DEBT RELIEF AND THE CURRENT ACCOUNT:

An Analysis of the *HIPC* Initiative *

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ABSTARCT

In this paper I develop a model to investigate the connection between debt relief and current account sustainability. This model can be used as a key input in assessing whether a HIPC country's real exchange rate is "overvalued," and will thus need to go through devaluation. The working of the model is illustrated for the case of Nicaragua, a country that in 2002 had one of the highest external debt to GDP ratios: almost 300%. Nicaragua is the second poorest country in the Western Hemisphere (after Haiti), and for the last decade has relied very heavily on foreign assistance and aid. Moreover, in the last few years Nicaragua has run extremely large current account deficits – in excess of 37% of GDP during 1997-2001 --, largely financed by grants, donations and migrant remittances.

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I. Introduction

Max Corden's contributions to economics have been wide-ranging and highly influential. His pioneering work on the economics of protectionism was illuminating and shaped policy decisions in a number of countries. His work on effective protection – including his elegant four-quadrant diagrammatic representation – influenced the work of many trade theorists, and his research on exchange rates and macroeconomic policy has enlightened scholars from around the world.[1] In this paper I deal with two topics that have had a central role in Max Corden's research: debt relief and current account sustainability.[2] In particular, I analyze the potential impact of the IMF and World Bank's Highly Indebted Poor Countries (HIPC) debt-relief initiative on beneficiary countries' current account balances. I also discuss the way in which the debt relief initiative is likely to affect the countries' real exchange rates and public debt sustainability. Exchange rates economics has indeed been another central topic of Max Corden's prolific research (for his latest work on the subject, see Corden 2002).

In the fall of 1996, and as part of a new approach towards poverty reduction, the World Bank and the International Monetary Fund developed a wide-ranging plan to provide debt relief to many of the poorest nations in the world. This program, which has come to be known as the Highly Indebted Poor Countries (HIPC) debt relief initiative, contemplates the forgiveness of a fraction of these countries bilateral and multilateral debt. By early 2002, 22 poor countries had made substantial progress in negotiating debt relief within the context of the HIPC initiative.[3] The amount of actual debt relief that is being considered varies from country to country. A basic principle guiding the program is that in the post-HIPC era the country in question will be able to achieve *"external sector sustainability,"* and thus will not require new rounds of debt forgiveness in the future. In a recent document, the World Bank and the IMF have stated this principle in the following way:

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[1] See Corden (1966, 1969, 2002).

[2] Max Corden's work on these areas is too extensive to cite in full; a selective list would include Corden (1989, 1994) and Corden and Dooley (1989).

[3] In September 1999 the initiative was revised and the eligibility criteria were standardized. This revised program has come to be known as "The Enhanced HIPC Initiative." Details on the day-to-day progress in

> "[B]y bringing the net present value (NPV) of external debt down to about 150 percent of a country's exports or 250 percent of a country's revenues at the decision point, it aims to eliminate this critical barrier to longer term debt sustainability for these countries." (IDA and IMF, 2001, p. 4; emphasis added).

Maintaining "sustainability" in the post-HIPC era is a major challenge for these countries. Whether this is indeed accomplished depends both on the policy stance taken by the countries themselves, as well as on the availability of concessional loans at subsidized interest rates. A related and particularly important issue is whether the HIPC nations will require a real exchange rate devaluation in order to attain (and maintain) sustainability in the period following debt relief.[4]

In this paper I develop a model to investigate the connection between debt relief and current account sustainability. This model can be used as a key input in assessing whether a HIPC country's real exchange rate is "overvalued," and will thus need to go through devaluation. The working of the model is illustrated for the case of Nicaragua, a country that in 2002 had one of the highest external debt to GDP ratios: almost 300%. Nicaragua is the second poorest country in the Western Hemisphere (after Haiti), and for the last decade has relied very heavily on foreign assistance and aid. Moreover, in the last few years Nicaragua has run extremely large current account deficits – in excess of 37% of GDP during 1997-2001 --, largely financed by grants, donations and migrant remittances.

The rest of this paper is organized as follows: in section II I develop a model of debt relief and current account sustainability. This model differs from existing work in several respects. In particular, it considers both the steady state sustainable deficit, as well as the transitional *sustainable path* of the current account balance. In Section III I present an application of the model for the case of Nicaragua. In Section IV I expand the discussion and deal with the broader implications of the HIPC initiative for macroeconomic sustainability. In particular, in this section I argue that, as currently

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the HIPC initiative can be found in the following IMF-maintained web site: http://www.imf.org/external/np/exr/facts/hipc.htm

[4] On the relationship between current account sustainability and the equilibrium real exchange rate see, for example, Edwards and Savastano (2000) and the references cited there.

designed, the HIPC initiative is likely to generate serious macroeconomic dislocations in those HIPC countries with a high stock of *domestic* debt. Finally, Section V includes some concluding remarks.

