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# THE HIPC INITIATIVE: TRUE AND FALSE PROMISES

by

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New Approaches to Poverty Reduction in Development

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## PREFACE

The HIPC Debt Initiative, the first comprehensive approach to reducing the external debt of the world's most Highly Indebted Poor Countries, was agreed by governments around the world in 1996 and supported by the G7 Cologne Summit in 1999.

In this paper, Daniel Cohen explains why the real debt relief provided by the HIPC Debt Initiative may be much lower than anticipated. The paper allows an assessment of the true amount of resources released by donor countries and of the reduced debt burden of debtor countries by employing a market perspective, rather than the common face value or net present value calculations, on outstanding HIPC debt. The market perspective tries to establish a realistic account of the probability that the debt in question would not have been serviced in the absence of the HIPC debt initiative. As the eligible countries are characterised by very high debt burdens (however measured), the implicit market value of their liabilities is far below face value and net present value.

The author's findings warn against scaling down aid flows on the grounds of debt relief granted under the HIPC initiative. If clearing donors' books were to be combined with scaling down new aid flows, the HIPC initiative would become detrimental to the eligible debtor countries. This would be very bad news for the poor of the world.

Donors should, instead, split the accounting of the HIPC debt initiative into two elements: a loss commensurate to the implied discount on the face value of claims, new flows for the remainder. In addition, the paper provides suggestions for arranging debt buy-back schemes at pre-fixed prices mutually agreed by debtors and donors.

Daniel Cohen is a Senior Consultant at the Development Centre and a Professor at the École Normale Supérieure, Paris. The research which led to this highly relevant paper for all countries concerned with severe indebtedness, was carried out in the context of the Centre's research on Capital Flows, Financial Crises and Development.

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## *Résumé*

Selon ce Document technique, l'évaluation de l'initiative PPTE (Pays Pauvres Très Endettés) est faussée par le fait que — contrairement à l'accord Brady — elle ne prend pas en compte la “valeur de marché” de la remise de dette. La “valeur de marché” exacte est celle qui intègre le risque de non-paiement : arriérés, rééchelonnements et refinancements “contraints” de différentes natures.

A partir d'une analyse économétrique des débiteurs à revenu intermédiaire des années 80, le document affirme que l'initiative est à peu près dix fois moins généreuse que ce que pourrait laisser penser sa valeur faciale comptable.

## *Abstract*

The paper develops the view that the perspective on the HIPC initiative is distorted by the fact that -contrary to the Brady deal itself- it lacks all perspective on the “market value” of the debt which is written down. The appropriate “market value” is one that takes account of the risk of non-payment: arrears, rescheduling and “constrained” refinancing of various sorts. Building upon econometric evidence that relies on middle income debtors in the eighties, the paper argues that the initiative is about ten times less generous than face value accounting would suggest.

## II INTRODUCTION

The cancellation of the poor countries' debt has been high on the agenda of policymakers for quite a long time. The steps taken in Cologne, Germany in June 1999 have furthered the effort to a significant level. Although much remains to be done, the HIPC initiative, if properly managed, could well have the same positive impact on the very poor countries as the Brady deal had in the late 1980s on the middle income debtors. Despite the criticism that were advanced at the time, it is indeed now fairly accepted that the Brady deal was influential for the recovery of countries such as Mexico (see, e.g., Claessens *et al.*, 1994).

Rather than reviewing in detail a process which has already received much attention, this paper will try to emphasise a number of critical points which may highlight some of the difficulties which are yet to be overcome. The crux of our argument, following the analysis that was performed on the Brady countries, is to distinguish nominal and actual debt cancellation. This is all the more critical in the context of the HIPC initiative in that creditors countries might be tempted to count as "aid" what really amounts to a cleaning of the book.

The view that will be developed in this paper is indeed that understanding of the HIPC initiative is distorted by the fact that – contrary to the Brady deal itself – it lacks perspective on the "market value" of the debt which is written down. The market value that is needed is a different concept from the present value calculations which are usually performed when dealing with the HIPC. Those calculations re-assess the discount factor and correct for the conditionality of the debt (carrying on average an interest rate of about 2 per cent against a market rate of – say – 7 per cent). The appropriate "market value" is one that takes account of the risk of non-payment: arrears, rescheduling and "constrained" refinancing of various sorts.

This market value perspective is not only semantic, it is not only a way of saying that the write-off amounts to less than is usually assumed by the donors countries. It is also a warning, and a means of addressing some of the alternatives to the process which is underway. It is a warning, first, against the risk that donors countries might scale down aid by an amount which is tied to the debt write-off they have granted. If this happened, even only partially, the exercise could be detrimental to the debtors.

This market perspective also offers an agenda for policymakers. If a "market price" could be agreed upon by all parties, which would value the debt of the HIPC properly, then one should allow the debtor countries to go beyond the current initiative. They could, indeed, be offered the option to repurchase, at the corresponding market price, more debt than foreseen by the

current debt cancellation scheme. For those countries willing to do this, this could open the way to a final exit.

The paper will proceed as follows. It will first review critically the debt thresholds that are usually adopted when assessing the amount of debt relief that is necessary. It then turns to adopting a market-value perspective on the debt involved. The picture that is reached for each individual country and for the HIPC group as a whole are then presented in Section V. It then reviews some of the alternative proposals that have been put forward by NGOs and multilateral agencies and suggests a proposal to enhance the initiative.

