

On foreign debt sustainability of developing countries: towards a long run approach for development

(work in progress, comments are welcome)

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Abstract

The role of economic theory is to suggest models and indicators that allow in identifying when foreign debt of a developing country is sustainable and when it is “excessive”. The IMF and the World Bank define the external debt sustainability of a country as its ability to meet the current and future external debt service obligations in full, without recourse to debt rescheduling or accumulation of arrears. This concept of sustainability focuses on the behaviour of the borrower (the borrower’s willingness and ability to repay its debt “in full”) rather than on the behaviour of the lender (based on the lender’s liquidity and investment alternatives) and implies that countries receiving external debt relief are in a situation of “excess debt”. But when creditors have to decide for some debt relief measures, they need to establish, by a sustainability analysis, the sustainable debt level of the borrower. This reasoning is evidently circular and shows how the traditional notion of sustainability is arbitrary. This is due to the characteristics of the sovereign debt relationship (Epstein and Gintis, 1992). The aim of this paper is to redefine the concept of foreign debt sustainability. We propose a long run dynamic approach based on a flow analysis rather than a stock analysis. In this approach we try to solve the problem of arbitrariness existing in the traditional approach on foreign debt sustainability.

Keywords: Foreign Debt Sustainability, Finance for Development, Sovereign Debt Relationship.

JEL Classification: F34, H63, O10.

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Introduction

In this paper we discuss the problem of foreign debt sustainability for developing countries and in particular for the so-called Severely Indebted Low Income Countries (SILIC).

These countries are characterised by high foreign debt, undiversified export base, large share of agriculture in GDP, large share of labour force in the primary sector. They do not have access to private financial flows and are regarded as unable to sustain the rules of international financial markets. Furthermore these countries have generally slow growth, considerable poverty problems and economic weakness. In particular they are characterised by severe trade account deficits as well as bad conditions of the current accounts. Typically they show low saving and investment ratios.

The so-called Heavily Indebted Poor Countries, eligible to an important debt relief initiative according to IMF and World Bank's criteria, are included in this group.

The paper is organised as follows. In part I we deal with the concept of foreign debt sustainability. In paragraph 1.1 we describe the sovereign debt relationship and the endogenous enforcement strategies adopted by creditors. This analysis is crucial to understand the basic hypothesis of the debt sustainability approaches. In paragraph 1.2 and 1.3 we discuss the borrower based approach and its application in the most important initiative to reduce the foreign debt of poor countries to sustainable levels (denominated HIPC Initiative). In paragraph 1.4 we discuss the lender based approach. We point out the limits of both the approaches.

In part II we suggest a different approach on foreign debt sustainability. We propose a long run dynamic approach based on a flow analysis. In this approach the degree of freedom of the notion of debt sustainability is eliminated by pursuing development aims. In paragraph 2.1 we discuss the principal assumptions of this approach whereas in paragraph 2.2 we show how it is possible to define a development-based approach to solve the problem of arbitrariness existing in the traditional approach on foreign debt sustainability. An analytical framework is required in order to simulate the sustainable path of indebtedness of a country.

Part I - On foreign debt sustainability

In this part we show that the notion of foreign debt sustainability cannot be independent from existing or past power relations and strategic interactions between international lenders and borrowers. Otherwise this notion is inevitably contradictory.

As noticed below, in economic analysis debt sustainability is defined on the basis of the behaviours of lenders or borrowers involved in the contractual relationship. Therefore, to analyse the concept of foreign debt sustainability it is necessary to understand the characteristics of the sovereign debt contractual relationship.

1.1 The sovereign debt relationship

Transactions between lenders and borrowers are members of a large class of exchanges that can be modelled as *principal agent relationships*. As stressed by Bowles (2002), a principal agent problem arises if and only if there exists a conflict of interest over some aspect of an exchange which is not subject to costless enforceable contracting. When the claims arising from an exchange cannot be enforced by a third party (the courts) one or both parties to the exchange will adopt *endogenous enforcement strategies* to secure advantage in the transaction.

Epstein and Gintis (1992) point out that the typical endogenous enforcement strategies applied by creditors in the domestic context (such as collateralizing, profit-sharing and joint-control of the financed projects) become ineffective in the sovereign debt contractual relationship. In the international credit relationship the most effective endogenous enforcement strategy is the *contingent renewal*: the lender elicits performance from the borrower by promising to renew the contract in future periods if satisfied, and to terminate the contract if not. This strategy is retaliatory¹ and implies an exercise of power².

The threat of retaliation against a sovereign debtor is credible since the debtor might be able but unwilling to pay.³ It will be willing to pay if and only if the costs expressed by the threat (i.e. non-renewal of contract and other sanctions) are bigger than the costs supported in the case of payment (i.e. the adjustment costs).

A necessary condition to obtain the willingness to repay consists in that the expected value of borrower's gain from access to lender's credit exceeding the expected value of seeking alternative funding. However, "*given the oligopolistic character of international lending and the co-ordination by the International Monetary Fund and by the related organizations, the international lender has few reasons to take the borrower's alternative as given. Indeed, collusion among lenders can ensure that default by sovereign debtor effectively freezes the debtor from further loans for a considerable period of time...*"⁴.

In other words, since modern international financial institutions allow considerable latitude for collusion among lenders, the threat of retaliation is powerful.

