiscal 1996/97 and 5.4 percent in fiscal 1997/98. And the growth target of 7.0 percent assumed in that same document for 1999/00 was also not reached; owing to lower agricultural production (caused by a drought) and lower than expected real demand (brought about by a sharper than expected terms-of-trade deterioration), the *Second Completion Point Document* for Uganda (IMF and World Bank 2000b) expected a real GDP growth rate of only 4.5 percent in that fiscal year. Of course, experiencing a loss in income growth in the area of 2.0 percentage points due to unforeseen macroeconomic events would have been less troublesome if debt relief and concessional financing would have allowed the original growth target to set at 8-10 percent or higher, rather than seven percent. But debt relief (and concessional financing) for Uganda did not allow such ambitious growth targets, since it would have been inconsistent with the target of 150 percent for the debt-to-export ratio decided on as a sustainable debt burden.

## 5 Summing up and concluding

Even though the lowering of the targets under HIPC II constitutes real progress in terms of alleviating poor country debt problems, the analysis in this paper leads to the overall conclusion that the sustainability targets guiding HIPC debt relief lack a strong analytical basis. The particular nature of the underlying solvency theory made it necessary to adopt the debt indicator approach in order to determine the switching values of various debt burden indicators. This is what was done in the 1989-90 and subsequent editions of the *World Debt Tables/Global Development Finance*, and this is how the HIPC targets should be interpreted. But since the switching values are based on average calculations, inadequate account is taken of the fact that HIPC countries encounter debt problems for a wide variety of reasons, at very different levels of foreign debt and with very different consequences for their economies.

Considering the diversity of debt problems and economic circumstances, it would not be unjustified to expect that the 'true' switching value of the debt-to-export or the debt-to-revenue ratios could differ quite a lot from one country to another. However, implicit in the debt capacity analysis underlying the HIPC Initiative is a common switching value, which is sought after.<sup>37</sup> However, in the absence of more solid evidence, it is doubtful whether the 'true' switching values of each and every HIPC country can be found in the neighbourhood of present targets. The foregoing history of the analytical origins of these values would seem to support this doubt. Although both are now set at lower levels than previously, neither targets currently serving as *anchors* of debt relief derives from empirical analysis of specific HIPC country debt burdens. While reaching the uniform HIPC II sustainability targets may indeed hold the promise of resulting in

---

<sup>37</sup> To some extent, of course, allowing a range of switching values to signify sustainability (as was the case when the target range of 200-250 and 20-25 percent for the debt and debt service ratios, respectively, were used under HIPC I) was an attempt to remedy this deficiency.

manageable debt positions of many low-income debtor countries, in other cases it may not be enough. And at the other end, for some HIPC countries, sustainability may perhaps even be reached without reducing the debt burden to present target levels, as suggested by Cohen (1998). The point is that insisting on allocating debt relief on the basis of single values of two debt indicators, to countries, whose debt-related problems are surely more diverse and complex than could possibly be revealed by those two indicators, increases the risk of ending up allocating available funding inconsistent with individual country needs.

Instead the adoption of country-specific targets it is suggested as a possible way to tailor debt relief more accurately to country needs, as these would be more in keeping with the economics of debt capacity. While offering a way to tailor scarce funding for debt relief more closely to country circumstances, the political feasibility of a shift from group to country targets may of course be debated. But since debt relief may be viewed as a form of aid, rejecting debt relief based on country-specific sustainability targets on political grounds loses some legitimacy. Whatever else has determined the geographical and quantitative pattern of aid allocation in the past, political considerations have always been part of the process. It is not clear why the political dimension of debtor-creditor relations should stand in the way of adopting a debt relief mechanism, which may offer a more efficient allocation of available financing.