II. Debt Relief and Current Account Sustainability

A key requirement of the HIPC initiative is that, once debt relief is granted, the beneficiary country achieves macroeconomic "sustainability" and, thus, will not request a new round of debt forgiveness in the future. Generally speaking, macroeconomic sustainability has two key elements: (1) fiscal sustainability, defined as maintaining a primary balance consistent with a stable public sector debt to GDP ratio;[5] and (2) current account sustainability, defined as a situation where the current account balance is consistent with solvency. This latter requirement, in turn, means that the current account balance is consistent with a stable the ratio of "external debt to GDP (Milesi-Ferreti and Razin 1998)." Analyses of current account sustainability have become particularly popular among investment banks and other market participants. For instance, private sector analysts interested in assessing emerging nations' vulnerability have used Goldman-Sachs GS-SCAD Model developed in 1997 extensively. More recently, Deutsche Bank (2000) has developed a model of current account sustainability both to analyze whether a particular country's current account is "out of line," and to evaluate the appropriateness of its real exchange rate.

In this section I developed a model of current account sustainability for a poor country. It is assumed that this country has two types of external debt: (a) concessional debt, at a subsidized rate of interest; and (b) debt on commercial terms. Moreover, the model assumes that the country receives a substantial flow of remittances from migrant workers, and that there also are significant grants and donations from NGOs and other type of organizations. Also, I assume that in the initial period – or period zero – a proportion of the country's concessional debt is forgiven. The model provides expressions for the sustainable path of the current account to GDP ratio, as well as for its steady state sustainable level. If the sustainable current account differs from the actual balance, the country in question will need to go through an adjustment process in order to reconcile the actual and sustainable balances. Under most circumstances this adjustment

[5] On the HIPC initiative and fiscal sustainability, see Edwards (2002b) and World Bank and IMF (2001).

will entail both expenditure reducing policies, as well as a real exchange rate realignment. Although no formal expression for the required real exchange adjustment is derived, I do provide a discussion of the main channels at work.

The current account is said to be "sustainable" when it is consistent with solvency. Solvency, in turn, requires that the ratio of the (net) international demand for the country's liabilities (both debt and non-debt liabilities) stabilizes at a level compatible with foreigners' net demand for these claims on future income flows (Edwards 2002a). The sustainability literature has focused, almost exclusively, on the long run (steady state) sustainable current account deficit. This emphasis, however, is not particularly useful in the context of the HIPC countries, where economic conditions – including the accessibility to concessional loans and to the private international capital market – are likely to change once the debt is forgiven. Nor is the emphasis on the steady state particularly helpful from a policy point of view. Indeed, policy makers are interested in understanding whether the economy is on a *sustainable path* at any particular moment in time. Moreover, from a political economy perspective, what matters is the type of adjustment – if any -- that the country will have to make in order to move towards, and remain on, a *sustainable current account path*. In the analysis that follows I assume that the initial period – or period zero – corresponds to the moment immediately after the country in question has been granted debt relief within the context of the enhanced HIPC initiative. The current account balance is defined as follows (a positive number refers to a current account deficit):

$$(1) \qquad cad_t = idpay_t + td_t - rem_t.$$

Where $idpay_t$ are net payments of interests, royalties and dividends; td_t is the trade balance (including non-financial services), and rem_t are net remittances received from abroad. In Nicaragua, as in many emerging nations, grants and "donations" are included in the capital account. Equation (1) is measured in foreign exchange – U.S. dollars, say. By definition the current account deficit is equal to net capital inflows (or capital account balance) KF_t, minus the change in the stock of international reserves (ΔR_t): $KF_t = cad_t + \Delta R_t$. Net capital inflows, in turn, may be broken up into several components: (a) Net

changes in concessional debt, ΔDC; (b) net changes in international debt contracted on commercial terms, and issued both by the public and private sectors, ΔDE. (c) Net change in private portfolio investment, ΔP. (d) Net foreign direct investment flows, including net real estate purchases, FDI. And, (e) grants and donations by international aid organizations, including NGOs (don).

$$(2) \qquad KF_t = \Delta DC_t + \Delta DE_t + \Delta P_t + FDI_t + don_t = cad_t + \Delta R_t.$$

In order to derive the "sustainable" path of the current account through time it is necessary to obtain expressions for the sustainable evolution of its components. Of course, the dynamic behavior of these variables is constrained by the requirement that they converge to their long run desired and stable ratios.

Generally speaking, the international community's policy towards the provision of concessional funds may be captured by the following expression for the rate of growth of subsidized loans through time:

$$(3) \qquad d \ln DC_t = (\phi g + \pi^*).$$

where g is the rate of growth of real GDP in the recipient country, π^* is dollar inflation, and $0 \leq \phi \leq 1$. The actual trajectory of the sustainable path of the current account will depend strongly on the value of ϕ. This, in turn is a policy variable of the international community, and is exogenous to the HIPC countries. If $\phi = 0$, the international community is willing to maintain the real value of DC constant at the post HIPC level. In this case, however, no additional funds in *real terms* are provided. At the opposite end, $\phi = 1$ implies that the international donor community is willing to provide sufficient concessional funds as to maintain the DC to GDP (Y) ratio at the immediate post HIPC level. This is, however, an overly optimistic assumption, that ignores the fact that subsidized funds tend to decline as countries reach higher stages in the development process. This declining trend in the availability of concessional financing is captured by

ϕ smaller than one, but greater than zero. In what follows, and unless otherwise stated, I will assume that $0 < \phi < 1$.

