

WPS 1525

POLICY RESEARCH WORKING PAPER 1525

Is Ethiopia's Debt Sustainable?

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The international development community has begun to recognize that options aimed at providing debt relief to countries where debt is not sustainable need to be seriously explored.

When is debt not sustainable? How does one examine debt sustainability in the broader context of macroeconomic management?

The World Bank
Eastern Africa Department
Country Operations Division
October 1995



Summary findings

The debt burden facing a number of low-income countries has received considerable international attention. The international development community has begun to recognize that options aimed at providing debt relief to countries where debt is not sustainable need to be seriously explored. When is debt not sustainable? Should external debt problems be separated from those related to domestic debt problems? How does one examine debt sustainability in the broader context of macroeconomic management?

Ghani and Zang build on the Branson model of debt sustainability and apply it to a severely indebted, low-income country — Ethiopia. They provide a simplified framework where debt sustainability (both domestic and external) is an integral element of macroeconomic stability. Interactions between different policy variables (such as debt, fiscal, and interest rate policies), outcome variables (such as GDP and export growth), and international economic conditions (international interest rates) jointly define whether a country is on a sustainable debt path. Equations on debt sustainability can be

estimated under this framework, and this could be easily estimated for other countries, thus providing a good starting point for examining debt sustainability.

There are three lessons from the empirical analysis of Ethiopia.

- First, a strong reform program is critical in bringing the country back on a sustainable debt path.
- Second, the issue of debt relief requires serious consideration by the international development community.
- Third, growth and resource mobilization need adequate emphasis to ensure that debt is repaid.

For most severely indebted low-income countries in Africa, this would require renewed emphasis in making agriculture a dynamic sector of the economy and building forward and backward links between agriculture and the rural economy. In countries where famines are recurrent, dynamic agricultural growth is essential not only for debt sustainability but also for achieving food security.

This paper — a product of the Country Operations Division, Eastern Africa Department — is part of a larger effort in the department to examine debt sustainability issues. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Afsar Nokhostin, room J10-285, telephone 202-473-4150, fax 202-473-8262, Internet address anokhostin@worldbank.org. October 1995. (14 pages)

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¹ The authors are grateful to Carl Jayarajah, Prof. William Branson, Shahid Yusuf, David Yuravlivker, Deepak Bhattasali, and Fayez Omar for help and guidance.

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Table of Contents

Introduction and Summary	2
The Extent of Ethiopia's Debt Problem	3
Structure of External Debt	4
Government's Debt Strategy	5
The Macroeconomic Framework	6
Fiscal and Debt Dynamics	8
Ethiopia's Debt Dynamics	8
Debt, Drought, and Budget Scenarios	11
Conclusions	13
References	14

Tables

Table 1: Ethiopia's Debt Service Burdens	4
Table 2: Ethiopia--External Debt Stock	4
Table 3: Ethiopia--Debt Relief Projections	6
Table 4: Ethiopia's Macroeconomic Indicators, FY1990-95	10
Table 5: Ethiopia's Debt Dynamics, FY1990-95	12
Table 6: Debt Dynamics under Different Scenarios, FY1996	12

Introduction and Summary

1. The problem of debt burden facing a number of low-income countries has received considerable international attention in recent times. The international development community has begun to recognize that options would need to be seriously explored aimed at providing debt relief to those countries where debt is not sustainable. When is debt not sustainable? Should external debt problems be separated from those related to domestic debt problems? How does one examine debt sustainability in the broader context of macroeconomic management. These important issues have been addressed in the literature on debt sustainability.² Among them, Branson (1990) presented a simple framework in which debt sustainability (both domestic and external) is an integral element of macroeconomic stability. In this framework, debt sustainability (both domestic and external) is an integral element of macroeconomic stability. Interactions between different policy variables (such as debt, fiscal and exchange rate policies), and outcome variables (such as GDP and export growth), as well as international economic conditions (international interest rates) jointly define if the country is on a sustainable debt path. This paper applies such a framework in the context of Ethiopia.