### III THRESHOLDS OF SOLVENCY

The market perspective needed to analyse the cost of the initiative is different from another, although an equally crucial, exercise estimating the debt at present value terms. Present value calculations take account of the fact that much of the HIPC debt is made at concessional terms so that the stream of principal and interest falling adds up to less than its face value, when discounted at market rate of interest. On average, the ratio of present value to face value is around 55 per cent. Present value calculations, however, do not scale down the service of the debt by the probability that it will indeed be honored, nor (which almost amounts to the same thing) by the likelihood that the debt will have to be refinanced (either through new loans, explicit rescheduling or arrears). Such expectations, instead, are the driving force behind market values, and they are those which should be taken into account when assessing the scope of the HIPC initiative. The reader can jump to Section V to see, for each individual country, the difference for these three concepts of face value, present value and market value.

Referring to the World Bank's Global Development Finance (GDF) calculations, it emerges that the debt service of the severely indebted low income countries amounted to \$87 billion (on an overall stock of 211.2 billion). Yet the net transfer item (which is the nominal difference between how much the country received altogether from its creditors and how much it actually transferred to them) is virtually nil, in fact slightly positive (which means that altogether they actually received more than they paid).

This perspective is a familiar issue that has been raised repeatedly at the time of the Brady deals. When a creditor reduces its claim on a debtor by *one* dollar, by how much does it really reduce the burden of the debtor? At the time of the Brady initiative, the debt of most middle income debtors was quoted on a secondary market, in which commercial banks would trade and sell their assets. In some extreme cases such as Bolivia, the discount on the debt came down as low as 95 per cent, which meant that the creditors were willing to sell a claim nominally priced one dollar for five cents. The Brady initiative itself offered to cut the nominal value of the debt by a significant amount. In the (extreme) case of Bolivia for instance the Brady deal carried an 84 per cent discount. In the less severe case of Brazil and Mexico, one of the key options offered to the Bank involved a 35 per cent discount. Ecuador, which recently found itself in the midst of a new foreign debt crisis, the discount agreed upon in the Brady deal amounted to 45 per cent. Yet, in the immediate aftermath of the Brady deal, the debt was still quoted at a significant discount. In the case of Argentina, the discounted bond was traded at 61 cents on the dollar (27/07/92), in the case of Nigeria which is perhaps

closer to the current case, it was quoted at 25 cents on the dollar (i.e. a 75 per cent discount) after a cash-back at a 60 per cent discount (and despite the collateralized capital that was granted for the deal)! These numbers, which were an integral part of the debate at the time of the Brady deal, are strong evidence of the discrepancy between the market and the face values of the debt at the time when the Brady deals were signed.

As a starter to the empirical analysis, it is important to have in mind a minimum benchmark to gauge the extent to which debt should be interpreted as too large. Three ratios are usually taken into account: debt-to-export, debt-to-GDP and Debt-to-tax receipts. The HIPC initiative essentially relies on the most popular of the three, the debt-to-export ratio, and gives an additional, albeit at this stage, a marginal one to the debt-to-tax ratios. Originally, the benchmark debt-to-export ratio has been set at 200 per cent; after the Cologne agreement it was reduced to 150 per cent. The debt-to-tax ratio was originally set at 280 per cent; after the Cologne agreement it was lowered to 250 per cent; although it comes into play only if the export-to-GDP ratio is above 30 per cent and the tax-to-GDP ratio is above 15 per cent.

It is useful to start with the simple question: where do these numbers come from, can we rationalise them? We can think of at least four different methods to identify these critical numbers.

*i) Average debt ratios at the time of the first rescheduling*

This is the simplest and most naïve method, yet it is certainly a telling indicator: what was on average the debt level that was reached when countries experienced their first debt crisis? In other words: what is the level of the debt ratio above which investors realise, often too late, that the country is in trouble? The answer is as follows: for Latin America as a whole the average value corresponds to a debt-to-export ratio worth 250 per cent and for the world as a whole it stood at 270 per cent in the 1980s. The number is probably an upper bound to that which we must keep in mind in order to assess the probability of such event to occur.

*ii) Revealed preference argument*

Another method consists in extrapolating the servicing capacity that was observed in the past, as a way of computing the upper limit to the debt ratio. At the climax of the debt crisis, in the mid-1980s, the countries which were highly in debt did transfer a significant amount of resources abroad. As theoretical models would show (see Cohen, 1991), these transfers of resources can be taken as one indirect way of evaluating the cost of debt repudiation that the debtor country would have suffered, had it *not* be willing to service



its debt. From such indirect estimates, the upper bound of the debt-to-export (or for that matter debt-to-GDP) ratios can be extrapolated to be consistent with such an implicit “collateral”.

For the “top five” debtors of Latin America (Argentina, Brazil, Chile, Mexico and Venezuela), an upper bound for the debt-to-GDP ratio of about 80 per cent can be identified (which is indeed the benchmark taken by the World Debt Table). The argument behind the 80 per cent benchmark, however, hinges on the assumption that the net transfers observed at the peak of the worst debt crisis could be repeated in case of necessity! Although our theoretical model suggest that this should indeed be the case, there is little doubt that an 80 per cent ceiling is definitely an upper limit of solvency.

### *iii) Tax burden*

The same argument, can be used in principle, to assess the upper bound, as a fraction of its tax base, of a debt that a government might service. Although the process is hazardous, the value that was reached by such large debtors as Ireland, Belgium and Italy, which did accumulate primary surpluses to stabilize their debt-to-GDP ratios could be used take as an upper bound. At the climax of their efforts, Belgium achieved a primary surplus amounting to 10 per cent of its tax base; Italy 12 per cent and Ireland 15 per cent. If the Irish figure is taken data as “the” upper bound, and the same technique is applied, an upper bound for the debt-to-tax ratio of 300 per cent emerges.