## References

- Ahmed, M., Husain, I, Johannes, R. and Zhu, N. (1994). *Toward Resolving the Debt Problem of Severely Indebted Low-Income Countries (SILICs)*, mimeographed, Washington, DC: World Bank.
- Alford, A. and Lussier, J. (1993). 'An examination of the price discount on the external debt of developing countries', *World Economy* 16(6): 713-724.
- Aliber, R.Z. (1980). *A Conceptual Approach to the Analysis of External Debt of the Developing Countries*, World Bank Staff Working Paper 421, Washington, DC: World Bank.
- Alter, G.M. (1961). 'The servicing of foreign capital inflows by under-developed countries', in Ellis, H.S. and Wallich, H.C. (eds), *Economic Development for Latin America*, New York: St. Martin's.
- Avramovic, D. (1958). *Debt Servicing Capacity and Postwar Growth in International Indebtedness*, Baltimore: Johns Hopkins Press (for the World Bank).
- Avramovic, D. and Gulhati, R.I. (1960). *Debt Servicing Problems of Low-Income Countries 1956-58*, Baltimore: Johns Hopkins Press for the World Bank.
- Avramovic, D. *et al.* (1964). *Economic Growth and External Debt*, Baltimore: Johns Hopkins Press (for the World Bank).
- Bacha, E.L. (1984). 'Growth with limited supplies of foreign exchange: a reappraisal of the two-gap model', in Syrquin, M., Taylor, L. and Westphal, L.E. (eds), *Economic*

- Structure and Performance: Essays in Honor of Hollis B. Chenery*, New York: Academic Press.
- Balassa, B. (1964). *Trade Prospects for Developing Countries*, Irwin: Yale University Press.
- Bardhan, P.K. (1967). 'Optimum foreign borrowing', in Shell, K. (ed.), *Essays on the Theory of Optimal Economic Growth*, Cambridge, MA: M.I.T. Press.
- Bevilaqua, A.S. (1994). *Dual Resource Transfers and the Secondary Market Price of Developing Countries' External Debt*, mimeographed, Washington, DC: IMF.
- Bitterman, H.J. (1973). *The Refunding of International Debt*, Durham: Duke University Press.
- Borensztein, E. (1990). 'Debt overhang, credit rationing and investment', *Journal of Development Economics* 32(2): 315-335.
- Cassen, R. and Nissanke, M. (1990). *The Macroeconomics of Aid Dependence*, paper prepared for World Bank symposium African External Finance in 1990s, Washington, DC: World Bank.
- Chaudhuri, K. and Zhu, N. (1998). *External Debt Sustainability: Theory and Applications to Heavily Indebted Poor Countries*, Discussion Paper 98-01, Department of Economics, University at Albany, State University of New York.
- Chenery, H.B. and Strout, A.M. (1966). 'Foreign assistance and economic development', *American Economic Review* 56(4): 679-733.
- Claessens, S., Detragiache, E., Kanbur, R. and Wickham, P. (1997). 'HIPC's debt review of the issues', *Journal of African Economies* 6(2): 231-54.
- Cline, W.R. (1989). 'The Baker plan and Brady reformulation: an evaluation', in Husain, I. and Diwan, I. (eds), *Dealing With the Debt Crisis*, Washington, DC: World Bank.
- Cline, W.R. (1983). *International Debt and the Stability of the World Economy, Policy Analyses in International Economics 4*, Washington, DC: Institute for International Economics.
- Cohen, D. (1998). 'The Sustainability of African Debt', in Cohen, D. (ed.), *Contemporary Economic Issues: Proceedings of the Eleventh World Congress of the International Economic Association: Volume 3: Trade, Payments and Debt*, New York: St. Martin's Press and London: Macmillan Press.
- Cohen, D. (1995). 'Large external debt and (slow) domestic growth: a theoretical analysis', *Journal of Economic Dynamics and Control* 19(5-7): 1141-63.
- Cohen, D. (1993). *Growth and External Debt*, CEPR Discussion Paper 778, London: Centre for Economic Policy Research.
- Cooper, R.N. and Sachs, J.D. (1985). 'Borrowing Abroad: The Debtor's Perspective', in Smith, G.W. and Cuddington, J.T. (eds), *International Debt and the Developing Countries*, Washington, DC: World Bank.