The rate of growth of net commercial external debt ($d \ln DE_t$) is assumed to be the sum of two components:

$$(4) \qquad d \ln DE_t = \varphi_0 + \varphi_1(\{(DE/X)^* - (DE/X)_{t-1} \}).$$

Where the first component is $\varphi_0 = g + \pi^*$, and the second component is a function of the divergence between international investors' desired holdings of this country's debt, relative to its exports – denoted by $(DE/X)^*$ --, and their actual holdings in the previous period. An advantage of this formulation is that it allows for the possibility that the initial debt to exports ratio differs from the long run desired level. Naturally, once the steady state is achieved, $\{(DE/X)^* - (DE/X)_{t-1} \} = 0$, and the rate of growth of commercial terms external debt is equal to $\varphi_0 = g + \pi^*$.[6] Assuming that the degree of openness of the country, measured by the ratio of exports to GDP ($\chi = X/Y$) remains stable, the steady state rate of growth of DE is compatible with maintaining a stable debt to GDP ratio $(DE/Y)^*$. With regards to (net) portfolio flows, I follow a similar approach, and I assume that their evolution through time is governed by the following equation:

$$(5) \qquad d \ln P_t = \sigma_0 + \sigma_1 \{ ((P / X)^* - (P_{t-1} / X_{t-1})) \}.$$

Where, as in the case of commercial debt, $\sigma_0 = g + \pi^*$. In the steady state, $(P / X)^* = (P_{t-1} / X_{t-1})$, and the second term in equation (5) disappears. I assume that foreign direct investment *flows* behave according to the following dynamic equation:

$$(6) \qquad (FDI_t / X_t) = (FDI_{t-1} / X_{t-1}) + \kappa \{((FDI / X)^* - (FDI_{t-1} / X_{t-1})) \}.$$

[6] Naturally the analysis can be easily extended to the case where DE grows at a rate equal to a fraction of $g + \pi^*$.

That is, the *flow* of FDI converges in the long run to a desired ratio relative to exports. The speed of convergence is given by κ.[7] I assume that the monetary authorities have a well-defined demand for international reserves, and that their goal is to maintain a stable ratio of reserves to exports. That is,[8] $d \ln R_t = \xi_0 + \xi_1 \{ ((R / X)^* - (R_{t-1} / X_{t-1})) \}$, and $\xi_0 = g + \pi^*$. With regards to grants and donations, I assume that they are exogenous (more on this later).

After manipulating the equations presented above, it is possible to obtain an expression for the *sustainable path* of the current account deficit. In order to facilitate the comparison between the approach developed here and other models of current account sustainability, it is useful to express the sustainable path relative to GDP. Under the assumption of a stable degree of openness (χ), the path of the current account to GDP ratio is given by:[9]

$$(7) \quad (cad_t / Y_t) = \alpha (\phi g + \pi^*) (DC_0 / Y_0) e^{g(\phi - 1)(t-1)} + \alpha \chi \delta_{t-1} d \ln (DE_t) + \alpha \chi \rho_{t-1} d \ln (P_t) + + (FDI_t / Y_t) + (don / Y)_t - \chi d \ln (R_t).$$

Where (DC_0 / Y_0) is the concessional debt to GDP ratio in the period immediately after the debt is forgiven under the HIPC initiative. As before, g is the rate of growth of real GDP, π^* is the international (dollar) rate of inflation, α is equal to the inverse of $(1 + g + \pi^*)$, χ is the degree of openness of the economy measured as the exports to GDP ratio, δ is the ratio of domestic debt to export, and ρ is the ratio portfolio investments to exports. This equation clearly captures the importance of concessional financing in determining the sustainable path of the current account through time. If, as most HIPC studies implicitly or explicitly assume, after the debt is forgiven the country will continue

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[7] Notice that while the behavior of the other components of the capital account has been modeled in terms of stocks, I have used a "flow approach" to describe FDI behavior. The reason for this is that there is little information on the desired stock of FDI; on the other hand, there is abundant information on the determinants of the flow of FDI investment.

[8] In the actual computations for the case of Nicaragua I assume that the initial reserves-to-GDP ratio is equal to the desired ratio. Alternative assumptions can be easily introduced into the analysis.

[9] It should be noted that the results obtained from this model refer to the current account deficit under the assumption that the country achieves a certain target rate of growth and a certain target rate of domestic inflation. In that sense these are conditional results are not the outcome of a general equilibrium exercise. This expression also assumes that the degree of openness, $\chi = X/Y$, is stable through time.

to have substantial access to concessional financing, ϕ will be high. The limiting scenario occurs when ϕ is equal to one. In this case, the first right hand side term in equation (7) will exhibit no dynamics and will collapse to $\alpha (g + \pi^*) (DC_0 / Y_0)$, an expression that is familiar from simple, static models of sustainability. In this case, which may be labeled as "optimistic," the concessional debt to GDP ratio achieved immediately the HIPC initiative (in period 0) is maintained indefinitely. If, alternatively, it is assumed that ϕ is smaller than one (but greater than zero), DC will increase in real dollar terms, while at the same time the DC to GDP ratio would decline through time. In the steady state long run, the concessional debt to GDP ratio (DC / Y) will converge to zero, playing no role in long run sustainability. This is, indeed, a more realistic scenario, and one that is consistent with the nature of the development process countries' accessibility to subsidized official financing tends to decline as GDP grows. In the analysis that follows I will concentrate on the case where $0 \leq \phi < 1$. Equation (7) indicates that the sustainable path of the current account will also depend on the evolution of commercial debt, portfolio investment, grants and on reserves policy. For each of these variables there are three important determinants of their short term behavior: (a) their initial value; (b) the long run desired ratio relative to exports; and (3) the speed of adjustment. Finally, the sustainable path of the current account also depends strongly on the real rate of growth of GDP: the higher the growth rate, the larger is the sustainable deficit. This simple result suggests that being overly optimistic about the future performance of the economy will tend to result in an underestimation of the external effort required to achieve sustainability. Edwards and Vergara (2001) have argued that this is the case in many HIPC-related exercises.[10]