2. Ethiopia is a severely indebted low-income country (SILIC).³ When it came to power in May 1991, the Transitional Government of Ethiopia inherited a large debt overhang, compounded by a fragile macroeconomic environment. In 1993, the Government launched a reform and recovery program, supported by IDA, IMF, and other donors, aimed at establishing a stable macroeconomic environment, putting the country on a sustainable debt path, and resuming growth. Being largely an agricultural economy, characterized by low yields, Ethiopia has frequently been affected by exogenous shocks such as droughts and famines, which have played a critical role in determining growth and inflation. The macroeconomic framework described in this paper provides analyses on how the debt path of Ethiopia could be affected by droughts and famines and what policies would be required to bring the economy on a sustainable path. Relying on narrow macro policy instruments alone will not be sufficient. This would need to be complemented with sustained efforts to accelerate growth, with increased attention towards rural development and policies aimed at improving productivity and food security.

3. The rest of this paper is organized as follows. The first part presents a brief overview of the extent and scope of the debt problem facing Ethiopia. The second part provides the macroeconomic framework for examining Ethiopia's debt dynamics. The third part presents empirical findings on the sustainability of Ethiopia's debt path. Next, projections are presented on the sustainability of the future debt path under different scenarios, followed by conclusions.

² For example, Branson (1990), Anand and van Wijnbergen (1989), Cohen (1988), Fischer and Easterly (1990), and World Bank (1992).

³ See World Debt Tables 1994-95, Volume 1, chapter 3.

4. Evidence shows that Ethiopia was clearly on an unsustainable debt path prior to the launch of its reform program. In 1993, with the start of its reform program, Ethiopia has begun to make the transition from the unsustainable to a sustainable debt path. However, this transition is not solidly sustainable in the face of shocks, as the problem of debt overhang continues to be severe. Ensuring the sustainability of Ethiopia's debt would require actions on two fronts: debt stock reduction and prudent macro management. First, relief on Paris Club debt on Naples Terms High, would help to reduce the debt overhang. This would need to be complemented with retiring outstanding commercial debt in arrears on a substantial discount. Similar debt relief would be needed from non-Paris Club group of countries. Second, Ethiopia would also need to take more aggressive actions on the policy reform front.

5. The need for further strengthening the policy environment is reinforced by the different projections presented on how Ethiopia could maintain the sustainability of its future debt path, in the event that the country suffers from a severe drought, and under other scenarios. A key finding here is that in the absence of a substantial fiscal effort, Ethiopia would slide back towards an unsustainable debt path. Under the worst case scenario, if the country is affected by a major drought which results in zero real GDP growth, and if the policy makers wish to restrain inflation to less than 5 percent per annum, then they would need to generate a surplus on primary fiscal balance to prevent the debt path from becoming unsustainable.

The Extent of Ethiopia's Debt Problem

6. The extent of debt problem facing Ethiopia is presented in Table 1. Selected ratios on debt service burdens for Ethiopia are compared with the average for all SILICs, comprising of 32 countries, as well as with individual East African countries. The table shows that the ratio on scheduled debt service to exports of goods and services at 47.4 percent for Ethiopia was slightly greater in comparison to the average of 43.0 percent for all SILICs. Ethiopia's scheduled debt service to exports ratio was substantially greater than its actual debt service to exports ratio, highlighting that Ethiopia has accumulated arrears on its external debt. In 1993, the actual debt service to exports ratio for Ethiopia was just 9 percent in comparison to 18 percent for all SILICs. This is one indicator of debt overhang, resulting from arrears accumulation, and it is substantially more significant in Ethiopia in comparison to other SILICs (see World Debt Tables, 1994-95, Volume 1, Chapter 3). At end-1994, Ethiopia's ratio of the present value of debt service obligations on its existing debt stock to exports of goods and services was about 370 percent.⁴

⁴ The ratio is computed by taking the ratio of the present value of debt service on its existing debt stock as of end-1994 (discounted at a rate of 8 percent) to average exports for the past three years (1992-94).

Table 1: Ethiopia's Debt Service Burdens, 1993 (percent)

Country	Scheduled debt service to exports	Actual debt service to exports	Scheduled debt service to exports plus grants	resource transfers to GDP
SILICs	43.0	18.2	36.8	4.9
Ethiopia	47.4	9.0	23.3	24.7
Kenya	29.7	28.0	25.5	2.5
Tanzania	78.8	25.1	36.8	29.4
Uganda	81.1	60.6	34.3	8.6

Source: World Debt Tables, 1994-95, Volume 1, Chapter 3; 1991-93 average for exports and grants.

