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## MACRO DATA AND MACROECONOMIC ANALYSIS: THE RELEVANCE OF A CONSISTENT MACROECONOMIC DATABASE IN ETHIOPIA

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**Abstract:** *Designing and implementing adjustment programmes in the context of a mixed economy requires the understanding of the macroeconomic condition in general and public and private sector interaction in particular. However, much of the macroeconomic analyses in Ethiopia suffers not only from the lack of accurate data sources but also from inconsistency across different sources on the one hand and analytical inconsistency within an identified source on the other. The focus of this study is the discrepancy and inconsistency of the existing data reported by different institutions. By highlighting the problem first and outlining the relevant analytical framework, a consistent macro database is built for the period 1970-1990 (G.C.). Although the data is built using international sources the methodology can readily be applied to data from domestic sources (notably National Bank of Ethiopia, Central Statistical Authority, Ministry Finance and Ministry of Economic Development and Cooperation. It is also recommended that the above institutions need to co-ordinate their data in an analytically consistent framework.*

### I. INTRODUCTION

Much of the macroeconomic analyses in Ethiopia suffers not only from lack of accurate data sources but also from inconsistency across different sources on the one hand and analytical inconsistency within an identified source on the other. Needless to list such macro analyses as all of them are not based on an integrated consistent macro database (See the articles in the recent collections in [2] and [6] for instance). A comparison of some of the macro economic variables across institutions can vividly show this. In this paper we will not attempt to investigate the problem at the level of the source of data. The focus will rather be on the discrepancy and inconsistency of the existing data reported by different institutions. The rest of the paper is organized in three sections. In section two the problem will be mapped by using illustration. Section three explains an integrated analytical framework which can be used for organizing the

existing data. Section four discusses the methodology for defining and estimating the external gap. Section four will conclude the paper by providing the implication of the analysis.

## 2. THE PROBLEM

An important component of the design of adjustment programs for developing countries and the macroeconomic diagnosis which precedes them is the relationship between the external capital inflow and the internal saving - investment balance. In such broader framework the behavior of the interaction of the public and private sectors plays a key role. The theoretical underpinning of the design of adjustment programs seems to assume that the private sector simply accommodates the external shocks and the effects of fiscal-monetary policies. One needs, however, to analyze the behavior of the private sector and its interaction with the public sector before indulging in such a big venture. This requires a consistent and institutionally disaggregated capital account (saving investment balance, current account balance and source of external finance) database. Lack of such consistent database is quite apparent in the standard international data sources. National data sources are not better either. In the context of Ethiopia, this problem can be seen in most of the data sources.

The first problem relates to the inconsistency across different sources. Table 1 gives a sample of macro variables obtained from different sources. It should be noted that the discrepancies are very high as the percentage is related to the total GDP. For instance a 1% discrepancy in 1986/87 implies adding or deducting 100 to 150 million Birr.

The second major problem relates to analytical inconsistency. The National Accounts of Ethiopia as reported by the Ministry of Planning and Economic Development for the year 1986/87 is used to illustrate this point. As will be explained in section II consistency between *National Account* and *Balance of Payments* data requires the net factor payment and current transfer computed from the National account should be equal to the same item computed from the balance of payments. When this is computed for 1986/87, it gives (as percentage of GDP) -13% for the former and -2% for the latter. Similar computation done for the same year on data from the National Bank of Ethiopia gives -1% and -6% respectively. Thus, clearly there are two problems on the macro data: inconsistency by source and analytical inconsistency within a source in question. The rest of the paper addresses the latter issue.

Table 1: The Macro Data Inconsistency

	1984/85	1985/86	1986/87
	(% of GDP)		
Gross Fixed Capital formation			
Mulatu (1990)	13.98	12.72	14.59
Ministry of Planning and Economic Development (1994)	12.38	12.91	14.25
National Bank of Ethiopia (1989/90)	15.53	14.33	15.76
Total Consumption			
Mulatu(1990)	97.18	97.77	96.59
Ministry of Planning and Economic Development (1994)	97.49	91.85	92.99
National Bank of Ethiopia (1989/90)	95.59	96.08	95.21
Gross Domestic Saving			
Mulatu(1990)	2.82	2.23	3.41
Ministry of Planning and Economic Development (1994)	4.18	10.69	8.35
National Bank of Ethiopia (1989/90)	4.41	3.91	4.79
Export of goods and non-factor services			
Mulatu(1990)	11.49	12.66	11.52
Ministry of Planning and Economic Development (1994)	8.19	9.46	8.32
National Bank of Ethiopia (1989/90)	11.46	12.57	11.32
Imports of goods and non-factor services			
Mulatu(1990)	22.65	23.15	22.70
Ministry of Planning and Economic Development (1994)	16.14	17.30	16.39
National Bank of Ethiopia (1989/90)	22.57	23.00	22.29

### 3. AN INTEGRATED MACRO FRAMEWORK AND THE ACCUMULATION BALANCE

The analysis relies on two institutional categories (public and private). Public sector refers to central government, local government, central bank and financial and non-financial public enterprises. The rest of the sectors are defined as the private sector.