In conclusion, in sovereign debt relationships lenders have to study endogenous enforcement mechanisms. The only effective mechanism is the threat of retaliation, where the co-ordination strategy and the power relations between lenders and borrowers determine the contract fulfilment.

¹ Epstein and Gintis (1992) point out that the threat of retaliation is not limited to denial of future credit, but it involves also trade and military sanctions.

² We adopt the notion of power proposed by Bowles and Gintis "*For A to have power over B is sufficient that, by imposing or threatening to impose sanctions on B, A is capable of affecting B's actions in ways that further A's interests, while B lacks this capacity with respect to A*" (Bowles and Gintis, 1992).

³ However there is not any notion which can isolate the ability to repay from the willingness to repay. Indeed, a sovereign debt may always be repaid by mean of transfers of resources from the private to the public sector. For this reason it is not possible to distinguish between "solvency" and "sustainability".

⁴ Epstein and Gintis, 1992, p. 175.

As we discuss below, the concept of foreign debt sustainability is based on the behaviours of the agents involved in the sovereign debt relationship. In particular the different notions of debt sustainability existing in the literature can be distinguished into two classes: the notions based on the behaviour of the borrower and the notions based on the behaviour of the lender.

1.2 The IMF and World Bank point of view on debt sustainability: the behaviour-based approach

The IMF and the World Bank define the external debt sustainability of a country as its ability and willingness to “meet the current and future external debt service obligations in full, without recourse to debt rescheduling or accumulation of arrears *and without compromising growth*”.⁵

This concept of sustainability focuses on the behaviour of the borrower (the borrower’s willingness and ability to repay its debt “in full”) rather than on the behaviour of the lender (based on the lender’s liquidity and investment alternatives).

The basic assumption underlying this notion is the following: “*if a country has serviced debt of a certain level (defined as a percent of exports, GDP or fiscal revenues) and this level does not increase, it will be willing (otherwise it would have already repaid it) and able to continue to service the debt.*” (De Melo, 1990, p. 255).

According to this view, the signal of an unsustainable debt is clear: a country receiving external debt relief (in form of debt rescheduling or debt forgiveness) is in a situation of “excess” of debt. That is, the current debt level is higher than the sustainable one.

Given this assumption, the aim of economic theory is to suggest models and indicators that allow to find the so called “thresholds of solvency”, that is to say the ratios of foreign debt with respect to GDP, exports or revenues under which the debt is sustainable and over which it is “excessive”. Reached the thresholds of solvency, the debt is expected to remain sustainable if the debtor stabilizes these ratios through some appropriate fiscal and current account balances⁶.

This approach is really problematic for the existence of a degree of freedom. To clarify this point, let’s suppose that creditors are engaged in a debt relief initiative (as the HIPC initiative) in order to reduce the external debt of a country to sustainable levels. Then creditors have to decide when external debt may be considered “sustainable” (that is to say when it is not “excessive”). However, as we have seen, the fact that creditors decide to accord some debt relief measures is in itself the

⁵ IMF-World Bank 2001, p. 4. Almost the same definition appears in World Bank (1998, p. 55), but without reference to growth.

⁶ A further interesting and debating problem concerns to find the sustainable fiscal and current account balances given the sustainable debt ratios. For an exposition of the standard approach on this subject see De Melo (1990) and Cuddington (1997). About the present debate we also suggest to read the criticism developed by Pasinetti (1998) to Maastricht thresholds.

criterion to declare a situation of “excess debt”. This reasoning is evidently circular and shows how the economic indicators connected with this notion of sustainability are in some way arbitrary.

This arbitrariness is inevitable once we don’t consider the relationship between lender and borrower. Indeed, as we have seen in the paragraph 1.1, the decision of a debtor country to “meet current and future external debt service obligations in full” is not independent from the characteristics of this relationship. In particular, the contract fulfilment depends on the coordination strategies and the power relations between lenders and borrowers.

As a consequence it is possible to affirm that any definition of debt sustainability cannot be neutral, even if performed by international organizations. Further, if these organizations coordinate the creditors or are creditors themselves, the judgement on debt sustainability is performed by one part of the contested exchange. Even if this decision will favour not necessarily the interests of creditors, certainly the decision is taken by creditors.

1.3 The HIPC initiative and the arbitrariness of the thresholds of solvency

The Heavily Indebted Poor Countries (HIPC) initiative, promoted by the G-8 Summit in 1996 and enhanced in 1999, entails coordinated actions by the international financial community, including multilateral institutions, to reduce the external debt burden of the most indebted countries to *sustainable levels*. The concept and the indicators of debt sustainability are crucial both in the definition of the eligible countries and in the determination of the appropriate debt relief.

The HIPC initiative, assuming the borrower based approach of the International Financial Institutions, defines sustainability through the following debt indicators (related both to the fiscal and the external position). In the original framework a debt was regarded as being sustainable if the ratio of Net Present Value (NPV)⁷ of debt to exports was in the range of 200-250 % or less and the ratio of debt service on exports was in the range of 20-25 % or less. For particular open economies with a large export base there was also a fiscal indicator of NPV of debt to government revenues of 280 % or less. Debt relief for eligible countries aimed to reach these sustainable ratios.

After the Koln agreement the HIPC initiative has been “enhanced” and the thresholds of solvency have been lowered: the ratio of NPV of debt to exports ratio has been lowered to 150 % and the ratio of debt service to exports has been lowered to the range 15-20 %. Moreover, if the ratio of exports to GDP is above 30 % and the ratio of fiscal revenues to GDP is above 15 %, a further threshold has to be respected: the ratio of debt to fiscal revenues has to be below 250%.