In long run equilibrium, and under the assumptions of a stable degree of openness (χ) and of $0 \leq \phi < 1$, the steady state sustainable current account deficit will be given by:[11]

[10] Naturally, in the final analysis the rate of growth is an endogenous variable, and will depend on the nature and depth of the debt forgiveness program. Endogenizing the rate of growth is, however, beyond the objectives of the current paper.

$$(8) \qquad (cad / Y)^* = (DE/X)^* \chi \ (g + \pi^*) \alpha + \chi \ (FDI/X)^* + (P/X)^* \chi \ (g + \pi^*) \alpha - (g + \pi^*) \chi \ (B/X)^* + \chi \ (don / X).$$

Notice that in the framework developed here – and more specifically, in equations (7) and (8) – interest rates appear to play no role in on long run sustainability. The reason for this, of course, is that this analysis has focused on the *current account* and not on the *trade balance*. Interest rates (and dividend flows) play a key role, however, in determining the *trade balance* consistent with a specific sustainable current account path. In Section III I discus in some detail the role of interest rates in assessing broadly defined external sustainability in Nicaragua.

The analysis developed in this section may be interpreted as a more general version of the one taken by other studies on current account sustainability, including the works of Milesi-Ferreti and Razin (1998, 2000), Goldman-Sachs (1998), Edwards (2002a) and Deutsche Bank (2000). More specifically, the model presented here differs from traditional analyses in the following respects: First, it explicitly considers the existence of two types of external debt: concessional and commercial. In the longer run, however, the ratio of subsidized debt to GDP converges to zero. Second, the model developed here explicitly considers the existence of a well-defined demand for international reserves. Third, this model assumes that a sizable proportion of the country's concessional debt is forgiven within the context of the HIPC initiative. Fourth, it allows for a key role for grants and donations. Fifth, the approach developed in this paper explicitly considers remittances as an important source of capital account financing. And sixth, the current analysis puts particular emphasis on the transitional sustainable path of the current account balance.

From a policy analysis point of view, a useful exercise is to compare the sustainable primary balance that emerges from the model's simulation with the actual balances during the last few years. This comparison will provide some guidelines on the type of external adjustment – if any – that the country in question will have to undertake after the HIPC-sponsored debt relief is granted. In particular, this type of exercise will

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[11] If we assume a positive (DC / Y) in the longer run, equation (6) will have to be adjusted accordingly. This is simple, ands amounts to adding the term (DE/Y)* (g + π*) α to the right hand side of this

provide useful information in studies that assess the possible need for real exchange rate adjustments in the future.[12]

III. Current Account Sustainability and Debt Relief: A Case Study

In this section I illustrate the working of the model using data for Nicaragua, one of the poorest countries in the Western Hemisphere, and one that for decades has been burdened by an extremely high external debt. In 2000 Nicaragua's total external debt had reached a face value of $6.8 billion, representing 280% of the country's official GDP.[13] The World Bank and IMF (2000) have calculated that in terms of net present value this debt represented $4.5 billion, or approximately 180% of GDP.[14] The enhanced HIPC initiative contemplates reducing Nicaragua's external debt burden to a net present value of approximately US$ 1.32 billion or 150% of exports. This, in turn, amounts to 55% of official GDP. After forgiveness is granted, the face value of Nicaragua's external debt is expected to be approximately US$ 4.2 billion, or 167% of official GDP.[15]

In addition to its very high external debt, Nicaragua has other characteristics that make it an ideal candidate for a case study. First, it has a very large current account deficit, which in 1997-2001 averaged in excess of 37% of GDP. Second, it also has a very high domestic debt burden – in excess of 65% of GDP in 2002. This ratio is several times higher than that of other HIPC nations. Edwards (2002b) shows that the average domestic debt to GDP ratio in a group of HIPC countries is only 16.5%. Third, during the last few years Nicaragua has run very large fiscal deficits, with the primary deficit to GDP ratio exceeding 4% during 1999-2001. This deficit level is much larger than those of other Latin American nations, most of which run a primary surplus. Fourth, Nicaragua relies very heavily on grants and donations by NGOs to finance its public sector

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equation.

[12] For a recent discussion on debt relief under HIPC see Birdsall and Williaqmson (2002).

[13] There is general agreement that Nicaragua's official GDP underestimates "real" GDP. There is less agreement, however, on the magnitude of this underestimation. While according to the World Bank (2002) "adjusted" GDP is approximately 1.7 times the official figure, other experts have argued that the adjustment should be closer to 1.3 times. For the sake of consistency, in the rest of the paper I use official GDP data. The results, however, would not be affected significantly if adjusted data were used. I deal with this issue in the concluding remarks section.

[14] This figure assumes that Nicaragua has used all "traditional" debt relief mechanisms available to it under the so-called "Naples terms." See World Bank and IMF (2000), Tables 3 and 4.