#### The Accumulation Balance

A typical feature of developing countries is being recipient of foreign inflow with a deficit on the current account and domestic capital expenditure exceeding domestic saving. For such an economy total investment (I) should equal national saving ( $S_n$ ) and net capital inflows or foreign saving (F).

$$I = S_n + F \quad (1)$$

F defined as the net change in asset and liability position of the country is equal to the deficit of the current account of the balance of payments: (see also CAD given in equation (6) below)

$$F = M - X - N \quad (2)$$

where M and X are imports and exports of goods and non-factor services and N is net factor payments and current transfer from abroad. Rearranging equation (1) and disaggregating by institutional category yields,

$$(I_g - S_g) + (I_p - S_p) = M - X - N \quad (3.a)$$

$$= F_g + F_p \quad (3.b)$$

where the subscripts g and p refer to the public and private sectors respectively. Equation (3) states that the investment saving gap equals to the deficit (surplus) in the current account and represent a decline (improvement) in the net foreign exchange position, which necessitates a net inflow (outflow) of the foreign exchange resulting from capital transaction. It is based on these identities that reconciliation of various sources is possible. The reconciliation in this paper is based on data reported by international institutions (UNCTAD, World Bank, IMF etc.).<sup>2</sup> The next part deals with (3.a) the external balance which is followed by the analyses on (3.b) the internal balance.

## The External Balance

### (a) Exports and Imports

Of the three main items in the current account balance X and M can easily be obtained from national account statistics. Since the data in this paper is reported in dollars, the domestic currency value given is converted using average annual exchange rate (as given in equation (19) and (20) below).

*(b) Net Factor Payments and Current Transfers from Abroad*

The net factor payments and current transfer from abroad (N) are not consistently reported in the national accounts and the balance of payments. N can be derived from national account data by subtracting gross domestic saving ( $S_d$ ) from gross national saving ( $S_n$ ). That is  $N = S_n - S_d$ . Thus, it can be written as:

$$N = NFP + NTR = S_n - S_d \quad (4)$$

where NFP and NTR are net factor payments and net current transfer from abroad, respectively. Another source for the net factor payments and current transfer is IMF's *Balance of Payments Statistics*. This source is used together with statistics from the World Bank's *Debt Reporting System*. These data are used to disaggregate net factor payments and current transfer by public and private sectors. This will include net interest payment by government to abroad (NIg), grants received by the government from abroad (Gr), workers' remittances received from abroad (Rem) and interest payments made by the private sector to abroad (NIp). The major adjustment lies in dealing with the discrepancy between the national accounts estimate of the net factor payment and current transfer from abroad ( $S_n - S_d$ ) and that derived from the balance of payments statistics. Depending on the assumption about the accuracy of national accounts data vis-à-vis the balance of payments there are two options in dealing with this discrepancy. If one assumes that the N computed from national account is correct, this value could be imposed on the balance of payment statistics. The discrepancy on the balance of payment will be accounted for in the variable *other net factor payments and current transfers of the private sector* ( $N_{po}$ ) [or any other reasonable choice]. Hence, the latter variable is composed of: the reported interest payment and current transfer to abroad of the private sector ( $NI_p$ ), an item representing the discrepancy between the national accounts and balance of payments figures for the net factor payments and current transfer, and other factor payment and current transfer items appearing in the balance of payments (i.e.  $N_{po} = NI_p + \text{Errors} + \text{OTHERS}$ ). A database based on such adjustment mechanism is reported in Alemayehu [1]. The second alternative is to assume that the net factor payments and current transfer computed from balance of payments is correct. In such a situation the net factor payments and current transfer obtained from the balance of payments should be imposed upon the domestic saving to give the national saving. Assuming further that saving in the public sector is relatively accurately recorded, the private sector saving could be chosen to account for