As underlined by Hjerthom (2000), it is widely asserted that the World Bank and the IMF have 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’.

⁷ 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 due does not add up, when discounted at market rate of interest, to its face value but to less (see Cohen, 2000, p.4).

In effect the only way to determine some thresholds of solvency on the basis of the behaviour of the borrower is to extract a rule from the past experience of the developing countries behaviour. The results are based on retrospective analysis of the incidence of rescheduling of non-HIPCs compared to their PV of debt-to-exports ratios in the preceding years.⁸

Based on the earlier time period (NPV of debt-to exports ratios in 1991-1993 and incidence of rescheduling in 1993-1997), for those countries with an NPV of debt-to-exports ratio below the 150 percent level - the sustainability threshold under the enhanced HIPC framework - the incidence of rescheduling was only 12 percent. For the group of countries with NPV of debt-to-exports ratios between 150 and 200 percent, the incidence increased to 22 percent. For those with ratios over 200 percent, the incidence of rescheduling rose to 70 percent.

For the more recent period, the NPV of debt ratios between 1993 and 1995 are compared to incidence of rescheduling in the subsequent period 1995-2000. In this sample the incidence of rescheduling for the group of countries with debt ratios between 150 and 200 percent increased slightly to 25 percent, while the incidence of rescheduling for the group of countries above 200 percent decreased markedly to 36 percent.

The limits of this analysis, and in general of the efforts to find “reasonable thresholds of solvency” from the past experience of debt (non) repayment are rather evident (see for example Cohen, 2000).

Firstly, the actual results may vary according to the time period considered. Secondly, countries differ in their ability to manage any given level of debt. Moreover, history is the result of the relationships between borrowers and lenders. Then, if we use the past behaviour of the borrowers to foresee their future ability and willingness to repay the debt, we are considering the borrowers and the lenders in the past international environment, that is to say characterized by the same strategic interactions and embedded in the power relationships.

This is an arbitrary use of history: the actual contract fulfilment by debtors is analysed on the basis of the past fulfilment. However the past contract fulfilment depends on the past characteristics of the relationship (that is on past power relations and past strategic interactions).

In fact the history of the HIPC initiative itself demonstrates that the “true thresholds of solvency” do not exist and that in the definition of “excess debt” there is a degree of freedom due to arbitrary choices. When, after the Koln agreement, the initiative was enhanced, the indicators were lowered

⁸ See IMF and the World Bank, 2001, pp. 38-39.

not to apply a different economic analysis, but to accept the requests of NGOs and to face the broad cultural and political consensus for the forgiveness of poor countries debt.

Hjertholm (2000), starting from the idea that the HIPC sustainability targets are not well supported in analytical terms, suggests to adopt country-specific targets in such a way that it is possible to take in account that countries encounter debt service problems for a variety of reasons and at different levels of debt.

We agree with him: debt sustainability must be evaluated country by country. The problem is how to analyse debt sustainability in a more comprehensive and non arbitrary way.

1.4 The lender based approach

As we have previously mentioned, two basic perspectives exist on the issue of debt capacity, namely the borrower's perspective and the creditor's one. While the former is based on the characteristics of the debtor country's economy related to the willingness and ability to service foreign debt, the latter is concerned with the supply of external financing to a debtor country, and as such looks at the matter from the perspective of creditors.

The crucial issue of this approach is that a certain debt is sustainable if, given the expectations for the future scenarios the lenders will continue to finance the deficit of the debtor country (both fiscal and current account deficit). This perspective is normally adopted in the theoretical frameworks which analyse the sustainability of the domestic debt of a country (see for example Spaventa, 1987).

Let's represent this typical framework to analyse the evolution of the domestic public debt with respect the GDP and the conditions under which the debt is sustainable. The same model is used to analyse the evolution and the sustainability of the foreign public debt with respect to GDP or with respect to exports.

1.4.1. The analytical framework

Let's consider an economy which has inherited from the past a domestic public debt /GDP ratio equal to $b_0 \geq 0$. Moreover let's suppose that, starting from period 1, this economy is characterised by a constant real interest rate r and by a constant real growth rate n . It is assumed that the future growth and interest rates are known with certainty. Moreover we suppose that government deficits are not monetized⁹. Finally, we assume that lenders maximize their intertemporal utility over an infinite horizon.

Now suppose that in periods $1, 2, \dots, T$ the ratios between expenditures and GDP, on one side, and between the revenues and GDP, on the other, are respectively equal to g_1, g_2, \dots, g_T and to t_1, t_2, \dots, t_T .

⁹ This is consistent with a non inflationary policy.

From the law of variation of the public debt, we can derive the debt level in every period. If the GDP is constant ($n = 0$), we will obtain:

$$\begin{aligned}
b_1 &= g_1 - \mathbf{t}_1 + (1+r)b_0 \\
b_2 &= g_2 - \mathbf{t}_2 + (1+r)b_1 = \\
&= g_2 - \mathbf{t}_2 + (1+r)(g_1 - \mathbf{t}_1) + (1+r)^2 b_0 \\
b_3 &= g_3 - \mathbf{t}_3 + (1+r)(g_2 - \mathbf{t}_2) + (1+r)^2(g_1 - \mathbf{t}_1) + (1+r)^3 b_0 \\
b_T &= g_T - \mathbf{t}_T + (1+r)(g_{T-1} - \mathbf{t}_{T-1}) + \dots + (1+r)^{T-1}(g_1 - \mathbf{t}_1) + (1+r)^T b_0
\end{aligned}$$

Then in every period the debt level is equal to the level in the last period plus the interests accumulated plus (minus) the primary deficit (surplus) obtained in this period.