[15] See World Bank and IMF (2000) for details. It is expected that debt relief under this initiative will be granted in mid-2003.

expenditures. And fifth, migrants' remittances represent a key source of current account financing.[16]

Before proceeding it is useful to discuss briefly the recent behavior of the actual current account deficit during the last few years. Relative to GDP this deficit has behaved as follows (See World Bank, 2002):

- 1997 31.8 %
- 1998 29.3 %
- 1999 37.0 %
- 2000 37.5 %
- 2001 33.0 %.

For the year 2002 a current account deficit of 31% of GDP is expected. To put things in comparative perspective, the median current account deficit in the Latin American nations during this period was less than 3.5%. Nicaragua has been able to maintain these extremely high deficits by not servicing its foreign debt, and by receiving significant aid and remittances from abroad

III.1 Parameterization of the Model

In Table 1 I present the parameter values used in the current account sustainability simulations for Nicaragua. These parameters have been taken from the Central Bank of Nicaragua, the Ministry of Finance and from studies on the Nicaraguan economy undertaken by the multilateral institutions.[17] It is useful to comment briefly on some of the parameter values used in the simulation, and presented in Table 1:

Post-HIPC Concessionary Debt to GDP Ratio, (DC_0 / Y_0): The HIPC initiative considers reducing the face value of the concessional external debt from a face value of US$ 6.8 billion, to a face value of US$ 4.2 billion. In early 2003, when the HIPC program for Nicaragua is expected to reach a "decision point" the new post-forgiveness

[16] On the behavior of the current account in Nicaragua see, for example, IMF (2001), Edwards and Vergara (2001) and Edwards (2002).

[17] On data sources, see Edwards (2002b) and the references. In order to facilitate the comparison with other studies, most of the ratios in Table 1 are provided relative to GDP. They may be converted into ratios relative to exports by dividing them by χ.

stock of concessional debt will represent approximately 167% of GDP. Thus, the value of (DC_0 / Y_0) used in the baseline computations is equal to 1.67.

Rate of Growth of Real GDP (in US$): The World Bank and the IMF (2000) have assumed that Nicaragua's real GDP will grow at 5.5% in real terms in the period 2002-2008 and at 5% into the longer run. In this study, however, and in order to investigate the role of growth on sustainability, I consider alternative values of real GDP growth, ranging from 2% to 7% per year. With respect to US inflation I assume 2.5% per year during the period under study.

Availability of Concessional Funds in the post HIPC Period: In the base case scenario I assume that concessional financing will increase at a rate below that of nominal GDP. More specifically, I consider that $\phi = ½$, and, thus, that DC grows through time at the rate $((g/2) + \pi^*)$. As Edwards and Vergara (2001) have argued, this assumption is consistent with independent and disaggregated projections on the expected future path of concessional financing made by the multilateral and bilateral donors.

Interest Rates: Although interest rates play no role in determining the sustainable path of the current account, they are a fundamental determinant of the sustainable path of the *trade account*. In the simulation exercise for the trade balance presented in Section III.3 below I consider a baseline value of the concessional rate of interest of 3% in nominal terms. This is the result of considering an interest rate of 0.75% on multilateral debt, and an interest rate on bilateral debt of 4.75% in nominal terms.[18] With respect to commercial debt, I assume in the base case scenario that Nicaragua can borrow, on average, at 15% in *nominal* US dollar terms. Although this number may appear to be on the high side, it is not. In fact, this interest rate is in line, in terms of the implicit country risk premium, with rates in some Latin American nations such as Brazil and Venezuela that have access to international financial markets. Also, it is slightly lower than the average interest rate paid by Central Bank of Nicaragua during the recent past.

As is clear from equations (7) and (8), the future behavior of grants and "donations" is a fundamental determinant of future current account sustainability. According to Edwards and Vergara (2001) it is highly likely that during the rest of the decade grants received by Nicaragua will experience an important decline. After

[18] See Edwards and Vergara (2001) and World Bank and IMF (2000).

analyzing data and policy statements from the major aid agencies and from bilateral donors, Edwards and Vergara (2001) conclude that the most likely profile of grants relative to GDP will look as follows:[19]

- 2003 10.0 %
- 2004 7.0 %
- 2005 6.5 %
- 2006 5.7 %
- 2007 5.0 %
- 2008 4.7 %
- 2009 4.5 %
- 2010 4.5 %.

This trajectory assumes that during the first full year of the post-HIPC, Nicaragua will continue to receive the same level of foreign grants as in the pre-debt forgiveness period: 10% of GDP. From that point onwards, it is assumed that grants decline steadily, until by the end of the decade they represent 4.5% of GDP. I assume that in the steady state (i.e. in the "very" long run), grants and donations will be at 1% of GDP. Although this represents a significant reduction relative to the current grants level, it is still quite substantial in the very long run. In the sensitivity analysis, however, I assume a more optimistic evolution of grants during the rest of the decade.

III.2 The Sustainable Path of the Current Account in Nicaragua: Basic Results

Table 2 contains the results obtained form the base case scenario simulation for the sustainable path of the current account to GDP ratio in Nicaragua. The results are provided for eight years, as well as for the steady state. Year 1 should be interpreted as the first year after the debt has been forgiven under the HIPC initiative. Thus, if debt relief is granted in mid 2003, year one should be interpreted as referring to 2004. The results are presented for alternative assumptions regarding the real growth of GDP, going from 2% to 7% of GDP.