Structure of External Debt

7. Ethiopia's total long-term external debt stock was US \$4.3 billion as of May 30, 1995 (excluding US\$ 72 million owed to IMF, and US\$ 28 million of short-term debt),

Table 2. Ethiopia - External Long-Term Debt Stock by Term and Type of Creditor

Type of Debtor	Before expected debt relief (end May 95)		After expected debt relief	
	Millions US\$	% of total LDOD	Millions US\$	% of total LDOD
Long-Term Debt (LDOD)*	4,299	100.0	3,188	100.0
Public and publicly guaranteed	4,299	100.0	3,188	100.0
Private non-guaranteed	0	0.0	0	0.0
Public and Publicly Guaranteed	4,299	100.0	3,188	100.0
Official Creditors	3,593	83.6	2,889	90.6
Multilateral	2,285	53.2	2,285	71.7
Concessional	2,051	47.7	2,051	64.3
IDA	1,398	32.5	1,398	43.9
Non-Concessional	234	5.4	234	7.3
IBRD	0	0.0	0	0.0
Bilateral	1,308	30.4	604	18.9
Paris Club	701	16.3	234	7.3
Non-Paris Club	607	14.1	370	11.6
Bilateral Commercial	237	5.5	0	0.0
Commercial	706	16.4	299	9.4
Bonds	0	0.0	0	0.0
Commercial banks	299	7.0	299	9.4
Export Credit	0	0.0	0	0.0
Suppliers Credit	407	9.5	0	0.0
Private Non-Guaranteed	0	0.0	0	0.0
LONG-TERM DEBT (LDOD)	4,299	100.0	3,188	100.0

Source: Ministry of Finance, Ethiopia

Note: Debt relief includes the possible Paris Club debt relief based on Naples Terms High (67% debt stock reduction) and the Commercial Debt Buyback on suppliers credit and other bilateral commercial debts.

* Outstanding and disbursed; does not include Rouble denominated loans (3.3 billion Roubles), and interest arrears.

which was equivalent to about 90 percent of FY95 GDP. This does not include 3.3 billion of Rouble debt owed to Russia; the Ethiopian and Russian authorities are currently negotiating the

exchange rate to be applied to this debt. About US\$ 2.3 billion of the total debt is owed to multilateral creditors, of which US\$ 1.4 billion is owed to IDA. About US\$ 1.3 billion is owed to official bilateral creditors. Within the official bilateral creditor group, around US\$ 701 million is owed to the Paris Club and US\$ 607 million is owed to non-Paris Club creditors. Within the non-Paris Club group, bilateral debt of a commercial nature amounts to US\$ 237 million. Straight commercial debt amounts to US\$ 706 million, or 16 percent of the total long-term debt stock. Within this group, commercial banks are owed US\$ 299 million. These are mainly related to borrowings by Ethiopian Airlines. Most of this debt is collateralized and Ethiopian Airlines is current with its payments to the commercial banks. Suppliers credits, that have been in arrears for sometime, amount to US\$ 407 million, or nearly 10 percent of the total long term debt stock.

Government's Debt Strategy

8. The source of the present external debt problem can be traced to policies followed under the previous regime, which included large borrowings for defense purposes, inappropriate macroeconomic policies, and the channeling of resources to inefficient public undertakings which had very low rates of return. Export performance suffered considerably under these restrictive policies. Furthermore, the selection of projects without proper appraisal, delays in project implementation and the lack of proper follow-up, had adverse effects on the optimal use of external resources. Thus, many projects were not able to pay back their costs.

9. Ethiopia has prepared and adopted a comprehensive debt management strategy, many aspects of which are already being implemented. Debt relief of close to US\$ 400 million was obtained as a result of negotiations with the Paris Club in December 1992, mostly resulting from rescheduling rather than stock reduction. Also, with financial assistance from Norway, Ethiopia's debt to the IBRD was eliminated through prepayment. The Government has emphasized that its debt strategy is an integral part of its macroeconomic management strategy and has strictly limited the scope for public external borrowing on non-concessional terms.