### *iv) Risk of debt crisis*

Assessing the best predictor of a debt crisis allows the use of such predictors as an indirect way of measuring the thresholds of solvency. Building upon previous research, an empirical method has been developed, based upon the risk of a debt crisis (measured by the risk of a debt rescheduling). This is summarised in Appendix 1. When account is taken of all other relevant characteristics of a debt crisis (education, economic policy, openness...), the debt-to-GDP ratio is the most significant predictor of a debt crisis. When a “blind assessment” of the solvency of a country is performed instead, a debt to -export ratio turns out to be a better predictor that the debt-to GDP. But it also actually turns out in this case that the debt-to tax ratio is yet a better predictor of a debt crisis, when a blind assessment is requested. In order to translate these results into thresholds of solvency, we have computed the ratios for which the risk of a debt crisis exceeds 60 per cent (which itself appears to be the most significant ratio so far as the impact on growth is concerned).

*Debt ratios which trigger the risk of a debt crisis*

Debt-to-GDP:	50 per cent
Debt-to-Export:	200 per cent
Debt-to-Tax:	300 per cent

These ratios are fairly in line with those which are traditionally used for assessing debt-to-GDP and debt-to-export ratio.

Beyond the numbers themselves, the previous discussion shows that the debt-to-tax ratio should be the relevant benchmark. One argument against using this ratio is that it is open to a moral hazard issue: governments could be tempted to lower the tax base in order to raise the amount of a debt write-off that they might obtain correspondingly. One simple alternative to using *actual* debt-to-tax ratios could be to set a *normative* estimate of tax receipts that the IMF could determine as an objective.

## IV EQUILIBRIUM MARKET PRICES

These different approaches show that the risk of non-payment is an integral part of developing countries's debt history. This risk lies at the heart of the discount which is observed on secondary markets, if they exist. As Bulow and Rogoff (1990) pointed out in a seminal paper, there is even more to it than the sheer discount factor that applies to a risk of non-payment. It is indeed critical to make a distinction between *average* prices (which are embodied in secondary market prices) and *marginal* prices which correspond to the effect, at the margin, of reducing the debt. In order to grasp the significance of this critical distinction, assume that the market expects a country to generate, in present value term, a fixed amount  $X$  of resources that will be shared by the creditors. The market price of the debt, call it  $q$ , is then simply worth:

$$q = X/D$$

in which  $D$  is the outstanding stock of debt which lays claim on  $X$ . This price is the one that is quoted on secondary markets. In an average, every individual investor is entitled to share proportionate to his nominal holdings. What holds for the individual investors, however, does not hold for the community of investors as a whole. Altogether, they will never get more than  $X$ . At the margin, getting one extra dollar will bring nothing to the investors as a whole, although every one of them would clearly be richer. More generally, assume that the debt is written down, at the margin by a fraction  $x$ . So long as the new value  $D' = xD$  is still smaller than  $X$ , the price of the new debt will rise to:

$$q' = X/D',$$

yet keeping the overall market value of the debt, call it  $V$ , unchanged at  $X$ .

In other words, despite a debt reduction initiative which may be significant, the net benefit to the country of the debt reduction scheme might be nil, inasmuch as it will still have to pay the same amount  $X$  after the deal. Following Bulow and Rogoff, we must then distinguish the average price which is, in principle, observable on the secondary markets and the marginal price,  $q_m$ , which can be defined as :

$$q_m = \frac{\partial V}{\partial D}$$

i.e. the price which indicates, at the margin, how much can a debt reduction scheme bring, in expected repayment, to the country. In the extreme example

where, no matter what, the country will always pay  $X$  (so long as the debt is larger), one sees that the marginal price of the debt is zero so long as the debt is larger than  $X$ .

These examples are not only speculative. They were applied by Bulow and Rogoff to the analysis an one of the early buy-back exercise that was performed, after the debt crisis of the 1980s by Bolivia. Sponsored by various donors, the Bolivian government repurchased *half* the face value of its debt on the market. As a result, the price simply shot up to twice its earlier value (from 5 cents to 10 cents on the dollar), leaving little relief of Bolivia once the buy-back was performed.

From a more theoretical point of view, if the value of the debt is the present discounted value of future payments  $X_t$ , which are themselves drawn from a probability distribution  $dF(X)$  (which means that  $F(x)$  is the probability that  $X$  is lower than  $x$ ), then the value can be written as :

$$V = \left\{ \int_0^D X dF(X) + D[1 - F(D)] \right\}$$

The first part of the left hand side corresponds to the payments which are forwarded by the country in the case when their payment capability  $X$  is lower than the face value falling due; the second part corresponds to the expected payments associated with the case when the debt is repaid in full. One can write:

$$1 - \pi = 1 - F(D)$$

as the probability that indeed, the country's resources exceed (in present value terms) what it owes to its creditors. So long as the stream of feasible payment remains below  $D$  then the country only pays  $X$  ; when they are worth more, then the country repays  $D$  in full. One can write the average price as:

$$q = \frac{V}{D} = \frac{1}{D} \int_0^D X dF(X) + [1 - F(D)]$$

and the marginal value:

$$q_m = \frac{\partial V}{\partial D} = 1 - F(D)$$

which is always lower than the average value, and simply corresponds to the probability that the debt will be repaid in full. In the extreme case when one

*never* expects the debt to be repaid in full, then the marginal price of the debt, which measures in present value term, the benefit of (marginal) debt reduction is simply *zero*. This is typically the case that the Bolivian authorities discovered, once they realized that cutting by half their outstanding debt did nothing to reduce its market value.

This exercise, however simplistic, does underline the need to distinguish a strict nominal accounting of debt write off from a “market based” accounting which analyzes the extent to which expected forthcoming payments are reduced. It furthermore points to the idea that market prices themselves tend to exaggerate the benefits of debt write off, in as much as they are usually lower than the true price of the write off, namely the marginal price of the debt. We now turn to giving some empirical flesh to these issues.