- De Aghion, B.A. (1993). 'Analytical Issues on LDC Debt: A Survey', *World Economy* 16(4): 467-82.
- Dhonte, P. (1975). 'Describing External Debt Situations: A Roll-Over Approach', *IMF Staff Papers* 22(1): 159-186.
- Díaz-Alejandro, C.F. (1981). 'Southern cone stabilization plans', in Cline, W.R. and Weintraub, S. (eds), *Economic Stabilization in Developing Countries*, Washington, DC: Brookings Institution.
- Dittus, P. (1989). 'The budgetary dimension of the debt crisis in low-income sub-saharan countries', *Journal of Theoretical and Institutional Economics* 145(2): 358-66.
- Easterly, W. (1999). 'The ghost of financing gap: testing the growth model used in the international financial institutions', *Journal of Development Economics* 60(2): 423-38.
- Eaton, J. (1993). 'Sovereign debt: a primer', *World Bank Economic Review* 7(2): 132-72.
- Eaton, J. and Gersovitz, M. (1981a). 'Debt with potential repudiation: theoretical and empirical analysis', *Review of Economic Studies* 48(2): 289-309.
- Eaton, J. and Gersovitz, M. (1981b). *Poor-Country Borrowing in Private Financial Markets and the Repudiation Issue*, Princeton Studies in International Finance 47, Princeton University.
- Eaton, J. and Gersovitz, M. (1980). 'LDC participation in international financial markets: debt and reserves', *Journal of Development Economics* 7(1): 3-21.
- Esquivel, G. and Larraín B., F. and Sachs, J.D. (1998). *The External Debt Problem in Central America: Honduras, Nicaragua, and the HIPC Initiative*, Development Discussion Paper 645, Harvard Institute for International Development, Harvard University.
- Eurodad (1998). *Taking Stock of Debt: Creditor Policy in the Face of Debtor Poverty*, Brussels: European Network on Debt and Development.
- Feder, G. and Just, R.E. (1979). 'Optimal international borrowing, capital accumulation creditworthiness control', *Kredit und Kapital* 12(2): 207-20.
- Feder, G. and Just, R.E. (1977). 'A study of the debt servicing capacity applying logit analysis', *Journal of Development Economics* 4(1): 25-38.
- Feder, G., Just, R.E. and Ross, K. (1981). 'Projecting debt servicing capacity of developing countries', *Journal of Financial and Quantitative Analysis* 16(5): 651-69.
- Feder, G. and Regev, U. (1975). 'International loans, direct foreign investment, and optimal capital accumulation', *Economic Record* 51(135): 320-25.
- Fei, J.C.H. and Paauw, D.S. (1965). 'Foreign assistance and self-help: a reappraisal of development finance', *Review of Economics and Statistics* 47(3): 251-67.
- Fielding, D. (1997). 'Modelling the determinants of government expenditure in sub-saharan africa', *Journal of African Economies* 6(3): 377-90.