We can rewrite the expression of b_T in this way:

$$b_T = \sum_{t=1}^T (g_t - \mathbf{t}_t)(1+r)^{T-t} + (1+r)^T b_0 \quad (1.1)$$

So the debt level at the end of time T is equal to the initial debt level b_0 accumulated at the rate r for T periods plus the algebraic sum of primary deficits (surpluses) in every period $t = 1, 2, \dots, T$, each of them accumulated at the rate r for $T - t$ periods.

Let's suppose that we know the values of primary deficits (surpluses). The present value of b_T will be:

$$\frac{b_T}{(1+r)^T} = \sum_{t=1}^T \frac{g_t - \mathbf{t}_t}{(1+r)^t} + b_0 \quad (1.2)$$

Now let's impose the "no-Ponzi Game" (NPG) condition: $\frac{b_T}{(1+r)^T} \rightarrow 0$ for $T \rightarrow \infty$, so that:

$$\sum_{t=1}^{\infty} \frac{\mathbf{t}_t - g_t}{(1+r)^t} = b_0 \quad (1.3)$$

It is possible to demonstrate that the NPG condition follows immediately from the transversality condition of the lender's utility maximization problem. That is, the NPG condition is an implication of lenders' optimal behaviour (see Cuddington, 1997, Appendix 1).

The identity (1.2) indicates the intertemporal budget constraint for a constant level of production ($n = 0$). As long as the present value of the debt far into the future declines as the planning horizon expands, we are in the standard case of the finance literature: the value of an asset (here the country's debt) is equal to the present discounted value of all the dividends attached to it (here all

future debt servicing given by $\mathbf{t}_t - g_t$, $t = 1, \dots, T, \dots$). It is said to be worth its “fundamentals”, and if the debt were traded on a secondary market, its market value would exactly match its face value.

The “no Ponzi game” condition states that the debt level must increase overtime at a rate smaller than the interest rate r . From an economic point of view this means that, if the government wants to place all the obligations needed to pay the debt service, the debt service cannot be financed entirely by new financing (debt obligations). Suppose that this condition is violated, so that the present value of the activities accumulated by savers will be positive over an infinite horizon. Then, individuals who maximize their intertemporal utility will not subscribe all the obligations because in that case they would renounce to consume a fraction of the lifetime wealth. So optimality in equilibrium models requires the respect of this solvency constraint. This constraint doesn’t require that debt must be repaid in full: it requires simply that the present value of b_T must tend to 0 over an infinite horizon. This means that the current debt level can be positive and that it can grow indefinitely, even if at a rate smaller than r . In other words, this condition implies that the discounted sum of revenues in all periods must exceed the discounted sum of expenditures for an amount equal to the initial consistency of the debt.

Agenor and Montiel (1996, p. 123) argue that: *“The government is solvent if the expected present value of the future resources available to it for debt service is at least equal to the face value of its initial [i.e. current] debt stock. Under these circumstances, the government will be able to service its debt on market terms. Solvency thus requires that the government’s prospective fiscal plans satisfy the present-value budget constraint.”*

So, in this framework, sustainability is reached if the existence of a positive debt is accompanied by the realization of primary surpluses over an infinite horizon. If this discipline is violated, the debt accumulation will become unsustainable and a rational optimizing saver will not subscribe the obligations emitted by the State.

Now let’s generalise this discussion for a positive growth rate of income $n > 0$ (we assume that n is constant overtime). So eq. (1.1) becomes:

$$b_T = \sum_{t=1}^T (g_t - \mathbf{t}_t) \left(\frac{1+r}{1+n} \right)^{T-t} + b_0 \left(\frac{1+r}{1+n} \right)^T \quad (1.4)$$

If $n > r$, the term $b_T = b_0 \left(\frac{1+r}{1+n} \right)^T$ decreases continuously and tends to zero for $T \rightarrow \infty$. So in this case the value of b_T depends on the primary balances and not on the debt inherited from the past. So in this case it isn’t necessary to obtain primary surpluses. In others words when the growth rate is higher than the interest rate, an initial debt doesn’t create any problem of sustainability and the intertemporal budget constraint is not binding.

On the contrary, the sustainability problem exists when $n < r$ (whose $n = 0$ is a particular case). This case seems more realistic and interesting. Let's suppose that we know the values of primary deficits (surpluses). The present value of b_T will be:

$$b_T \left(\frac{1+n}{1+r} \right)^T = \sum_{t=1}^T (g_t - \mathbf{t}_t) \left(\frac{1+n}{1+r} \right)^t + b_0 \quad (1.5)$$

Let's impose the "no Ponzi game" condition: $b_T \left(\frac{1+n}{1+r} \right)^T \rightarrow 0$ for $T \rightarrow \infty$; we obtain:

$$\sum_{t=1}^{\infty} (\mathbf{t}_t - g_t) \left(\frac{1+n}{1+r} \right)^t = b_0 \quad (1.6)$$

This equation indicates the intertemporal budget constraint when $n > 0$. The public sector can't pay the debt service just emitting new debt obligations: the presence of an initial debt b_0 requires to obtain adequate primary surpluses.