the discrepancy between the net factor payments and current transfer as computed in national accounts and that of the balance of payments<sup>3</sup>. The choice between the two alternatives should depend on the nature of the analysis to be made using the data and the relative faith one puts on the two sources. For instance, if the analysis is largely based on the external sector it is reasonable to assume net factor payments and current transfer as computed from balance of payments to be correct (assuming both sources are equally trusted). It is this latter assumption chosen in this study. Further, disaggregation by institutional category results in

$$N = N_g + N_p \\ = Gr + Rem - NI_g - NI_p \quad (5)$$

The net interest payments by the public sector ( $NI_g$ ) are reported in Balance of Payments Statistics in lines 15, 16, 19-24; net grants received by the public sector are reported in lines 39-24. Worker remittances are taken from the lines 27, 28 and 33-38. Investment income of the private sector is taken from the lines 11-14, 19 and 20<sup>4</sup> (See Appendix IV).

### (C) The Current Account Balance

The variables defined in (a) and (b) together will define the current account balance of the balance of payments. The current account deficit (CAD)<sup>5</sup>, which is equal to F in equation (1) is defined as,

$$CAD = M - X - N \\ = M - X - [Gr + Rem - NI_g - N_{po}] \quad (6)$$

As explained above, CAD, X, M are taken from national accounts. The individual items constituting the net factor payments and current transfer from abroad (N) are from the balance of payments statistics. In principle the two sources should give identical value for N. In practice they do not. As one of the ways out of this inconsistency problem (based on assumption one), the two sources of the data could be reconciled by a balancing item - other net interest payments and current transfer from abroad of the private sector ( $N_{po}$ ). In this paper, assuming the record on the *Balance of Payments Statistics* is correct (i.e., following the alternative assumption), the saving of the private sector is chosen for reconciliation of such a discrepancy. Hence, the  $N_{po}$

computed from Balance of payments is added to domestic saving ( $S_d$ ) to give the national saving ( $S_n$ ). Given a public saving ( $S_g$ ) (which is assumed to be relatively accurately recorded), the private sector saving is computed as residual (accommodating the discrepancy).

### Internal Balance

#### (a) Government Revenue and Expenditure

Government current revenue (T) and expenditure (G) represent the current revenue (including grants) and current expenditure of the public sector. Including grants (Gr) in Government current revenue (T) ensures consistency as the same item appears as a current transaction in the balance of payments. Similarly, government current expenditure (G) includes net interest payment (NIg). The main data source for T and G is the IMF's *Government Finance Statistics* (GFS).<sup>6</sup>

Public sector savings are derived as the difference between current government revenue and government expenditure, i.e.

$$S_g = T - G \quad (7)$$

Private sector savings are computed as residuals and are equal to the difference between total national savings ( $S_n$ ) and public sector saving ( $S_g$ ):

$$S_p = S_n - S_g \quad (8)$$

#### (b) Saving and Investment

Estimates of national saving ( $S_n$ ) and domestic investment (I) are available in the national accounts statistics. These are taken from *World Tables*. A series for the proportionate share of the public and the private sector in total investment is generated from government capital formation data given in [9] and [10]. The level of public investment is derived by applying this ratio on gross domestic investment obtained from the *World Tables*:

$$I_g = (I_g/I) \cdot I \quad (9)$$



The level of private investment is obtained as residual

$$I_p = I - I_g \quad (10)$$

The above variables define the public and private sector resource gap,  $(I_g - S_g)$  and  $(I_p - S_p)$ , respectively. This, as shown in equation (3), creates the linkage with the balance of payments.

#### Net Resource Transfer from the Private to the Public Sector

A common feature of developing countries is the existence of a large public sector resource gap financed by both external and domestic resources. The methodology for defining and estimating the external resource is given in the next section. The domestic resource transfer to the public sector ( $Z$ ) is computed as residual - as the difference between the use and source of public sector funds. It results *ex post* from range of measures (like inflation tax, for instance) adopted to finance the budget deficit and public enterprise capital requirements:

$$Z = I_g - S_g - F_g \quad (11)$$

where  $F_g$  is net foreign capital inflow to the public sector. It is possible to isolate within  $Z$  the component of total resource transfer that accrues to the government ( $Z_g$ ) - estimated as the net outstanding claims on the central government (which corresponds to the figures appearing on line 32an of the *International Financial Statistics*). The difference between  $Z_g$  and the total transfer of resources ( $Z$ ) thus might be interpreted (ignoring statistical discrepancies) as a residual measure of net transfer of resources from the private to the public sector.