- Frank, C.R. and Cline, W.R. (1971). 'Measurement of debt servicing capacity: an application of discriminant analysis', *Journal of International Economics* 1(3): 327-44.
- Gallagher, M. (1994). 'Government spending in Africa: a retrospective of the 1980s', *Journal of African Economies* 3(1): 62-92.
- Greene, J. and Villanueva, D. (1990). *Private Investment in Developing Countries: An Empirical Analysis*, IMF Working Paper WP/90/40, Washington, DC: IMF.
- Gulhati, R.I. (1967). 'The 'need' for foreign resources, absorptive capacity debt servicing capacity', in Adler, J.H. and Kuznets, P.W. (eds), *Capital Movements and Economic Development*, Baltimore: St. Martin's Press.
- Hadjimichael, M.T. and Ghura, D. (1995). *Public Policies and Private Investment in Sub-Saharan Africa: An Empirical Investigation*, IMF Working Paper WP/95/19, Washington, DC: IMF.
- Hadjimichael, M.T., Ghura, D., Mhleisen, M., Nord, R. and Uçer, E.M. (1995). *Sub-Saharan Africa: Growth, Savings, and Investment, 1986-93*, IMF Occasional Paper 118, Washington, DC: IMF.
- Hajivassiliou, V.A. (1993). *A Simulation Estimation Analysis of the External Debt Crises of Developing Countries*, Cowles Foundation Discussion Paper 1057, Yale University.
- Hajivassiliou, V.A. (1989). 'Do the secondary market believe in life after debt?', in Husain, I. and Diwan, I. (eds), *Dealing With the Debt Crisis*, Washington, DC: World Bank.
- Hajivassiliou, V.A. (1987). 'The external debt repayment problems of Idcs: an econometric model based on panel data', *Journal of Econometrics* 36(1-2): 205-30.
- Hamada, K. (1969). 'Optimal capital accumulation by an economy facing an international capital market', *Journal of Political Economy* 77(4): 684-97.
- Hanson, J.A. (1974). 'Optimal international borrowing and lending', *American Economic Review* 64(4): 616-30.
- Hemphill, W.L. (1974). *The Effects of Foreign Exchange Receipts on Imports of Less Developed Countries*, IMF Staff Papers 21(3): 637-77.
- Hernandez, E.C. (1988). *Issues in the Design of Growth Exercises*, IMF Working Paper WP/88/65, Washington, DC: IMF.
- Hjertholm, P. (1997). *An Inquiry Into the Fiscal Dimension of External Debt: The Case of Sub-Saharan Africa*, Ph.D. Thesis (Red Series 43-97), Institute of Economics, University of Economics.
- Hjertholm, P. (1991). *An Analysis of Sub-Saharan Africa's External Debt*, Master Thesis, Institute of Economics, University of Copenhagen.
- IMF (1989). *World Economic Outlook*, April, Washington, DC.
- IMF (various years). *Annual Report on Exchange Arrangements and Exchange Restrictions*, Washington, DC.

- IMF and World Bank (2000a). *Uganda: Initiative for Heavily Indebted Poor Countries: Second Decision Point Document*, Washington, DC.
- IMF and World Bank (2000b). *Uganda: Initiative for Heavily Indebted Poor Countries: Second Completion Point Document*, Washington, DC.
- IMF and World Bank (1999). *Modifications to the Heavily Indebted Poor Countries (HIPC) Initiative*, Washington, DC.
- IMF and World Bank (1997a). *Uganda: Final Document on the Initiative for Heavily Indebted Poor Countries (HIPC)*. Washington, DC.
- IMF and World Bank (1997b). *HIPC Initiative: Guidelines for Implementation*, Washington, DC.
- IMF and World Bank (1996). *Debt Sustainability Analysis for the Heavily Indebted Poor Countries*, Washington, DC.
- Kamel, N. (1988). *Criteria for National Solvency*, Applied Economics Discussion Paper 50, Institute of Economics and Statistics, University of Oxford.
- Kharas, H. (1984). 'The long-run creditworthiness of developing countries', *Quarterly Journal of Economics* 99(3): 415-39.
- Kharas, H. (1981a). *The Analysis of Long-Run Creditworthiness: Theory and Practice*, World Bank Domestic Finance Study 73, Washington, DC: World Bank.
- Kharas, H. (1981b). *On Structural Change and Debt Service Capacity*, World Bank Domestic Finance Study 74, Washington, DC: World Bank.
- Kharas, H. (1981c). *Constrained Optimal Foreign Borrowing by Less-Developed Countries*, World Bank Domestic Finance Study 75, Washington, DC: World Bank.
- King, B.B. (1968). *Notes on the Mechanics of Growth and Debt*, World Bank Staff Occasional Papers 6, Washington, DC: World Bank.
- Kutty, G. (1990). 'Logistic regression and probability of default of developing country debt', *Applied Economics* 22(12): 1649-60.
- Lensink, R. and van Bergeijk, P.A.G. (1991). 'The determinants of developing countries' access to the international capital markets', *Journal of Development Studies* 28(1): 86-103.
- López, R.E. and Thomas, V. (1990). 'Import dependence and structural adjustment in sub-Saharan Africa', *World Bank Economic Review* 4(2): 195-207.
- McDonald, D.C. (1982). *Debt Capacity and Developing Country Borrowing: A Survey of the Literature*, IMF Staff Papers 29(4): 603-49.
- McFadden, D., Eckaus, R., Feder, G., Hajivassiliou V. and O'Connell, S. (1985). 'Is there life after debt? an econometric analysis of the creditworthiness of developing countries', in Smith, G.W. and Cuddington, J.T. (eds), *International Debt and the Developing Countries*, Washington, DC: World Bank.
- Moran, C. (1989). 'Imports under a foreign exchange constraint', *World Bank Economic Review* 3(1): 279-95.