As shown by Bohn (1995), in a stochastic framework (where for example the futures rates of interest are not deterministic), the model is more complicated and the no Ponzi game does not coincide with the transversality condition. Nevertheless the no Ponzi game condition remains an implication of the optimal behaviour by lenders (Cuddington, 1997).

An identical analytical framework can be used to analyse the sustainability of the foreign debt, related either to GDP or to the exports. In the first case, given the hypothesis that the entire foreign debt is public, the only difference with the previous model is that r indicates the real world interest rate. In the second case, r is the real world interest rate and n is the growth rate of exports of an indebted country.

As shown by Cohen (1985), the most important consequence of applying this framework to the foreign debt sustainability problem is that solvency does not require the full repayment of the entire debt (as instead in World Bank and IMF approach).

Let's suppose to apply the previous framework to analyse the evolution of the ratio between foreign debt and exports, so that b_0 indicates the initial foreign debt/exports ratio. Denoting exports during period t as X_t , let's define the constant s such that with repayments equal to sX_t for all periods to come, the present value of these repayments equals the inherited debt level B_0 :

$$B_0 = sX_1/(1+r) + sX_2/(1+r)^2 + \dots + sX_t/(1+r)^t + \dots \quad (1.7)$$

This is the same condition expressed by identity (1.5), where r is the real world interest rate, n is the growth rate of exports of an indebted country and it is assumed that repayments are a fixed proportion of export every year. We can then find the value of s which satisfies this condition:

$$s = (r - n)B_0/(1+n)X_0 \quad (1.8)$$

Cohen considers s as an index of solvency: indeed it indicates the repayments (in terms of fraction of exports) which permit a country to remain solvent.

It is possible to consider more complicated cases where both the rate of interest and the export growth rate vary over time (r_t and n_t in period t). It is easy to show that s is then defined as:

$$s = cB_0/X_0 \quad (1.9)$$

with $1/c = \sum_{t=1}^{\infty} \{(1+n_1) \cdots (1+n_t)\} / \{(1+r_1) \cdots (1+r_t)\}$

Note that if $n_i > r_i$ for all i , the sum $1/c$ is infinite and one sees that s is zero: it is the index of a perfect solvent country. Otherwise, whenever $1/c$ is finite, s will be a strict positive number.

We can apply the same reasoning to the intertemporal budget constraint so to find the primary surplus that is necessary to obtain every year to remain on a sustainable path.

It is important to note that s defines the repayment stream which keeps the debt-to-export ratio constant.

1.4.2 Comparing the two approaches

It is important to note that, even if the conclusion seems to be the same in the two approaches (respectively borrower and lender based), in the sense that to reach debt sustainability it is necessary to stabilize the debt-to-GDP or debt-to-exports ratio, the conditions, the meaning and the effects of this stabilization are very different in the two theoretical cases.

In the lender based approach, the problem of sustainability involves that the fiscal (or current account) deficit must be continuously refinanced. To reach this result the present value of the debt must tend to zero for $T \rightarrow \infty$ and to obtain this tendency it is necessary to stabilize the debt with respect to GDP or exports (whatever is the initial level of this ratio).

In the borrower based approach must be stabilized once the sustainable ratio is reached. The idea is that if a country has repaid in full a foreign debt of a certain level (defined as a percent of exports, GDP or fiscal revenues) and this level does not increase, it will be willing and able to continue to repay the debt in full. These “thresholds of solvency” are specific, not generic, and, as we have discussed before, they are obtained in an arbitrary way.

In the borrower based approach the debt service has to be repaid in full and punctually, whereas in the lender based approach, which is more favourable for debtor countries, it is not necessary to repay the debt in full because debt is sustainable when the conditions of profitability for its refinancing are respected. In an extreme case, when $n > r$, the debt is sustainable even if there are not repayments at all.

1.4.3 The arbitrariness of the lender based approach

The lender based approach is arbitrary similarly to the borrower based approach.

Since the creditor perspective is based on the behaviours of lenders in international capital markets, a correct conception of the decision-making of lenders and of the institutional framework of international finance can help to elaborate a better theory (Eaton and Gersovitz, 1980; Sachs and Cohen, 1982).

Much of the literature on the loan supply issue has been generated in response to the growing presence (in the eighties) of commercial debt. The lender is taken to be a commercial lender, not an official one such as governments or multilateral aid agencies. As we saw in the first paragraph, the actual contractual structure of the sovereign debt relationship is very different from the typical structure existing in the case of domestic public debt. In the latter there are many savers in the financial market who have different investment alternatives and who become lenders with respect to the government in the case of profitability of this investment. On the contrary, in the former, the oligopolistic character of international lending and the co-ordination between lenders signify that in practice many low income debtor countries are severely credit constrained, whereas the analysis above assumed access to a perfect world capital market. At a general level credit constraints limit the applicability of sustainability analyses based on present values (Hjertholm, 2000).

Debt service payments of a fraction $(r-g)$ per unit of debt, which are sufficient to maintain long run sustainability with a perfect capital market (since debt grows no faster than the ability to repay it), imply that the total stock of debt will be continually expanding. If credit constraints are present, this cannot occur. In particular, if the credit constraints are determined by the existence of co-ordination among creditors, the financing of deficit could require an higher payment (for example a fraction r per unit of debt rather than $r-g$).