## V PRICING THE HIPC DEBT

The method proposed to assess the market value of external debt is built upon econometric estimates of the secondary market prices of middle income debtors in the late 1980s. Previous attempts to measure the elasticity of the price of the debt with respect to its nominal value can be found in Purcell and Orlanski (1988), Sachs and Huizinga (1987) or in my previous work (Cohen 1990). An equation, representative of these earlier studies, has been estimated as follows:

$$\text{Log}p = 5.06 - \underset{(0.152)}{0.653}\text{Log}D/X - \underset{(0.603)}{2.231}A/D - \underset{(0.373)}{1.016}R/D + \text{Time Dummies}$$

$R^2 = 0.560$  (standard errors in parenthesis).

Pooled equations for 1986.12 and 1997.12 data. 60 degrees of freedom.

where  $p$  = price of the debt on the secondary market,  $D$  = debt,  $X$  = exports,  $A$  = arrears, and  $R$  = rescheduling performed since 1982.

This equation (based on pre-Brady deal data) embodies quite a few striking results. To start with, it predicts that the critical ratio of debt-to-exports above which a secondary market discount (price lower than 100 per cent) arises is (somehow miraculously) a debt-to-export ratio of 200 per cent. This is then perfectly in line with the results of the previous section: a debt crisis emerges when the creditors do not expect full repayment. From that point on, the (partial) elasticity of the secondary market price with respect to the debt is estimated at -0.653, which means that a 10 per cent increase of the debt reduces the price 6 per cent.

Another striking feature emerges, namely, the impact of debt rescheduling and arrears upon the valuation of the debt. Table 1 shows how these estimates vary with different hypotheses regarding debt-to-export ratios and the severity of the crisis. Starting with a debt-to-export ratio of 200 per cent, the need to reschedule (“crisis” scenario) lowers the secondary market price from 100 per cent to 36 per cent, and the build up of arrears (“severe crisis”) further down to 28 per cent. Since, as we have seen in the previous section, debt rescheduling occurred around 250 per cent, one sees the high impact of financial crisis on the market valuation of the debt. By 1990, all countries,

except Hungary, with a secondary discount had rescheduled their debt at least once which correspondingly depressed the market price dramatically.

Table 1: **Secondary Market Price**

D/X	No crisis	Crisis	Severe crisis
200%	100%	36%	27.8%
250%	86%	31%	24%
300%	77%	28%	21%

Crisis = Rescheduling Severe crisis = Rescheduling and Arrears D/X = Debt to Export Ratio

Building upon this table, the situation of African countries would be at a debt-to-exports ratio of 250 per cent, and in the “severe crisis” column.

There is clearly a problem of interpretation here. Why is it that the same ratio of indebtedness yields such different market valuations, according to whether the debt is rescheduled or not? Before answering the question, it should be clear that the same phenomenon is currently at work in Ecuador. Ecuadorian debt has lost about half of its pre-Asian crisis value slipping down to a low of 30 cents on the dollar in September 1999 with a debt-to-export ratio of about 300 per cent, which is then not far off the “crisis” scenario number that is reported in table 1. How can we think of the impact of the debt crisis into the market valuation of the debtor? To start with, there is clearly a “systemic” risk that frightens investors. When a country defaults openly or implicitly, it clearly raises the fear that everything might go wrong, so that investors would all rather leave than stay. As we have shown, however, even post Brady deals prices were severely discounted, although at the time, the systemic risk had clearly evaporated. As Ecuador shows, defaults signal that specific country risk has risen. There are so many uncertainties on the way countries operate that default clearly sends a powerful signal about a country’s capacity or willingness to honor its commitment. As such, it is not surprising that it should trigger major shifts of the valuation made by the investors.

Investors may be individually encouraged to think *ex ante* that they will get more than they actually receive; for instance they may also think that they will have a better deal than their colleagues. What the repeated history of default and financial crises amply demonstrates, however, is that investors as a whole have a strong tendency to under-report the risk at hand. Default and financial crises come, from that perspective, as a moment of truth rather than as an “exogenous” factor.

In order to address this issue properly, it becomes critical to assess the risk of a debt crisis that inevitably comes with the build up of the debt. Building upon the model presented in Appendix 1, we have estimated how the average probability of a crisis varied with debt and recalibrated the price equation accordingly. Putting all these results together allows an estimate of the dependency of price on outstanding debt, when account is directly taken of the effect of debt on the probability of a debt crisis. Using the equations presented in Appendix 1, the following numbers emerge:

Table 2: **Probability of a Debt Crisis**

D/X	Probability (percentage)
200%	60%
250%	69%
300%	93%

These probabilities can be plugged into the price equation shown above, by weighting by the corresponding risk the effect of arrears and rescheduling.

The regression presented above has another drawback however. It does not account for the difference between marginal and average price. Indeed, it is stated in such a way that the marginal price  $p_m$  is related to the average price  $p$  by a straightforward relationship:

$$p_m = (1 - \varepsilon)p$$

in which  $\varepsilon$  is the elasticity of price with respect to debt, i.e. here,  $\varepsilon = 0.653$ . In other words the marginal price is always 65 per cent lower than the average price, which can be true on average, but certainly not always, as Section II has shown. In order to address the first issue, a more flexible equation is used. It allows the difference between the average and the marginal price to vary, so as to let them be identical and equal to one when the country is solvent. Furthermore, it allows the critical threshold when the marginal price of the debt becomes nil to be computed.