- Morgan, J.B. (1986). 'A new look at debt rescheduling indicators and models', *Journal of International Business Studies* 17(2): 37-55.
- Ndulu, B.J. (1991). 'Growth and adjustment in sub-Saharan Africa', in Chhibber, A. and Fischer, S. (eds), *Economic Reform in Sub-Saharan Africa*, Washington, DC: World Bank.
- Ngassam, C. (1991). 'Factors affecting the external debt-servicing capacity of African nations: an empirical investigation', *Review of Black Political Economy* 20(2): 45-64.
- Odedokun, M.O. (1995). 'Analysis of probability of external debt rescheduling in sub-Saharan Africa', *Scottish Journal of Political Economy* 42(1): 82-98.
- Odedokun, M.O. (1993). 'Econometric analysis of external debt burdens of African countries: debt rescheduling and arrears of interest', *African Development Review* 5(2): 57-73.
- Ojo, O. and Oshikoya, T.W. (1995). 'Determinants of long-term growth: some African results', *Journal of African Economies* 4(2): 163-91.
- Oshikoya, T.W. (1994). 'Macroeconomic determinants of domestic private investment in Africa: an empirical analysis', *Economic Development and Cultural Change* 42(3): 573-96.
- Powell, R. (2000). 'Debt relief for poor countries', *Finance and Development* 37(4): 42-5.
- Rahnama-Moghadam, M. and Samavati, H. (1991). 'Predicting debt rescheduling by less-developed countries: a probit model approach', *Quarterly Review of Economics and Business* 31(1): 3-14.
- Reisen, H. and von Trotsenburg, A. (1988). *Developing Country Debt: The Budgetary and Transfer Problem*, OECD Development Centre Studies, Paris: OECD.
- Rodrik, D. (1993). 'The transfer problem in small open economies: exchange rate and fiscal policies for debt service', in Faini, R. and de Melo, J. (eds), *Fiscal Issues in Adjustment in Developing Countries*, New York: St. Martin's Press.
- Rosenstein-Rodan, P.N. (1961). 'International aid for underdeveloped countries', *Review of Economics and Statistics* 43(2): 107-38.
- Sachs, J.D. and Cohen, D. (1982). *LDC Borrowing With Default Risk*, NBER Working Paper 925, Cambridge, MA: National Bureau of Economic Research.
- Sahn, D.E. (1992). Public expenditures in sub-Saharan Africa during a period of economic reforms, *World Development* 20(5): 673-93.
- Sahn, D.E. (1990). *Fiscal and Exchange Rate Reforms in Africa: Considering the Impact Upon the Poor*, Cornell Food and Nutrition Policy Program Monograph 4, Cornell University.
- Saini, K.G. and Bates, P.S. (1978). *Statistical Techniques for Determining Debt-Servicing Capacity for Developing Countries*, Federal Reserve Bank of New York Research Paper 7818, New York: Federal Reserve Bank of New York.