In other words, also in the lender based approach the debt sustainability analysis does not consider the characteristics of the sovereign debt contractual relationship. Since in this relationship the decision of the lender to finance or not to finance the borrower (and how much) are determined by the strategic interactions and the power relations, it is not possible to define debt sustainability on the basis of the behaviour of the lender without considering these aspects.

But if we conceive a debt sustainability analysis in such a way, since it is impossible to determine some economic indicators of sustainability without any regard for strategic interactions and power relations, we find again the problem of arbitrariness described for the borrower based approach.

We could even say that once creditors coordinated by the international financial institutions have decided to use the borrower based notion of sustainability, this notion describes the credit constraint for the borrower and the criteria of the behaviour of lenders, so that the lender based approach comes back to the borrower based approach itself.

We must now discuss the case in which the foreign debt of low income countries has a secondary market. Cohen (2000) proposes that the value of the debt and then debt sustainability should be

verified in the secondary market. In particular the crucial idea is that debt is sustainable as long as it can be sold in the secondary market. So, in a lender based perspective, debt sustainability is determined by the expectations and the buy-back behaviour of market agents. Now the problem is that the expectations of market agents are based on the interactions between lenders and borrowers. So, even if the foreign debt of low income countries had always a secondary market¹⁰ and the expectations of market agents on a country risk were rational, debt sustainability should be evaluated considering as given the strategic interactions and the power relations between lenders and borrowers: again, the degree of freedom is closed in an arbitrary way.

1.5 The limits of the traditional approaches in assessing long run debt sustainability

As we have already seen, the traditional definition of World Bank and IMF assumes that a country has achieved external debt sustainability if it can meet its current and future external debt service obligations in full, without recourse to debt rescheduling or the accumulation of arrears.

In a very recent report¹¹, starting from the idea that reducing debt under a certain “threshold of solvency” at a single point in time is not a guarantee against future debt problems, this definition has been integrated by considering the role of economic growth to maintain external debt sustainability in the long run¹². The basic assumption underlying this new definition is that *“while HIPC Initiative assistance will substantially reduce the debt service due on existing debt, maintaining external debt at sustainable levels will depend critically on future policies and growth performance of the HIPCs and on support from the creditor/donor community”*¹³.

Analytically three key determinants of debt sustainability are proposed¹⁴: (i) the existing stock of debt and its repayment terms; (ii) the development of the country’s fiscal and external repayment capacity, i.e. the growth of income, exports and fiscal revenues; and (iii) the growth, composition (the mix of grants and loans) and terms of new external financing. Moreover, the susceptibility of a country to external shocks is considered to have important implications for disruptions in repayment capacity. In other words, debt sustainability can be maintained in the long run if and only if there is an adequate growth of income, revenues and exports.

In other terms, the International Financial Institutions assert that in the long run the development of the country’s fiscal and external repayment capacity, i.e. the growth of income, exports

¹⁰ But generally foreign debt of SILIC country has not a secondary market.

¹¹ International Monetary Fund and World Bank (2001), “The challenge of maintaining long-term external debt sustainability”.

¹² The definition becomes: “a country can be said to achieve external debt sustainability if it can meet its current and future external debt service obligations in full, without recourse to debt rescheduling or the accumulation of arrears and without compromising growth” (IMF and World Bank, 2001, p. 4).

¹³ IMF and World Bank, 2001, p. 3.

¹⁴ IMF and World Bank, 2001, p. 4.

and fiscal revenues, is not exogenous to the indebtedness evolution, but it is in some ways determined by this evolution. And, in its turn, the dynamics of external repayment capacity is relevant to understand if a future debt build-up (or, more in general, debt position) can be considered sustainable or not.

It is important to note that if we assume that foreign transfers (both net capital inflows and net factor services) have some impact on the growth of income, exports and fiscal revenues, the traditional indicators of debt sustainability are no valid anymore.

Indeed, the borrower based approach simply proposes a threshold of solvency to be maintained in the long run, but it does not suggest any relationship between a given debt position and its possible future evolution. Since this framework does not analyse the reciprocal influence between indebtedness and growth of income, exports and fiscal revenues, it is no useful to analyse the possible evolution of the threshold of solvency. In a certain sense, this approach consists in a tautological analysis.

The framework of the lender-based approach takes the main factors involved (i.e. the growth of income, exports as well the rate of interest) as exogenously determined. As a consequence, it cannot be considered adequate once we assume the existence of an endogenous relationship between indebtedness and growth.

Part II – Towards a non arbitrary long run approach on foreign debt sustainability

In this section we discuss a new possible approach to analyse debt sustainability consistent with the critics developed in Part I. As we have pointed out in the introduction, this discussion is related to SILIC¹⁵, although we think that some arguments could be used also to analyse the debt sustainability problem in other developing countries.

2.1 Assessing long term debt sustainability: debt flows, contractual aspects and new external financing

Following the analytical perspective proposed by IMF and World Bank, three key variables should be considered to assess long run debt sustainability: the existing stock of debt and its repayment terms, the development of the country's fiscal and external repayment capacity, the growth, composition and terms of new external financing. In other terms, to analyse long-term debt sustainability we need to evaluate the evolution and the reciprocal influence of some variables: the debt service flows (this means indeed “debt stock and its

¹⁵ Severely Indebted Low Income Countries.