10. The projections presented in Table 3 show that Ethiopia's external debt indicators would improve significantly if, as planned, commercial debt in arrears is retired at a substantial discount and favorable debt relief is obtained from the Paris Club and non-Paris Club creditors. These measures are expected to reduce the ratio of the total debt stock to GDP, which is currently around 90 percent, to 65 percent. Assuming improved debt management and an enabling policy environment, the debt stock to GDP ratio would fall further to 50 percent by year 2000, and to 40 percent by year 2010. After debt relief, multilateral creditors will account for more than 70 percent of the reduced stock of the long-term debt. IDA will account for 44 percent of the total debt stock. The projections reported in Table 3 show that the total debt service as a ratio of exports of goods and services will fall from 46 percent in 1994 (before debt relief) to 15 percent in 1995 (after debt relief). It is projected to fall to 5 percent by year 2010. IDA debt service as a

ratio of exports of goods and services will average around 2 to 3 percent and is projected to remain at this level through the year 2010.

Table 3: Ethiopia - Debt Relief Projections

(US\$ million at current prices)

	Est. 1994	Proj. 1995	Proj. 1996	Proj. 1997	Proj. 2000	Proj. 2003	Proj. 2007	Proj. 2010
Total debt service, before debt relief*	365.0	336.0	350.0	341.0	360.0	259.0	244.0	292.0
o/w debt service to IDA	20.0	24.8	27.1	29.0	40.8	51.4	65.3	78.8
Debt service reduction due to debt relief**	0.0	169.2	176.4	165.6	148.5	108.0	108.0	120.0
Total debt service after debt relief	365.0	166.8	173.6	175.4	211.5	151.0	136.0	172.0
Before debt relief								
Debt service/Exports of goods & services	46	30	29	26	24	14	10	9
Debt stock/GDP (%)	93	89	82	78	65	56	51	47
After debt relief								
Debt service/Exports of goods & services	46	15	14	14	14	8	5	5
Debt stock/GDP (%)	93	65	60	59	50	45	43	40
IDA debt service/Exports of G & S (%)	3	2	2	2	3	3	3	3

Note: For these projections, annual average growth rates of real GDP and real exports are 5.5 percent and 5.7 percent respectively, for the period 1996-2010; Rouble-denominated loans amounting to 3.3 billion Roubles are not included.

* Assumes new commitments from IDA and other multilateral and official bilateral sources remain constant in real terms.

** Assumes successful completion of Commercial Debt Buyback operation, parallel operation to retire bilateral commercial debt, and Paris Club relief on Naples Terms High.

The Macroeconomic Framework

11. The basic framework for the macro analysis is the standard model of external and internal balance that assigns fiscal policy to internal balance and monetary policy to external balance.⁵ The internal objective in the original Mundell analysis was the level of output or unemployment. Here, the objective is an acceptably low rate of inflation. Mundell took the balance of payments --a flow variable-- as the external objective; here, it is defined as an acceptable level of foreign exchange reserves, a stock variable. At the aggregate level, the government controls two instruments: the level of the budget deficit (or surplus) and the mix of financing the deficit between borrowing from the public (domestic debt), including abroad (external debt), and money

⁵ A detailed application is presented by Professor Branson in Trade Policy Reforms Under Adjustment Programs, Operations Evaluation Department, World Bank, March 1992. This model goes back to Salter (1959) and Swan (1968). The specific assignment comes from Mundell (1962).

issue.⁶ The Mundell assignment sets the budget deficit to control aggregate demand to achieve the inflation objective, then sets the financing mix to maintain the reserve level, adjusts the budget setting to allow for feedback from the financing mix onto inflation, and iterates to a solution where both objectives are approximately met. In this framework, debt sustainability (both domestic and external) is an integral element of macroeconomic stability. Interactions between different policy variables (such as debt, fiscal and interest rate policies), and outcome variables (such as GDP and export growth), as well as international economic conditions (international interest rates) jointly define if the country is on a sustainable debt path.

12. In the application of this framework for Ethiopia, we assume that an unacceptably high rate of inflation indicates the need for reduction in the primary (or non-interest) budget deficit, or increase in the surplus. This can be interpreted as reducing inflation by reducing aggregate demand, or it can be interpreted as reducing the need for inflation tax financing of the deficit. Thus, the internal balance application is straightforward--a reduction in primary deficit is necessary for inflation reduction.