More specifically, we have tested a logistic equation of the form:

$$\text{Log}(p/1 - p) = -\varepsilon \text{Log}D/X + \text{Other variables}$$

so that the relationship between the average and the marginal price becomes:

$$p_m = p[1 - \varepsilon(1 - p)]$$



with this formulation, a country which gets near solvency ( $p = 1$ ) is also one in which the ratio of the marginal to the average price goes to 1. On the other hand, one can find a critical value  $p^*$  of the price  $p$  for which the price of the debt drops to zero. This occurs when  $p_m = 0$ , i.e.:

$$p^* = \frac{\varepsilon - 1}{\varepsilon}$$

using the data presented above,

$$\varepsilon = 1.47$$

which implies that the critical price when the debt becomes worthless is obtained with:

$$p^* = 0.32$$

In part coincidentally (but as suggested by the theory), this corresponds to the average value of the secondary market prices of middle income debtors prior to the Brady deal. Table 3 shows that, in the case of a severe crisis, all countries whose debt to export ratio exceeds 200 per cent have reached the stage where the marginal value of the debt is judged to be nil – in fact negative –, by secondary market participants. In those cases, one could perhaps reach a stage where a “Debt Laffer Curve” problem is at hand, as Paul Krugman once put it.

Plugging these results into the format of Table 1 (taking average export-to-GDP ratio), and using the relationship between marginal and average price that is suggested by the logistic model, we now reach the following calibration exercise:

Table 3: **Price Estimates**

D/X	Secondary Market Price	Marginal Price
150%	61%	30%
200%	46%	9.5%
250%	36%	2.1%
300%	23%	-3%

This table shows that the marginal value of the debt is virtually nil, on average and when account is now taken of the underlying risk of a debt crisis, when the debt to export ratio is at 250 per cent. Lowering the debt due by

the HIPC around that number is then no gift to the countries, so long as the debt reduction remains marginal. When the debt is reduced down to 150 per cent instead, the benefits become more substantial, although a significant marginal discount remains. On average, the price is then worth around 60 per cent of its nominal price, against 36 per cent when the debt to export ratio is around 250 per cent.

## VI ESTIMATING THE IMPACT OF THE HIPC INITIATIVE

Based upon the previous estimates, one can present for each individual countries the distinction between each of the three concepts that have been used so far (this is based on World Bank data). EDT is the total outstanding stock of debt, PV is present value debt such as estimated when correcting for the fact that interest rates are nominally lower than market rates because of a grant element, PV/X is present value over export; MV is market value with the definition that has been used above.

Table 4: Debt Statistics

	EDT	PV	PV/X	MV
Angola	12.2	11.5	2.36	4.5
Benin	1.6	1.0	1.59	0.58
Bolivia	6.1	4.9	3.36	1.0
Burkina Faso	1.4	0.8	2.74	0.24
Burundi	1.1	0.6	8.16	0.051
Cameroun	9.8	8.2	3.56	1.59
Central African Rep.	0.92	0.57	3.58	0.110
Chad	1.09	0.63	2.11	0.276
Congo, Dem. Rep.	12.9	12.2	7.74	1.09
Congo, Rep.of	5.1	4.7	2.86	1.25
Cote d'Ivoire	14.8	12.7	2.46	4.7
Equatorial Guinea	0.306	0.250	0.72	0.250
Ethiopia	10.3	8.7	8.98	0.668
Ghana	5.9	4.0	1.72	2.17
Guinea	3.4	2.5	3.06	0.564
Guinea-Bissau	0.964	0.695	17.33	-
Guyana	1.6	1.1	1.51	0.670
Honduras	5.0	3.2	2.47	1.98
Kenya	7.0	5.1	1.74	2.74
Laos PDR	2.4	1.1	2.46	0.405
Liberia	2.1	1.99	-	-
Madagascar	4.4	3.3	3.96	0.575
Malawi	2.4	1.4	2.26	0.571
Mali	3.2	2.2	3.2	0.474

### Debt Statistics (Continued)

	EDT	PV	PV/X	MV
Mauritania	2.6	1.4	3.18	0.304
Mozambique	8.2	2.7	5.39	0.346
Myanmar	5.7	4.9	3.09	1.09
Nicaragua	5.97	5.2	6.01	0.597
Niger	1.7	1.1	3.4	0.223
Rwanda	1.2	0.682	5.54	0.085
Sao Tomé	0.246	0.144	12.68	0.007
Somalia	2.6	2.3	-	-
Sudan	16.8	15.9	24.48	0.448
Tanzania	7.6	5.7	4.84	0.813
Togo	1.45	1.0	1.43	0.631
Uganda	3.9	2.4	3.11	0.532
Viet Nam	22.4	20.6	1.81	10.7
Yemen	4.1	3.1	0.91	3.1
Zambia	6.8	5.5	4.38	0.866

EDT = Total external debt (bl\$), PV = present value calculation (bl\$), PV/X = present value over exports, MV = Market value (bl\$)

### All HIPIC

Face Value	Present Value	Market Value	Average Price*
210.3	165.4	45.9	0.28

\* market value/present value. Source: World Bank and author's calculations.

The drastic consequences of taking account of the market values of these debts can be seen. On average, the numbers have to be corrected by more than 2/3 of their present value terms, and even more when the comparison is made to the face value of the debt.

We are now able to assess the economic impact of the HIPC initiative. Relying upon the marginal price of the debt, we can measure the true relief that is carried by the initiative through the formula :

$$\Delta V = \int_{D_1}^{D_0} \frac{\partial V}{\partial D} dD = \int_{D_1}^{D_0} p_m(D) \cdot dD.$$

This formula simply states that when debt is reduced from an initial value of  $D_0$  to a lower value of  $D_1$ , the debt burden of the country is only alleviated

by an amount which corresponds to the incremental effects that are captured by the marginal price. Based upon the numbers which are shown in Table 2, gives the estimates that are presented in Table 5 below.

We have made two calculations, one which is based on the Cologne agreements, the other one which is based on the pre-Cologne formulas.