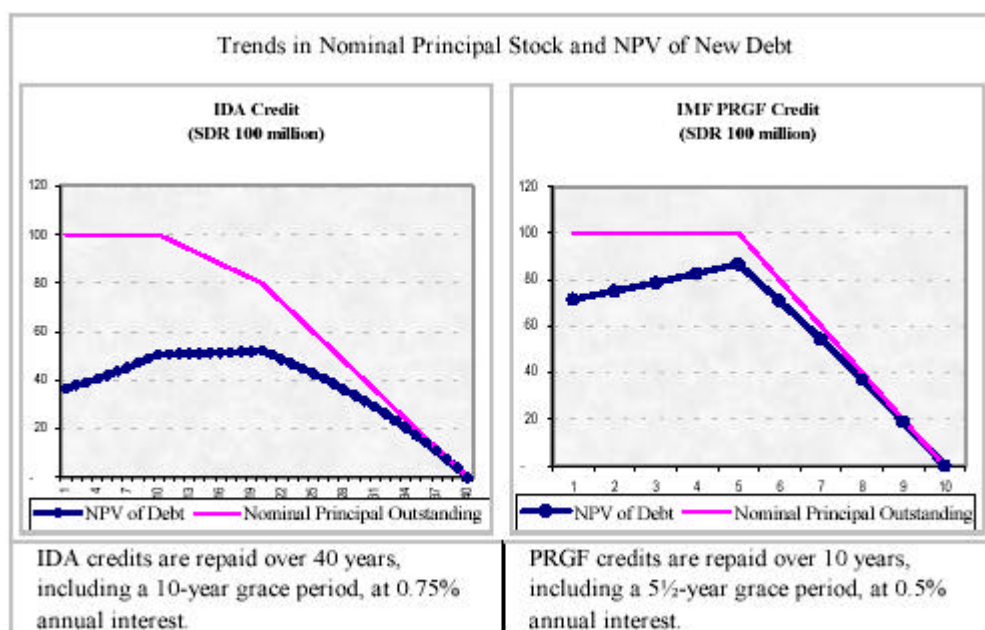
repayments terms”); the external repayment capacity (i.e. the growth of income, exports and fiscal revenues); the flows of new loans and grants, their composition and terms. Moreover, this framework should consider the external shocks which frequently affect developing countries.

Therefore it is possible to deduct from this perspective some insights of a dynamic and evolutionary approach to debt sustainability.

We follow this perspective and we suggest a possible approach. In this approach we have to analyse the mutual influence between the debt flows (both new loans and debt service, but also grants) and the external repayment capacity (i.e. the growth of income, exports and fiscal revenues).

The contractual profile of a debt position is crucial to understand the evolution of the process and then long-term debt sustainability. Indeed if we assess a debt position of a country in an evolutionary perspective, we should analyse the composition of different contractual profiles which result in a specific debt service dynamics.

A country can have a low debt service ratio and a relatively high NPV of debt-to-exports ratio depending on its the profile of debt repayment. We report below the evolution of two contractually different credits. We can assess some important features: the difference between the nominal stock and NPV of new debt and the dynamics of their values.



Source: IMF and World Bank (2001)

The difference between the nominal value of debt and its NPV is due to a grant element. The grant element of debt erodes over time, with a speed which depends on (i) the difference between the interest rate and the discount rate, and (ii) the repayment profile of the debt including the length of the grace period.

One can discern from the graphs some stylized patterns of the evolution of the NPV of new debt. Firstly, where if the loan contract provides a grace period, the NPV of the debt will increase until the grace period has been completely exhausted. Secondly, the NPV of the debt, measured over time, is expressed in terms of value at specific points in time. When changes in the discount rates occur over the life of a loan, the NPVs will vary inversely with the discount rates.

The possible new external financing should be assessed in the same way: the growth, the composition and its contractual profile determine the evolution of the inflows or outflows of financial resources, that is to say the dynamics of net flows.

These key determinants of long run sustainability are closely inter-related and further linked to domestic and external policies. The existing debt situation and the associated debt service reflect past policies and are starting points for determining long-term debt sustainability. This existing debt position will need a given level of future taxation to repay the debt. A heavy initial debt service burden could discourage investment and reduce resources available for development expenditures and poverty reduction. The growth of both income and exports and new flows of external finance are also important for long term debt sustainability, and strongly depend on present and future economic policies. Higher export growth typically leads to higher GDP growth, and the latter can, in its turn, lead to a higher fiscal revenues growth providing that adequate revenue collection mechanisms are adopted. Similarly, the contractual characteristics of new external financing will have an indirect effect on future growth, through the returns to investment and the impact on taxation.

We think that only a framework in which all these elements are present can be useful to determine the appropriate external financing and related correct policies.

2.2 Arbitrariness and arbitration

Let's suppose that we succeed in elaborating a framework to analyse in a more comprehensive way the issue of long-term debt sustainability, which considers the contractual profile and the evolution of debt service, the new financing and the linkages between growth, development and indebtedness. Now, as we have discussed in part I, the crucial problem existing in the analysis of

debt sustainability is the problem of arbitrariness. Is it possible to solve it starting from the evolutionary framework proposed in the previous section?