13. The application for external balance is somewhat more complex.⁷ A "flexible" or "realistic" exchange rate policy requires moving the nominal exchange rate to prevent appreciation of the currency in real terms, or generate some gradual real depreciation. Given that there is always some degree of international capital mobility, if the real interest rates get too far below international rates, there will be a capital outflow and loss of reserves. This implies that maintenance of external balance requires keeping real interest rates high enough relative to international rates that the relevant investors are willing to keep their deposits and other investments in the country. Thus, monetary policy must manage the mix of financing the deficit such that

$$(1) \quad r > r^* + de + rp,$$

where r is the domestic real interest rate, r^* is the international real interest rate, de is the expected rate of depreciation of the real exchange rate, e , and rp is a risk premium that embodies both the market's estimate of the risk in holding local-currency assets and the degree of capital mobility. In countries with open capital markets, the risk premium is positive, and domestic rates are tied closely to international rates. On the other hand, a country with air-tight capital controls could effectively maintain a negative risk premium, and determine its interest rate independently of international market conditions.

⁶ See J. A. Frenkel and A. Razin, Fiscal Policies and the World Economy (MIT Press, 1987), for a complete analysis of the effects of the composition of government spending and taxation.

⁷ The key drawback of this framework is that it assumes that capital is internationally mobile. Also, this framework does not address the problem that not all output growth can be converted into foreign exchange earnings.

Fiscal and Debt Dynamics

14. The above approach to the analysis of external and internal balance can also be interpreted in terms of the analysis of debt sustainability.⁸ This paper adopts the approach taken by Branson (1990), which develops the government's budget constraint in real terms into a formula for the growth of the ratio of total debt to GDP:

$$(2) \quad db = (r - n)*b + p - s,$$

where b is the ratio of debt to GDP, db is its arithmetic (not percentage) annual growth, r is the real interest rate, n is the growth rate of real GDP, p is the primary deficit after grants as a fraction of GDP, and s is the ratio of seigniorage to GDP. Seigniorage here includes both the "inflation tax" and real growth in demand for base money as the economy grows.⁹

15. The analysis of external and internal balance using the debt dynamics equation could proceed as follows. Seigniorage (s) would be determined from the projected growth rate and inflation objective, combined with an estimate of the velocity of base money. The real interest rate would come from the arbitrage equation (1), given the outstanding stock of debt. In general, the Government knows approximately the level of the rate that is needed to prevent excessive capital outflow, or capital controls may eliminate the problem. Equation (2) would then yield the value of the primary deficit (p) that is consistent with internal balance.

16. In some cases, estimates of the velocity of base money and its sensitivity to changing interest rates or inflation expectations, or of the relation between increasing debt issue and interest rates, may be unavailable or unreliable. In these cases, policy must proceed incrementally. The directions for policy change indicated by the modern debt dynamics approach are the same as those indicated by the classic internal-external balance approach. If inflation is unacceptably high, reduce the primary deficit. If foreign exchange reserves are too low, or falling too fast, tighten monetary policy, that is, shift from money finance toward debt finance of the existing deficit.

Ethiopia's Debt Dynamics

17. The debt dynamics for Ethiopia can be analyzed more precisely by looking at the components of the equation giving the change in the ratio of debt to GDP, equation (2) above, repeated here for reference:

⁸ See, for example, R. Anand and S. van Wijnbergen, "Inflation and the Financing of Government Expenditure: An Introductory Analysis with an Application to Turkey," *World Bank Economic Review* 3, January 1989, pp. 17-38.

⁹ The seigniorage term in the debt dynamics equation (2) is $s = (dp + n)/v$, where dp is the inflation rate, n is the real GDP growth rate, and v is the velocity of base money.

$$(2) \quad db = (r - n) * b + p - s.$$

where b is debt ratio, and db is its annual arithmetic change, r is the real interest rate, n is real GDP growth rate, p is primary fiscal balance as a fraction of GDP, and s is the ratio of seigniorage to GDP. It is known that b is positive as Ethiopia is a debtor country. Thus the sign of the growth term $(r - n)$ will tell whether the debt process is itself unstable: if $(r - n)$ is positive, the debt ratio will tend to be growing by feeding on itself. The country is borrowing to service its debt. In this case, for the overall process to be stable, the primary deficit less seigniorage term $(p - s)$ would have to be negative; the primary deficit would have to be less than the amount that can be financed by seigniorage. For the debt path to be sustainable, db would need to be non-positive.