[19] These projections are slightly more optimistic than those presented by the IMF and World Bank (2000) in the HIPC document for Nicaragua. In 2002 it is expected that grants will be 10% of GDP.

As may be seen, for a rate of growth of 5% per year the sustainable path of the current account deficit goes from 27% of GDP in year one, to 22% in year 3, to 17% in year 8. This trajectory implies a gradual *but very significant* reduction in the current account deficit trough time. This is particularly the case when compared with Nicaragua's current account deficit in 2002-2003: approximately 32% of GDP. There is little doubt that achieving an adjustment of this magnitude – almost ten percent of GDP in three years – will be difficult from a political economy point of view, and will have to include expenditure reduction and expenditure switching policies, including a substantial exchange rate devaluation.[20]

The baseline simulation in Table 2 assumes that $\phi = 0.5$. If, however, the availability of concessional financing is lower, the sustainable current account deficit would have to change in nontrivial ways. If, for example, $\phi = 0.33$, and concessional funds increase at an annual rate of $(\phi/3 + \pi^*)$, the sustainable deficit in year three will be 18%, and in year 8 it will reach 15% of GDP, representing a decline equivalent to 17% of GDP, in relation to 2001-02.

The simulation results in Table 2 depend on the assumptions on the future evolution of grants and donations presented above. In table 3 I report the estimated sustainable current account path under an alternative assumption regarding the future path of grants. More specifically, I assume that the international donor community is willing to provide a higher volume of funds during the years to come: in this alternative scenario, grants stay at 10% of GDP during the first four years of the post-HIPC era; they then decline by 1 percentage point of GDP per year. As may be seen, under this alternative scenario the reduction of the sustainable deficit is not as drastic as in Table 2. Still, these results suggest that 5 years after debt forgiveness is granted the sustainable deficit is (for a rate of growth of 5%) approximately 21% of GDP. That is 11 percentage points below its level in 2001-2002!

The results in Tables 2 and 3 indicate that in the steady state – and under the assumption of a 5% rate of growth of GDP -- Nicaragua would be able to sustain a current account deficit of the order of 5.4% of GDP. This is a relatively high figure, indeed higher than both the historical median for Latin America for the period 1970-1998

[20] Interestingly the simulations suggest that the sustainable path of the

and the sustainable deficit computed in other studies for a number of Latin countries (See Goldman-Sachs, 1997 and Edwards 2002a). There are two basic explanations for this relatively high value of the steady state sustainable current account deficit. First, as is evident from Table 1, the simulation exercise assumes a relatively high flow of FDI into the indefinite future. Second, these calculations assume that even in the steady state Nicaragua will have access to grants in the order of 1 % of GDP. Under a somewhat more pessimistic – some may even say more "realistic" – assumption regarding these two variables, the long run sustainable deficit would be reduce to 3.2-3.6% of GDP range, a figure that is more in line with the historical comparative evidence.

III.3 The HIPC Initiative and the Sustainable Trade Account in Nicaragua

The simulation results presented above focused on the sustainable path of the current account balance. From a policy point of view, however, it is also important to understand the sustainable path of the trade balance. Indeed, the magnitude of any future real exchange rate adjustment will be largely determined by the gap between the initial trade deficit and its sustainable path. In fact, a number of models have used an approach based on the sustainable current account and trade balances to compute the equilibrium real exchange rate (see Edwards and Savastano 2000, for details). From equation (1) it is clear that in order to compute the sustainable path of the trade balance it is necessary to have projections of: (a) net interest payments, dividend payments (net), profit remittances and royalties; and (b) migrants' remittances into Nicaragua. In this subsection I compute the sustainable path of the trade balance in Nicaragua for the first eight years of the post HIPC-period.[21]

As noted above, I assume a baseline value of the concessional rate of interest of 3% in nominal terms, and a commercial interest rate, on average, of 15% in nominal US dollar terms. In the base case scenario I make the assumption that dividends, profits and royalties initially represent 3% of GDP. This number is assumed to increase gradually to 3.5% of GDP during the next eight years.[22] These figures are consistent with Nicaragua's recent history, as well as with the international evidence. Migrants' remittances have historically represented approximately 13.5% of Nicaragua's GDP. A

[21] I make no attempt to compute the steady state trade balance. The reason is that it is particularly difficult to estimate the very long run behavior of dividends, profits, royalties and, especially, migrants' remittances.
[22] See Banco Central de Nicaragua, "Informe Sobre la Deuda Interna" Various Issues.

number of studies have found that remittances tend to be highly stable through long periods of time. In the exercise reported here I assume that the flow of remittances increases slightly, to 14.5% of GDP, during the first eight years of the post HIPC era.