Table 5: **Impact of the HIPC Initiative** (as a percentage of exports)

$(D/X)_0$	$\Delta V/X$ (Cologne)	$\Delta V/X$ (Pre-Cologne)
150 per cent	0	0
175 per cent	5.4	0
200 per cent	8.6	0
250 per cent	11.5	2.9
300 per cent	11.3	2.7

$(D/X)_0$  : Initial debt-to-export  $\Delta V/X$  : Market value reduction in percentage of export

This table shows the significance of the Cologne agreements compared to the previous version of the initiative. Before Cologne, the target which was then taken was to reduce the debt-to-export ratio down to the 200 per cent mark. As Table 5 makes clear, this is a zone where the marginal value of the debt is lower than 10 per cent of its nominal value, so that the real effect of the initiative was bound to be very limited. The post Cologne agreement, instead, is clearly more generous, as it reduces the debt down to a point where the effect can be felt. One should remain cautious, however, about the significance of the shift. The numbers shown are stock data. In flow terms (in percentage), say, of the budget, they would be much smaller.

## VII IMPACT ON GROWTH

The easiest way to capture the direct impact of the HIPC initiative is to evaluate the effect of the risk of a debt crisis on growth. We rely here on a growth regression that we previously estimated, which is itself based on earlier work by Easterly and Levine (1997).

Growth is regressed upon a set of indices which depend on: log of initial income per capita of the country (Lrgdp), log of secondary school enrollment of children (Lenr2); log of investment (Linv); an index of ethnic diversity (Ethn); terms of trade (Tot); and black market premium weighted by openness (Opb). The risk of a debt crisis (Pres) is also a significant variable, which has the merit of explaining a large part of the reason why Latin American (Latinca) has systematically grown below its potential over the past three decades. We present here one such regression.

Table 6: **Growth and Financial Crisis**

Variables	Coefficient	t statistic
C	-0.21	8.7
DUM80	$-0.09 \cdot 10^{-2}$	-3.1
AFRICA	$-0.02 \cdot 10^{-2}$	-0.59
LATINCA	$-0.03 \cdot 10^{-2}$	-0.9
LRGDP	-0.019	-6.9
SW	0.012	3.2
LENR2	$0.8 \cdot 10^{-2}$	3.01
PRES	-0.013	-3.43
LINV	0.013	4.75
TOT	0.07	2.37
OPB	-0.06	-5.8
ETHN	-0.021	-4.0
Adj.R <sup>2</sup>	0.64	

Dependent variable: per capita growth rate (1970s and 1980s)

Lrgdp: Log of initial income per capita of the country; Lenr2: log of secondary school enrollment of children; Linv: log of investment; Ethn: Easterly-Levine index of ethnic diversity; Tot: term of trade; Opb: black market premium weighted by openness; Pres: risk of a debt crisis; Latinca: Latin American and the Caribbean.

One can then estimate the impact of the HIPC initiative from the numbers that are obtained above. The Cologne agreement would reduce the risk of a debt crisis from 70 per cent to 39 per cent. From the point estimate that is presented in Table 4, the impact of the initiative on growth could reach *0.4 percentage points* which is a very significant number. As a comparison, the pre-Cologne initiative would have been estimated to yield about 0.1 percentage point only.

The significant correlation between growth and external debt shows the potential importance of a debt reduction scheme for the macroeconomic prospects of a developing country. Cleaning up the debt mess also has an indirect but equally essential role in shifting economic policy decisions. Governments which feel vulnerable to a debt crisis tend to adopt more protectionist policies, and trigger a self fulfilling pattern of trade and financial autarky that tends to raise the likelihood of a crisis. The same could be said of exchange rate misalignments: they are not only bad, at first order, for the sectors which are open to foreign competition, they also raise the protectionist pressures.

Alleviating the debt crisis also exerts a direct impact on the welfare of the agents that go beyond its direct impact on growth. A country that is trapped in a debt crisis find it extremely hard to smoothen the impact of volatile terms of trade. This is perhaps the point where the current initiative will have its most important influence: by allowing countries to borrow against transitory adverse shocks. This is also the point where the magnitudes involved are more telling. If a country whose debt to export ratio is at 150 per cent allows it to grow to 200 per cent in case of a bad shock, how large a terms of trade shock can the country absorb? Think of a transitory shock which, say, will not exceed three years. This says that the country will be able to absorb a terms of trade shock not exceeding, say, 15 per cent. This is not insignificant, but this shows how much remains to be done. The potential for growth, however, would be significantly raised if the debt write off were to be complete. After all, bringing the debt-to-export ratio down to 150 per cent is not overwhelming, when one acknowledges that troubles usually start when a country passes the 200 per cent mark. We now review some suggestions to improve the deals.

## VIII POLICY IMPLICATIONS

A number of NGOs have expressed doubts on the initiative. Jubilee 2000 has long pleaded for a full write-off of the debt. Jubilee 2000 is certainly the most well known organisation on such matters. Jubilee 2000-Africa has argued that African debt is too heavy to be repaid which is why it should be unconditionally written down. They plead that the resources freed could be used for social services, especially health and education. They also favour better governance of Africa as a pre-condition for a new round of indebtedness. Jubilee 2000-Japan has requested a write off of Japanese public claims on HIPC. Jubilee 2000 has also favoured the creation of a new arbitrage court, that would give debtor nations a larger role in settling financial disputes.

Oxfam (Oxford Committee for Famine Relief) has suggested granting a premium to the HIPC governments engaged in poverty reduction. They suggest measuring that commitment through the percentage of resources that is committed to social policies. Oxfam has also criticized the sustainability thresholds that were adopted for the HIPC initiative. They suggest:

- Debt-to-export in the range of 100 – 150 per cent.
- Debt-to-Government revenues in the range 150 – 170 per cent.
- Debt service to export in the range 10 – 15 per cent.