18. Table 4 presents data on the relevant variables. For the sake of simplicity, average figures are compared for the pre-reform period, FY90-FY92, and the reform period, FY93-FY95. Projections are also provided for FY96. The average annual ratio on external debt to GDP increased from 44 percent during the period FY90-92 to 97 percent per annum during the period FY93-95. Total debt (including domestic and external debt) to GDP ratio increased from 75 percent to 126 percent per annum during the same period. Debt ratios increased during this period as Ethiopia borrowed, largely on concessional terms, to finance its reform and recovery program; part of the increase is also explained by the devaluation of the domestic currency. The average real GDP growth rate increased from a negative 2.2 percent per annum during FY90-92 to 6.4 percent during FY93-95.

19. Calculation of the real interest rate (r) for inclusion in the growth factor $(r - n)$ is more problematic than the growth rate (n). Ethiopia had controlled financial markets and maintained negative real interest rates, measured in domestic currency, prior to reform, although these controls were not effective. With the implementation of the program, Ethiopia has liberalized its financial markets and raised real rates. In Table 4, LIBOR 6-month interest rate is reported. Real interest rate is estimated using the forward inflation rate for industrialized countries. There are two arguments for using international real interest rates in the growth factor $(r - n)$, instead of domestic rates. First, a large proportion of Ethiopia's debt are external debt. Thus, the use of international interest rates would be more appropriate. Second, the opportunity cost to the economy of internal funds is the international real interest rate they could earn abroad. Finally, data on domestic interest rates are not reliable. These arguments lead us to base the estimates of the relevant real interest rate on the international rate.

20. The change in the primary fiscal deficit (p) is also shown in Table 4. Ethiopia has made a substantial effort to reduce its primary fiscal deficit. As a ratio of GDP, primary deficit was reduced from 8.5 percent per annum during FY90-92 to 5.4 percent during FY93-95, amounting to a reduction in primary deficit by 3.1 percentage points of GDP. Nevertheless, primary deficit

continues to be high in comparison to most other reforming countries. The last ingredient is the calculation of seigniorage revenue (s). Table 4 shows that seigniorage revenue amounted to 4.2 percent of GDP per annum during the period FY90-92, and it fell marginally to 4.0 percent of GDP during the period FY93-95.

Table 4: Macro indicators, FY1990-95

	FY1990 actual	FY1991 actual	FY1992 actual	FY1993 actual	FY1994 estimated	FY1995 estimated	FY90-92 average	FY93-95 average
External debt, million US\$	3780.3	4169.2	4360.1	4728.6	4883.5	5025.7	4103.2	4879.3
External debt, million Birr	7825.2	8630.2	9025.4	22044.7	29056.8	31963.5	8493.6	27688.3
Domestic debt, million Birr	5027.0	6046.0	7033.6	7780.9	8268.9	8204.0	6035.5	8084.6
Total debt, million Birr	12852.2	14676.2	16059.0	29825.6	37325.7	40167.5	14529.2	35772.9
GDP at current mp, million Birr	17871.7	19815.5	20379.8	26034.7	27596.1	31764.5	19355.7	28465.1
Money, million Birr	4982.6	6123.3	6840.1	7683.5	8373.1	9428.4	5982.0	8495.0
External debt to GDP ratio (%)	44	44	44	85	105	101	44	97
Total debt to GDP ratio (%)	72	74	79	115	135	126	75	126
Velocity of money	3.59	3.24	2.98	3.39	3.30	3.37	3.24	3.35
Inflation rate (%)	5.2	20.9	21.0	10.0	1.2	10.4	15.7	7.2
Growth rate of real GDP (%)	3.4	-6.7	-3.2	12.3	1.3	5.5	-2.2	6.4
Seigniorage to GDP ratio (%)	2.4	4.4	6.0	6.6	0.8	4.7	4.2	4.0
Nominal interest rate, LIBOR 6-month	8.8%	7.3%	4.9%	3.5%	3.6%	4.8%	7.0%	4.0%
MUV, % change	5.7%	2.1%	4.3%	-2.3%	3.0%	1.5%	4.0%	0.7%
Real interest rate, LIBOR 6-month	3.1%	5.2%	0.6%	5.8%	0.6%	3.3%	3.0%	3.2%
Primary deficit to GDP ratio (%)	11.9	7.6	5.9	5.2	7.0	4.1	8.5	5.4

21. The estimates of the growth factor ($r - n$) and the primary deficit less seigniorage ($p - s$) for the pre-reform period, FY90-92, and the ongoing reform period, FY93-95, are shown in Table 5. Data on real interest rate (r), the growth rate (n), the primary deficit (p), and the seigniorage rate (s), are all annual averages for pre-reform and the reform period. Recall that in the debt dynamics equation (2), the growth factor multiplies the ratio of total debt to GDP [$(r - n) * b$]. This product plus ($p - s$) gives the change in the debt ratio (db).