#### 4. PRIVATE SECTOR RESOURCES GAP FINANCED BY EXTERNAL SOURCES

This section gives the methodology for defining and estimating the external gap. It also defines the capital accounts for both the private and public sectors.

### Foreign Capital Inflow

The foreign capital inflow into the economy is defined as the net change in the external asset and liability position: i.e.

$$F = \Delta L - \Delta A \quad (12)$$

For public and private sectors this can be given as

$$F_g = \Delta L_g - \Delta A_g + \Delta R \quad (13)$$

and

$$F_p = \Delta L_p - \Delta A_p \quad (14)$$

where  $\Delta A$  and  $\Delta L$  represent the changes in assets and liabilities,  $F$  is the foreign capital inflow with the subscripts denoting the public and private sectors, and  $\Delta R$  is the change in reserves.

Data pertaining to changes in the assets, liabilities and reserves of the public and the private sector are reported in US dollars in the Balance of Payments Statistics (BOPS). To obtain the figures in domestic currency, it is possible to use the corresponding annual conversion (exchange) rate reported in the *World Tables*. The changes in the assets of the public sector ( $\Delta A_g$ ) correspond to the sum of the figures reported in BOPS lines 53 - 55, 62 - 64 and 84 - 85, while change in recorded (R) private sector assets (direct investment abroad, portfolio investment, other long-term assets, and short term assets),  $\Delta A_p$ , refers to BOPS lines 45 - 48, 56, 59, 69 - 71, 77 - 79, 89 and 93 - 94. The changes in the liabilities of the public sector ( $\Delta L_g$ ) are reported as the sum of the figures in BOPS lines 86 - 88 (for other, short term liabilities), but net flows corresponding to long term external debt transactions (including bonds) by the public sector borrowers were derived from the World Bank's *Debtor Reporting System* (DRS). Recorded private sector external liabilities ( $\Delta L_p$ ) are the sum of direct foreign investment inflows and equity investment (BOPS lines 49 - 52, 60 - 61); long term external debt transactions, including bonds, by private sector borrowers from the DRS, and short term private sector borrowing (BOPS lines 90 - 92 and 95 - 97). The changes in official reserves ( $\Delta R$ ) are the sum of the figures in BOPS lines 98 - 111 (See Appendix III).

The net inflow of foreign capital to the public sector is derived as in equation (13). In case of the private sector, however, the derivation is complicated by three factors: (i) the unrecorded accumulation of private external assets ( $\Delta A_p u$ ), (ii) errors and omissions (BOPS line 112), the balancing item of the balance of payments; this item is assumed largely consists of unrecorded, short term (private) capital movements (referred as  $F_p URCA$  in the database); and (iii) the discrepancy in the national accounts and balance of payments figures (referred as  $F_p URNA$  in this database). The inflow of foreign capital to the private sector is consequently derived from the following:

$$F_p = (\Delta DL_p R - \Delta DA_p R) + F_p URCA + F_p URNA \quad (15)$$

The errors and omissions item in the capital account of the *Balance of Payments* ( $F_p URCA$ ) is a balancing item which refers to an unrecorded capital inflow when positive and an unrecorded outflow when negative.

$F_p URNA$  is a balancing item which captures the discrepancy between the national accounts figures of the current account balance and the balance of payments figures. A strong assumption is made here that this discrepancy may be interpreted as unrecorded capital transaction by the private sector.

### Capital Accounts of the Public and Private Sectors

The public sector capital balance or the balance between the uses and sources of public sector funds now can be defined by rearranging terms in equation (11):

$$I_p = S_g + F_g + Z \quad (16)$$

and the capital account of the private sector are defined as:

$$I_p + Z = S_p + F_p \quad (17)$$

with the uses of private sector funds, investment ( $I_p$ ) and the resource transfer to the public sector ( $Z$ ), appearing in the left hand side and the sources of private funds, private sector saving ( $S_p$ ) and net inflow of foreign capital to the private sector ( $F_p$ ), appearing on the right hand side.

The series on the capital position of the public and private sector is based on the *International Financial Statistics*, the *Debtor Reporting System* and the *Balance of Payment Statistics*. Data on the long term liabilities of the public sector ( $L_p$ ) and the private sector ( $L_p$ ) is obtained from the indebtedness position of the country as reported in the *Debtor Reporting System* (DRS) of the World Bank (data by institution type of borrowers). The DRS does not report, however, on the short term liability position by institutional sectors. Where such data are available, it is not disaggregated by institutional sectors. We derived the short term liabilities of the public sector ( $DS_p$ ) as the cumulative sum of the net changes in short term liabilities reported in lines 86 - 88 of the *Balance of Payments*. Similarly, the short term external liabilities of the private sectors ( $DS_p$ ) for the period are calculated as the cumulative sum of the net changes in the short term liabilities of the private sector as reported in BOPS lines 90 - 92 and 95 - 97 (See Appendix III).