They also add another criterion: debt service should not exceed 15 per cent of government's revenues. They also request that the review period should be reduced from 6 to 3 years (a call which has been in part taken into account after the Cologne summit).

CAFOD (Catholic Fund for Overseas Development) emphasises the need to reach a level of external debt which is both sustainable and consistent with potentially bad shocks that could hurt the countries. They emphasise the need to adjust service of the debt to the government revenues, and be consistent with the other expenses that the government must commit to human development.

Many of the critiques stated by the NGOs thus deal with the question of taking tax receipts as the appropriate denominator. This is consistent with the econometric results presented in section 4. All that it would take, to amend the initiative along these lines would be to extend the clause regarding the debt-to-tax ratio to all countries (and not only to those which have a large debt to export ratio).



The NGOs are also interested in earmarking the benefits of the HIPC for poverty reduction measures. This is certainly reasonable, although they share here the illusion that the debt reduction initiative has brought down the burden of the debt at face value. Taking our own calculation, the debt relief that is brought to a typical HIPC country whose debt goes from 250 per cent to 150 per cent is only worth, in practice, 10 per cent of its exports. None of the critiques addressed by the NGOs actually takes account of the perspective that we have raised, namely the discrepancy between face value and actual write down. One simple, yet essential, suggestion that we could make at this stage would be to make the book-keeping exercise clean. The lenders could split the initiative into two components: reporting losses on the one hand (for about 90 per cent of the deal) and granting actual relief for the remaining part. This would have the merit of not distorting the account of ODA and refrain the donors countries from the temptation to scale down other dimensions of the aid they are granting.

Another suggestion that would directly draw upon our analysis would be to authorise countries that want to buy-back their remaining debt from their creditors to do so. Clearly, the lessons drawn by Bulow and Rogoff from the Bolivian buy-back have to be taken into account. A pre-arranged price needs to be fixed at which the deal should be made, a price which explicitly relies upon the marginal value that is surrendered by the creditors, itself dependent on the magnitude of the transaction. If a country were to repurchase all of its remaining debt, the appropriate price would be the average price. In the case of the HIPC, this would represent a 40 per cent discount (see Table 5). But if, instead, countries were willing to purchase lower amounts (say bringing the debt further down to 100 per cent), then the marginal price is the correct one. From Table 3, a 70 per cent discount would be a good starting point for the discussion.

Surely, these number are only indicative and could be open to political considerations, but it should be clear that both the creditors and the debtors should have a strong interest in seizing this unique opportunity to clear out their books, which can only be achieved by acknowledging the true nature of the transaction involved.

## IX CONCLUSION

The significance of the HIPC initiative should be scaled down significantly. Following a standard argument in the literature on sovereign debt, the debt reduction scheme is of a second order magnitude. One simple, yet critical, implication is for the donors themselves. They should split their initiative into two components: one is a reported loss, one is new ODA. According to the econometric evidence presented in the text, the former should represent about 90 per cent of the total. One can certainly argue with the numbers themselves, but not with the principles. It would be indeed highly damaging to the developing countries that the debt reduction initiative should crowd out other ODA. The debt reduction exercise would free very few resources in itself, while the reduction of ODA would be a net loss. This would be all the more worrisome as the trend of net official development assistance (ODA) is negative, both in relative and in absolute terms. If we take, for instance, the share of net ODA in the GNP of the Development Assistance Committee (DAC) countries, it declined to 0.22 per cent, compared to 0.35 per cent in the mid-1980s. (Cfr. *Global Development Finance*, 1999). Only four countries - Denmark, the Netherlands, Norway and Sweden - exceeded the United Nations target of 0.7 per cent of GNP in 1997. Only three countries - Ireland, Sweden and the United Kingdom - recently announced increased aid budgets.

## X APPENDIX

**Risk of a debt crisis.** We have constructed a variable RES which is zero if the country never rescheduled and 1 if the country did reschedule (for each of the two sub-periods 1970s and 1980s). From such a variable, we can estimate a probit model in which the probability of a rescheduling (PRES) is regressed upon the beginning of period Debt-to-GDP Ratio (DEBT), the liquidity of the Economy (LLY) the Latin American dummy and the Sachs-Warner variable OPEN (which takes a value of one if the country liberalised its trade before 1970). Interestingly the African Dummy is not significant.

The results are as follows:

$$PRES = c + \underset{(3.20)}{1.83} Latin\ America + \underset{(3.2)}{0.04} DEBT - \underset{(-2.54)}{2.06} OPEN - \underset{(-3.0)}{4.22} LLY \quad (A1)$$

*Percentage of correct predictions: 0.90.* (t statistics in parentheses).

The debt variable, as expected, is highly significant. The Latin American Dummy is very significant, pointing to a regional factor that is well documented in the debt literature. Interestingly, the Sachs-Warner variable is also highly significant: those countries which have liberalised trade are also less likely to reschedule their debt (in the 1980s). It is not entirely clear how the channels for which this correlation works, and to some extent, it takes us back to the ambiguous status of this variable. It can either be taken as an indicator of “good management” in general, or as an implicit measure of the signalling effects of trade liberalisation upon the credit rating of a country.

Let us investigate here other specifications that might be relevant for predicting the debt crisis. One can think of at least two other indicators: Debt/Export and Debt/Tax Ratio. The first indicator is most often used for analysing the solvency of a country, to the extent that it takes as a denominator the “hard” currency earnings of a country; it is the key indicator behind the HIPCs. The second indicator is less often used, and relates to the fact that most LDC debt is government debt which has to be serviced out of government revenue. When dealing with the same type of equation as (A1), then the debt-to GDP ratio is always a better predictor of the debt crisis than the two alternative ratios.