22. The last column in Table 5 provides estimates on the arithmetic change in debt ratio, $db = (r - n) * b + (p - s)$. It shows that Ethiopia was on an unsustainable debt path prior to the launch of the reform program -- db grew by an annual average of 8.5 percentage points of GDP during the period FY90-92. With the launch of the reform program in FY93, the debt path became sustainable with the total debt to GDP ratio contracting by 2.5 percentage points of GDP per annum during the reform period.

Debt, Drought, and Budget Scenarios

23. The rest of this paper presents illustrative scenarios for the base case, low case, and in the case of a severe drought. It is assumed here that the Government's objective is to prevent its debt from becoming unsustainable while maintaining internal and external balance. Here, as before, we consider the low inflation rate as the target for internal balance and adequate foreign exchange reserves for external balance. To maintain internal and external balance, the government can use fiscal instrument, primary fiscal deficit, and monetary instrument, seigniorage. From equation (2), we can get the upper limit of primary fiscal deficit to make growth in the debt to GDP ratio (db) non-positive, given projected real GDP growth rate (n), inflation rate, velocity of money (v), which determine seigniorage and debt to GDP ratio (b). That is, government should keep primary fiscal deficit to GDP ratio below the upper limit to keep its debt on a converging path.

24. Table 6 presents various scenarios and examines what might be the government's fiscal effort to keep the Ethiopian debt on a sustainable path in FY96 for each scenario. Similar analysis can be easily applied to future years with slight modifications. The base case (Scenario 1) takes the Government's program targets for FY96--real GDP growth rate of 6 percent and inflation rate of 4.5 percent. Also, we assume real LIBOR of 3.2 percent (nominal LIBOR of 5 percent and MUV of 1.8 percent); initial total debt to GDP ratio of 116 percent; and constant velocity of money (i.e., money grows at the same rate as nominal GDP grows). Under these assumptions, if primary deficit is 4 percent of GDP, total debt to GDP ratio would decline by 2.4 percentage points in FY96. Thus, the upper limit of primary fiscal deficit would be 6.4 percent of GDP to prevent the debt to GDP ratio from growing. In other words, as long as the primary deficit is kept under 6.4 percent of GDP, Ethiopia's debt to GDP ratio won't increase.

25. Scenarios 2 and 3 assume a real GDP growth of 0 percent (e.g., arising from a severe drought). If the Government wants to contain inflation rate at 4.5 percent (Scenario 2) as in the base case, while preventing its debt to GDP ratio from increasing, it would need to generate a surplus on its primary fiscal balance, amounting to at least 2.4 percent of GDP. But, if the inflation target is 15.7 percent (Scenario 3), same as the average inflation rate of FY90-92, containing primary fiscal deficit at less than 1.0 percent of GDP would be needed to prevent its debt from exploding. Thus, neither scenario on inflation rate with zero percent of real GDP growth, and sustainable debt path, would be achieved without further tightening fiscal management. Ethiopia's debt situation may be shaky under recent fiscal management (primary deficit of 4 to 5 percent of GDP) and vulnerability to external factors such as severe droughts.