- Salop, J. and Spitaller, E. (1980). *Why does the Current Account Matter?*, IMF Staff Papers 27(1): 101-34.
- Savvides, A. (1990). 'LDC creditworthiness and foreign capital inflows: 1980-86', *Journal of Development Economics* 34(1-2): 309-27.
- Selowsky, M. and van der Tak, H.G. (1986). 'The debt problem and growth', *World Development* 14(9): 1107-24.
- Simonsen, M.H. (1985). 'The developing country debt problem', in Smith, G.W. and Cuddington, J.T. (eds), *International Debt and the Developing Countries*, Washington, DC: World Bank.
- Soesastro, H. (1977). *Assessing Debt Servicing Capacity of Developing Countries and Implications for Policy: A Survey*, Rand Paper Series, Santa Monica: Rand Corporation.
- Solomon, R. (1977). 'A perspective on the debt of developing countries', *Brookings Papers on Economic Activity* 2: 479-501.
- Taffler, R.J. and Abassi, B. (1984). 'Country risk: a model for predicting debt servicing capacity problems in developing countries', *Journal of the Royal Statistical Society* 147(4): 541-61.
- Taiwo, I.O. (1991). 'Commodity prices and debt crisis in sub-saharan africa', *Eastern Africa Economic Review* 7(2): 39-50.
- Tanzi, V. and Blejer, M.I. (1988). 'Public debt and fiscal policy in developing countries', in Arrow, K.J. and Boskin, M.J. (eds), *The Economics of Public Debt*, New York: St. Martin's Press.
- Tarp, F. (1994). 'Baggrunden for udviklingslandenes geldskrise' (Origins and causes of the developing country debt crisis), in Svendsen, K.E. (ed.), *Udviklingslandenes Geldskrise: konomiske Analyser og Strategier (The Developing Country Debt Crisis: Economic Analyses and Strategies)*. Copenhagen: Copenhagen Business School Press.
- Tarp, F. (1993). *Stabilization and Structural Adjustment: Macroeconomic Frameworks for Analysing the Crisis in Sub-Saharan Africa*, London: Routledge.
- Taylor, L. (ed.) (1993). *The Rocky Road to Reform: Adjustment, Income Distribution, and Growth in the Developing World*, Cambridge, MA: M.I.T. Press.
- Taylor, L. (1983). *Structuralist Macroeconomics*, New York: Basic Books.
- Underwood, J. (1990). *The Sustainability of International Debt*, mimeographed, Washington, DC: World Bank.
- van Wijnbergen, S. (1989). 'External debt, inflation, and the public sector: toward fiscal policy for sustainable growth', *World Bank Economic Review* 3(3): 297-320.
- van Wijnbergen, S., Anand, R., Chhibber, A. and Rocha, R. (1992). *External Debt, Fiscal Policy, and Sustainable Growth in Turkey*, Baltimore: Johns Hopkins University Press (for the World Bank).

- Verhagen, M. (1997). *Economic and Social Indicators of Debt Sustainability: An Empirical Study*, paper prepared for Eurodad Seminar New Insights on Debt Sustainability Analyses, The Hague, January 1997.
- World Bank (1998). *Global Development Finance*, Washington, DC.
- World Bank (1995a). *A Debt Reduction Fund for Heavily Indebted Poor Countries*, Staff Working Paper, Washington, DC.
- World Bank (1995b). *Uganda: The Challenge of Growth and Poverty Reduction*, Country Economic Memorandum 14313-UG, Washington, DC.
- World Bank (1994). *Reducing the Debt Burden of Poor Countries: A Framework for Action*, *Development in Practice Series* (pre-publication issue). Washington, DC.
- World Bank (1985). *World Development Report*, New York: Oxford University Press (for the World Bank).
- World Bank (various years). *World Debt Tables/Global Development Finance*, Washington, DC.



*UNU World Institute for Development Economics Research (UNU/WIDER) was established by the United Nations University as its first research and training centre and started work in Helsinki, Finland in 1985. The purpose of the Institute is to undertake applied research and policy analysis on structural changes affecting the developing and transitional economies, to provide a forum for the advocacy of policies leading to robust, equitable and environmentally sustainable growth, and to promote capacity strengthening and training in the field of economic and social policy making. Its work is carried out by staff researchers and visiting scholars in Helsinki and through networks of collaborating scholars and institutions around the world.*

UNU World Institute for Development Economics Research (UNU/WIDER)  
Katajanokanlaituri 6 B, 00160 Helsinki, Finland

Camera-ready typescript prepared by Anna Kervinen at UNU/WIDER  
Printed at UNU/WIDER, Helsinki

The views expressed in this publication are those of the author(s). Publication does not imply endorsement by the Institute or the United Nations University, nor by the programme/project sponsors, of any of the views expressed.

ISSN 1609-5774  
ISBN 952-455-260-4 (printed publication)  
ISBN 952-455-261-2 (internet publication)