If, instead, we try an “unconditional predictor” (i.e. univariate regressor) of a debt crisis (leaving aside the liquidity of the economy or the trade

openness variable) then we find that the debt-to-export ratio dominates the debt-to-GDP ratio. We are then led to a single comparison: which of debt-to-tax or debt-to-export is a better unconditional predictor of debt crisis. The result turns out to favour debt-to-tax. When both variables are put together we indeed obtain:

$$PRES = -0.84 + 1.01 \underset{(2.11)}{LogD/T} + 0.25 \underset{(0.61)}{LogD/X} \quad (A2)$$

*Percentage correct prediction* = 0.74. t statistics in parentheses.

To summarise the results obtained in this section, we therefore see that the debt-to-GDP ratio is the best conditional prediction of a debt crisis, when account is also taken of the liquidity of the economy, of the trade liberalisation variable of Sachs and Warner and of the Latin American Dummy. When the prediction is made unconditionally upon these variables, then either the debt-to-tax ratio or the debt-to-export ratio turn out to be better predictors, with the former dominating the latter.

**Table 7: Secondary Market Price**

D/X	No crisis	Crisis	Severe crisis
200%	100%	36%	27.8%
250%	86%	31%	24%
300%	77%	28%	21%

Crisis = Rescheduling Severe crisis = Rescheduling and Arrears D/X = Debt to Export Ratio

**Table 8: Probability of a Debt Crisis**

D/X	Probability (percentage)
200%	60%
250%	69%
300%	93%

**Table 9: Price Estimates**

D/X	Secondary Market Price	Marginal Price
150%	61%	30%
200%	46%	9.5%
250%	36%	2.1%
300%	23%	-3%

Table 10: **Debt Statistics**

	EDT	PV	PV/X	MV
Angola	12.2	11.5	2.36	4.5
Benin	1.6	1.0	1.59	0.58
Bolivia	6.1	4.9	3.36	1.0
Burkina Faso	1.4	0.8	2.74	0.24
Burundi	1.1	0.6	8.16	0.051
Cameroun	9.8	8.2	3.56	1.59
Central African Rep.	0.92	0.57	3.58	0.110
Chad	1.09	0.63	2.11	0.276
Congo, Dem. Rep.	12.9	12.2	7.74	1.09
Congo, Rep.of	5.1	4.7	2.86	1.25
Cote d'Ivoire	14.8	12.7	2.46	4.7
Equatorial Guinea	0.306	0.250	0.72	0.250
Ethiopia	10.3	8.7	8.98	0.668
Ghana	5.9	4.0	1.72	2.17
Guinea	3.4	2.5	3.06	0.564
Guinea-Bissau	0.964	0.695	17.33	-
Guyana	1.6	1.1	1.51	0.670
Honduras	5.0	3.2	2.47	1.98
Kenya	7.0	5.1	1.74	2.74
Laos PDR	2.4	1.1	2.46	0.405
Liberia	2.1	1.99	-	-
Madagascar	4.4	3.3	3.96	0.575
Malawi	2.4	1.4	2.26	0.571
Mali	3.2	2.2	3.2	0.474

### Debt Statistics (Continued)

	EDT	PV	PV/X	MV
Mauritania	2.6	1.4	3.18	0.304
Mozambique	8.2	2.7	5.39	0.346
Myanmar	5.7	4.9	3.09	1.09
Nicaragua	5.97	5.2	6.01	0.597
Niger	1.7	1.1	3.4	0.223
Rwanda	1.2	0.682	5.54	0.085
Sao Tomé	0.246	0.144	12.68	0.007
Somalia	2.6	2.3	-	-
Sudan	16.8	15.9	24.48	0.448
Tanzania	7.6	5.7	4.84	0.813
Togo	1.45	1.0	1.43	0.631
Uganda	3.9	2.4	3.11	0.532
Viet Nam	22.4	20.6	1.81	10.7
Yemen	4.1	3.1	0.91	3.1
Zambia	6.8	5.5	4.38	0.866

EDT = Total external debt (bl\$), PV = present value calculation (bl\$), PV/X = present value over exports, MV = Market value (bl\$)

### All HIPIC

Face Value	Present Value	Market Value	Average Price*
210.3	165.4	45.9	0.28

\* market value/present value. Source: World Bank and author's calculations.

Table 11: **Impact of the HIPC Initiative** (in percentage of exports)

$(D/X)_0$	$\Delta V/X$ (Cologne)	$\Delta V/X$ (Pre-Cologne)
150 per cent	0	0
175 per cent	5.4	0
200 per cent	8.6	0
250 per cent	11.5	2.9
300 per cent	11.3	2.7

$(D/X)_0$  : Initial debt-to-export  $\Delta V/X$  : Market value reduction in percentage of export

Table 12: **Growth and Financial Crisis**

Variables		t statistic
C	-0.21	8.7
DUM80	$-0.09 \cdot 10^{-2}$	-3.1
AFRICA	$-0.02 \cdot 10^{-2}$	-0.59
LATINCA	$-0.03 \cdot 10^{-2}$	-0.9
LRGDP	-0.019	-6.9
SW	0.012	3.2
LENR2	$0.8 \cdot 10^{-2}$	3.01
PRES	-0.013	-3.43
LINV	0.013	4.75
TOT	0.07	2.37
OPB	-0.06	-5.8
ETHN	-0.021	-4.0
Adj.R <sup>2</sup>	0.64	

Dependent variable: per capita growth rate (1970s and 1980s)

Lrgdp: Log of initial income per capita of the country; Lenr2: log of secondary school enrollment of children; Linv: log of investment; Ethn: Easterly-Levine index of ethnic diversity; Tot: term of trade; Opb: black market premium weighted by openness; Pres: risk of a debt crisis; Latinca: Latin American and the Caribbean.



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