As we have showed in part I, the existence of arbitrariness in the analysis is due to the fact that debt sustainability is defined on the basis of the behaviours of the borrower or of the lender, without any regard to the specific characteristics of the sovereign debt relationship according to which these behaviours are related each others and depend on strategic interactions and power relations. Any analysis which tries to assess debt sustainability without considering these features is inevitably arbitrary, in the sense that it fixes some indicators or targets of sustainability in an arbitrary way.

A possible solution of this problem is to assess (long-term) debt sustainability starting not from the behaviours of the parts of the contested exchange, but from a country-specific evolutionary relationship between the processes of indebtedness and development.

Once we have found a country-specific relation between the processes of indebtedness and development; we can fix some development targets and find the pattern of contractual debt profiles which permit to reach the “sustainable path”, i.e. the indebtedness path consistent with the fixed development targets. Moreover, if the position of a developing country in a given moment is out of this path, it is necessary to provide an adequate (both for quantity and composition) debt relief, so that the country is able to pursue its development aims.

In this perspective the concept of debt sustainability is not related to the behaviours of the contractual parts, but to the results of a certain relationship in terms of development. In other words we propose a *development-based approach* on debt sustainability, where a debt evolution is considered sustainable if it permits to reach some country-specific development aims.

If foreign debt sustainability is evaluated on the basis of the repayment (*inside* the principal agent relationship), this repayment is conditioned on strategic interactions and power relations between borrowers and a lenders and the framework is inevitably arbitrary.

On the contrary if debt sustainability is evaluated with respect to the development outcomes of the interaction (*outside* the relationship), the only arbitrary elements of the analysis are the development targets to be fixed, which are political and not economic decisions. In other terms, the degree of freedom of the sustainability analysis is made explicit and it is solved by pursuing development aims.

Now, once we recognize that the sovereign debt relationship is characterised by a contractual incompleteness and by an endogenous enforcement based on strategic relations and power relations, is it possible to apply this development-oriented concept of sustainability?

It is clear that, fixed the development targets, the implementation of this framework needs an enforcement mechanism like an international arbitration as proposed by Raffer and Singer (2001). Otherwise the development aims and the policy framework in which the relations between debt evolution and development perspectives are considered could be arbitrarily modified and the

implementation of the framework could depend on the strategic interactions and the power relations between borrowers and lenders, leaving the degree of freedom.

Future steps

In this paper we have put in evidence the inadequateness of the traditional approach on foreign debt sustainability and we have traced the basic lines of a new approach. However this work in progress needs a further step: an analytical framework is required in order to simulate the sustainable path of indebtedness of a country and to determine the debt relief necessary to reach this path.

References

- Agenor, P.R. and P.J. Montiel (1996): *Development Macroeconomics*, Princeton, New Jersey, Princeton University Press.
- Bohn, H. (1995): "The Sustainability of Budget Deficits in a Stochastic Economy," *Journal of Money, Credit and Banking*, 27, 257-271.
- Bowles, S. (2002): *Economic Institutions and Behaviour: An Evolutionary Approach to Microeconomics*, Princeton University Press.
- Bowles S. and Gintis, H. (1992): "The Political Economy of Contested Exchange," in Thomas E. Wartenberg (ed.), *Rethinking Power*, New York, SUNY Press, 1992, pp. 196-224.
- Cohen, D. (1985): "How to Evaluate the Solvency of Indebted Nation," *Economic Policy*, 1, 141-167.
- Cohen, D. (2000): "The HIPC Initiative: True and False Promises," *CEPR Discussion Papers*, No. 2632.
- Cuddington, J.T. (1997): "Analysing the Sustainability of Fiscal Deficits in Developing Countries," Economics Department Georgetown University, Washington, D.C.
- De Melo, M. (1990): "Fiscal Adjustment in High-Debt Countries," *Ricerche Economiche*, n. 2-3, 251-272.
- Eaton, J. and M. Gersovitz (1980): "LDC Participation in International Financial Markets: Debt and Reserves", *Journal of Development Economics*, 7(1), 3-21.
- Epstein G. and H. Gintis (1992): "International Capital Markets and the Limits of National Economic Policy", in T. Banuri and J. B. Schor, *Financial Openness and National Autonomy*, Oxford: Clarendon Press, 1992, pp. 167-197.
- Gunning, J.W. and R. Mash (1999): "Debt Relief and Debt Sustainability for Low Income Countries", Paper presented at the ABCDE Europe Conference, "Governance, Equity and Global Markets", Paris, June 21-23, 1999.
- Hjertholm, P. (2000): "Analytical History of Heavily Indebted Poor Country (HIPC) Debt Sustainability Targets", University of Copenhagen, *Institute of Economics Discussion Paper*: 00/03.
- IMF and World Bank (2001): "The challenge of maintaining long-term sustainability," Staff working paper, World Bank, Washington D.C.
- Pasinetti, L.L. (1998): "The myth (or folly) of the 3% deficit/GDP Maastricht 'parameter'," *Cambridge Journal of Economics*, vol. 22, no. 1, pp. 103-116.
- Raffer, K and H.W.Singer (2001): *The Economic North-South Divide: Six Decades of Unequal Development*, Cheltenham (UK)/Brookfield (US): Edward Elgar.
- Sachs, J. D. and D. Cohen (1982): "LDC Borrowing with Default Risk", NBER Working Paper 925, National Bureau of Economic Research, Cambridge.

Spaventa L. (1987): "The Growth of Public Debt," *IMF Staff Papers*, vol. 34, n. 2.

World Bank (1998): *Global Development Finance 1998*, Washington, D.C.