Table 5: Debt dynamics, FY1990-95
(percent of GDP at market price)

Period average	Real	Growth factor				Inflation	Deficit (p)	Seigniorage (s)	p-s	Growth of debt ratio
	LIBOR (r)	Growth (n)	r-n	Debt/GDP (b)	(r-n)*b					db=(r-n)*b+(p-s)
FY1990-92	3.0%	-2.2%	5.2%	75.0%	3.9%	15.7%	8.5%	4.2%	4.3%	8.1%
FY1993-95	3.2%	6.4%	-3.2%	126.0%	-3.9%	7.2%	5.4%	4.0%	1.4%	-2.5%

Table 6: Debt dynamics under various scenarios, FY1996
(percent of GDP at market price)

	Real	Growth factor				Inflation	Deficit (p)	Seigniorage (s)	p-s	Growth of debt ratio	Upper limit of deficit
	LIBOR (r)	Growth (n)	r-n	Debt/GDP (b)	(r-n)*b					db=(r-n)*b+(p-s)	for non-positive db
Base scenario, target											
1. 6% growth & 4.5% inflation	3.2%	6.0%	-2.8%	116.0%	-3.2%	4.5%	4.0%	3.1%	0.9%	-2.4%	6.4%
Severe drought (substantial negative per-capita GDP growth)											
2. 0% growth & 4.5% inflation	3.2%	0.0%	3.2%	116.0%	3.7%	4.5%	4.0%	1.3%	2.7%	6.4%	-2.4%
3. 0% growth & 15.7% inflation	3.2%	0.0%	3.2%	116.0%	3.7%	15.7%	4.0%	4.7%	-0.7%	3.0%	1.0%
Low growth (stagnant per-capita GDP growth)											
4. 3% growth & 4.5% inflation	3.2%	3.0%	0.2%	116.0%	0.2%	4.5%	4.0%	2.2%	1.8%	2.0%	2.0%
5. 3% growth & 7.2% inflation	3.2%	3.0%	0.2%	116.0%	0.2%	7.2%	4.0%	3.0%	1.0%	1.2%	2.8%
6. 3% growth & 15.7% inflation	3.2%	3.0%	0.2%	116.0%	0.2%	15.7%	4.0%	5.6%	-1.6%	-1.4%	5.4%
Higher real interest rate											
7. base case, but 5.2% real LIBOR	5.2%	6.0%	-0.8%	116.0%	-0.9%	4.5%	4.0%	3.1%	0.9%	-0.1%	4.1%

26. Scenarios 4, 5 and 6 assume a low growth of 3 percent with inflation rate at 4.5 percent (long-term target), 7.2 percent (average of FY93-95) and 15.7 percent (average of FY90-92), respectively. In these cases, primary deficit should be at most 2.0 percent, 2.8 percent and 5.4 percent of GDP, respectively. In other words, to keep Ethiopia's debt on sustainable path under a low growth of 3 percent, it will be difficult for the Government to keep inflation rate below 10 percent under recent fiscal management (primary deficit of 4 to 5 percent of GDP).

27. Scenario 7 assumes a very high real interest rate (LIBOR) of 5.2 percent instead of 3.2 percent while maintaining the other assumptions the same as the base case scenario. This change reduces the upper limit of primary deficit from 6.4 percent to 4.1 percent of GDP. Thus, if real LIBOR soars higher than 5.2 percent in FY96, tighter fiscal effort--primary deficit of less than 4 percent of GDP--will be required.

28. All in all, although a good start has been made in putting Ethiopia's debt on a sustainable path, more needs to be done. Since the Ethiopian economy depends so much on agriculture that is vulnerable to droughts and on international market conditions, in order to remain on a sustainable debt path needs more efforts--further debt relief, improved macroeconomic management, and the policy environment for growth.

Conclusions

29. This paper builds on the Branson model of debt sustainability and applies it to a severely indebted low income country, Ethiopia. It provides a simplified framework where debt sustainability (both domestic and external) is an integral element of macroeconomic stability. Interactions between different policy variables (such as debt, fiscal and interest rate policies), and outcome variables (such as GDP and export growth), as well as international economic conditions (international interest rates) jointly define if the country is on a sustainable debt path. Equations on debt sustainability can be easily estimated under this framework, and this could be easily estimated for other countries, and in this sense, it provides a good starting point for examining debt sustainability.

30. The lessons from the empirical analysis of Ethiopia are the following. First, a strong reform program is critical for bringing the country back on a sustainable debt path. Second, the issue of debt relief requires serious consideration by the international communities. Third, adequate emphasis would need to be continuously placed on growth and resource mobilization to ensure that debt is repaid. For most SILICs in Africa, this would require renewed emphasis on making agriculture a dynamic sector and building forward and backward linkages between agriculture and the rest of the economy. In countries, where famines are recurrent, dynamic agricultural growth is not essential only for debt sustainability, but also for achieving food security.

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