In the year 2000 Nicaragua's actual trade deficit was an astounding 40% of GDP; this figure declined in 2001 to 37% of GDP, and in 2002 it is expected that the deficit will reach 35% of GDP. In Table 3 I present the base case simulation results for the sustainable path of the trade deficit. As may be seen, assuming a 5% rate of growth of real GDP, the sustainable trade deficit is 31% of GDP in the first year after debt is forgiveness. By year three the sustainable deficit is expected to be 26% of GDP -- almost a 10-percentage points reduction from its level in 2002 --, and in year eight the sustainable deficit is 22% of GDP. There is little doubt that an adjustment of this magnitude will require a substantial depreciation of the real exchange rate. The exact magnitude of this adjustment will depend on a number of factors, including the elasticities of supply of different exports categories, the elasticities of import demand, and the future evolution of the terms of trade. Using a framework similar to the one developed in this paper, Edwards and Vergara (2001) have calculated that in the post HIPC period Nicaragua's real exchange rate will have to be depreciated between 17 and 24% relative to its 2002 level. The simulation results presented in this section also indicate that the sustainable path for the current account deficit is sensitive to the assumptions about the country's rate of growth. This suggests that overly optimistic growth projections – something that the multilateral institutions tend to do – will result in an underestimation of the type of adjustment effort required to put the country on a sustainable path.

III. Current Account Adjustment and Fiscal Sustainability

Surprisingly, by focusing on *external sustainability,* the multilateral institutions seem to have ignored issues related to domestic debt when designing the HIPC initiative. A comprehensive answer to the macroeconomic sustainability question, however, requires going beyond the country's external debt, and to consider the sustainability of *aggregate* public sector debt, including both foreign as well as domestic debt. While many HIPC nations have little domestic debt, others have accumulated a significant stock of debt that has been purchased by the local banking sector, pension funds and

individuals. Indeed, by ignoring the role of domestic debt, sustainability analyses may underestimate the magnitude of the fiscal effort that poor countries will have to make in the post-HIPC era. Very large required fiscal adjustments could have, in turn, important political economy consequences. First, the adjustment may result in a reduction of funds available to implement the anti-poverty programs. And second, very large reductions in primary expenditures may result in political instability and reform backtracking.

Nicaragua is, perhaps, the best example of a country with a very large, dollar-linked *domestic sector* debt, issued both by the Treasury and the Central Bank of Nicaragua. This stock of domestic debt – which in late 2001 reached 65% of GDP – has different origins, including bonds issued by the treasury to compensate individuals whose property was expropriated during the Sandinista rule, and bonds issued by the Central Bank to support commercial banks that failed during the late 1990s and early 2000s – see World Bank (2002), and Lachler (2001) fore details. It is important to notice that this domestic debt ratio (at 65% of GDP) is high from a comparative perspective. This is so, quite independently of the fact that Nicaragua already has a very large concessional debt burden, and that Nicaragua's official GDP is likely to be significantly underestimated.

A particularly severe problem in countries that face Nicaragua-type problems – and one that has received little attention -- is that the large real exchange rate devaluation required to achieve *external sector sustainability* will generate an increase in the domestic debt to GDP ratio, threatening *fiscal sustainability*. Using an analysis along the lines developed in this paper, it is possible to derive an expression for the sustainable path of the *sustainable primary fiscal deficit* (pb) compatible with fiscal sustainability:

$$(9) \quad (pb_t / Y_t) = [\{ g\phi + \pi^* - r_t^C \} (DC_0 / Y_0) e^{\{(d\,rer/rer) - (g\phi)\}(t-1)} + \{ g + \pi^* - r_t^D \} (DD_0 / Y_0)) e^{(d\,rer/rer)(t-1)}] \alpha - (g + \pi)(B_0 / Y_0).$$

Where in this case DD_0 is the initial level of domestic (dollar-linked) public sector debt, and $(d\,rer/rer)_t$ is the change in the real exchange rate in period t. The RER, in turn, is assumed to evolve through time according to the following equation: $rer_t = rer^* + (rer^* - rer_0) e^{-\gamma t}$. Here, rer * is the equilibrium real exchange rate, and γ is the rate at which

RER disequilibria are eliminated through time. (B_0 / Y_0) is the initial ratio of based money to nominal GDP. A simulation exercise for the case of Nicaragua indicates that in order to move to a fiscally sustainable path, the country will have to implement a fiscal adjustment in the order of 6-8% of GDP in the first two years after the HIPC initiative is implemented.[23]

III. Concluding Remarks

A fundamental goal of the debt relief HIPC initiative is to help poor countries move towards macroeconomic sustainability. The World Bank and the IMF have argued, however, that this will not be automatic, and will require implementing reforms that will help accelerate growth. The model developed in this paper shows that whether a country indeed achieves external sustainability is likely to depend on two additional set of variables: (1) The availability of concessional loans going forward. And (2), the future path of grants and donations. The application of the model to the case of Nicaragua illustrates the challenges of the post HIPC period. The results of this exercise indicate that, for a reasonable set of assumptions regarding future GDP growth, concessional loans and donations, Nicaragua will have to undertake an extremely severe external sector adjustment in the next four years; this adjustment is likely to require a massive real exchange rate devaluation. This real exchange rate change will, in turn, to introduce fiscal difficulties in the future. Whether this adjustment will affect the country's ability to implement an effective poverty reduction program is still an open question.

[23] Details on this simulation are available on request.

Table 1: Parameter Values Used in Current Account Sustainability Analysis for Nicaragua

Parameter	Symbol	Assumed Value	Comments and Sources
Initial Post-HIPC Concessional debt to GDP ratio	(DC_0 / Y_0)	167%	Taken from HIPC documents, including the "Decision Point Document"
Initial (net) non concessional external debt to GDP ratio	(DE_0 / Y_0)	10 %	Computed from data on flows obtained from different official documents.
Initial (net) portfolio holdings of Nicaraguan stock by foreigners	(P_0 / Y_0)	5 %	This number is compatible with World Bank models. It is, however, somewhat high from a comparative perspective.
Steady sytate (net) non concessional external debt to GDP ratio	$(DE / Y)^*$	35 %	This number is closer to what international organization and investment banks have calculated for poor Latin American countries. See, fore example, the analysis in Goldman-Sachs, GS-SCAD model, released in 1996.
Steady state (net) portfolio holdings of Nicaraguan stock by foreigners	$(P / Y_0)^*$	5 %	Figure comparable to that of other low income countries
Initial ratio of FDI to GDP	(FDI_0 / Y_0)	0.09	Taken from data from the Banco Central de Nicaragua
Steady State equilibrium ratio of FDI to GDP (and speed of adjustment)	$(FDI / Y)^*$	0.025	The initial FDI ratio is extremely high for international – and in particular for Latin American – standards. Its high value is the result of two basic factors: (1) The very initial level of FDI;

			and (2) recent increased investments as a result of Hurricane Mitch. We assume that this FDI ratio declines quite slowly (an adjustment factor of 0.075) to a level corresponding to 2.5% of GDP.
Long run rate of accumulation of portfolio and non concessional external debt	$(\Delta DE / DE)$, $(\Delta P / P)$	$(g + \pi^*)$	Speed of adjustment assumed to be 0.3 in base case scenario
Degree of openness of the economy	$\chi = X/Y$	Taken from historical data and assumed to be equal to 0.37 and stable	Used to write sustainability equations in terms of GDP
Rate of Growth of Concessional Debt	$(\phi g + \pi^*)$	In the base case scenario it is assumed that $\phi = 0.5$. This implies that DC grows in real terms. The DC to GDP ratio, declines through time, however.	Taken from independent projections by the multilateral and bilateral aid organizations. See Edwards and Vergara (2001) for details.
Rate of growth of nominal GDP in US dollars	$(g + \pi^*)$	As in section III we assume several alternative values for real growth (g), ranging from 2% to 7%; we assume a rate of US inflation of 2.5% per year.	The sustainable path of the primary balance will critically depend on the growth assumptions.
Interest rate on commercial funds	r^D	15%	Taken from projections based on comparable countries
Domestic rate of inflation	π	8.5%	The baseline case considers 8.5%. Alternative numbers in sensitivity analysis.
Interest rate on concessional funds	r^C	3.0%	Taken from projections made by IDA and IMF
Monetary base to GDP ratio	(B / Y)	0.09	Actual ratio in 2001; we assume that it is obtained in the long run. Alternative numbers are considered in sensitivity analysis.

Source: Taken from Banco Central de Nicaragua, World Bank (2002), IMF and World Bank (2000), and Edwards and Vergara (2001).

TABLE 2
Sustainable Path for the Current Account Deficit in Nicaragua
(% OF GDP)

	GROWTH					
Year	**2.00%**	**3.00%**	**4.00%**	**5.00%**	**6.00%**	**7.00%**
1	24.46	25.20	25.91	26.62	27.30	27.98
2	20.86	21.56	22.24	22.90	23.53	24.15
3	19.81	20.48	21.12	21.74	22.33	22.89
4	18.52	19.16	19.76	20.34	20.88	21.40
5	17.37	17.98	18.55	19.09	19.59	20.06
6	16.67	17.25	17.79	18.29	18.75	19.17
7	16.11	16.66	17.16	17.63	18.05	18.43
8	15.78	16.30	16.78	17.20	17.59	17.93
St. State	4.69	4.96	5.22	5.49	5.75	6.02

Source: Computed by the author. See text for details.

TABLE 3

Sustainable Path for the Current Account Deficit in Nicaragua Under Optimistic Assumption on Future Availability of Grants

(% OF GDP)

	GROWTH					
Year	**2.00%**	**3.00%**	**4.00%**	**5.00%**	**6.00%**	**7.00%**
1	24.46	25.20	25.91	26.62	27.30	27.98
2	23.86	24.56	25.24	25.90	26.53	27.15
3	23.31	23.98	24.62	25.24	25.83	26.39
4	21.82	22.46	23.06	23.64	24.18	24.70
5	20.37	20.98	21.55	22.09	22.59	23.06
6	18.97	19.55	20.09	20.59	21.05	21.47
7	17.61	18.16	18.66	19.13	19.55	19.93
8	16.28	16.80	17.28	17.70	18.09	18.43
St. State	4.69	4.96	5.22	5.49	5.75	6.02

Source: Computed by the author. See text for details.

TABLE 4
Sustainable Path for the Trade Deficit in Nicaragua
(% OF GDP)

	GROWTH					
Year	**2.00%**	**3.00%**	**4.00%**	**5.00%**	**6.00%**	**7.00%**
1	28.93	29.69	30.43	31.15	31.86	32.56
2	25.30	26.05	26.77	27.47	28.16	28.82
3	24.22	24.96	25.67	26.36	27.01	27.64
4	22.90	23.63	24.33	24.99	25.62	26.21
5	21.72	22.44	23.13	23.77	24.37	24.94
6	20.98	21.70	22.37	22.99	23.57	24.11
7	20.38	21.09	21.75	22.35	22.91	23.43
8	20.01	20.72	21.36	21.95	22.49	22.98

Source: Computed by the author. See text for details.

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