Foreign assets of the public sector (reserves) are derived from the BOPS. The foreign asset position of the private sector may be derived in various ways. The calculated values of the database include an estimate of the cumulative value of *unrecorded* private capital outflows:

$$\text{CumA} = \Sigma \Lambda = \Sigma (-F_p \text{URCA} - F_p \text{URNA})$$

However, when assumption two is employed the discrepancy is accounted for by the level of private sector saving. The domestic capital position<sup>7</sup> of the public and private sectors is reported in the *International Financial Statistics*. Public sector liabilities or claims on the central government ( $B_p$ ) in IFS line 32an, and private sector liabilities ( $B_p$ ) in IFS line 32d. In this database the net domestic asset position of the private sector is derived as the difference between the monetary base (31n + 32) and claims on the private sector (32d) as reported in *International Financial Statistics*. Where relevant, a modified figure (using information on other banking institutions can also be given). For some countries the IFS data shows substantial claims of 'other banking institutions' on public sector entities (IFS lines 42a - c). These can be interpreted as constituting (directly) private sector claims on the public sector and are added to the private domestic asset position.

One of the price variables given in this study is the exchange rate. The nominal exchange rate (local currency per US dollar) is taken from *World Tables* (but corresponds to that given in the IFS, line rf). Real exchange rates are calculated for two types of definitions: the first is a trade

related real exchange rate defined as the nominal exchange rate ( $e$ ) times the arithmetic mean of the export ( $P_x$ ) and import ( $P_m$ ) unit price indices divided by the domestic GDP deflator ( $P_d$ ) and the second is a 'dollar - asset' related real exchange rate where the US GDP deflator ( $P_s$ ) replaced the foreign trade price index in the definition:

$$RER (a) = \frac{e \cdot (P_x + P_m) / 2}{P_d} \quad (19)$$

$$RER (b) = \frac{e \cdot P_s}{P_d} \quad (20)$$

All relevant data are taken from *World Tables*.

Another price variable is *real interest rate* ( $r$ ). Three interest rates are given. These are lending rate ( $i_l$ ), deposit rate ( $i_d$ ) and the US dollar based 3 months LIBOR as reported in *International Financial Statistics*. The real domestic interest rates are computed using GDP deflator:

$$r_l = \frac{1 + i_l}{1 + \bar{P}_d} - 1$$

$$r_d = \frac{1 + i_d}{1 + \bar{P}_d} - 1$$

Where:  $\bar{P}_d$  = domestic inflation rate (GDP deflator)

### Limitations and Accuracy of the Database

Although this framework allows to correct inconsistency and disaggregate the data by institutional sectors it is not without problems. First, it does not address the root cause of the inconsistency and merely tries to make the best use of the existing database. Second, the methodology might result in a systemic bias (over or under estimation) in the figures for some variables. As discussed in the text, the net factor payments and current transfers are disaggregated using the balance of payments data. Subsequently net factor payments and current transfer as computed from the balance of payments is imposed upon domestic saving to get

national saving (the private saving being the accommodating variable). In this process the 'private saving', computed as residual to ensure consistency, could be under/over stated.

Third, if the discrepancy of net factor payments and current transfer computed from the two sources is high, the estimate of the net external borrowing ( $F_p$ ) to the private sector may be unreliable. Further, this problem could be exacerbated in some cases because of certain accounting incompatibility between the DRS and BOPS. The DRS reports in principle only actual debt transactions (flows) and actual interest payments. The BOPS, on the other hand, follows another practice, which is to report on interest payments and debt repayments that are due, arrears and refinancing through debt rescheduling are then used as counterpart items constituting 'capital inflows'. From BOPS it is unclear how consistently this practice is followed in each country, nor it is always possible to distinguish between interest repayment arrears involving public or private sector debt. As long as arrears relate to principal payments and rescheduling are booked in the BOPS under short term liabilities, and such values affect the estimates in the database, particularly the residual  $F_p$  is again affected. Further, as indicated, the current account balance as estimated in the BOPS accounts for interest payments due, thus it may include arrears on interest payments implying that the current account deficit in the BOPS may be 'overestimated' in this sense. A change in the short term liabilities, exceptional finance, functions as a counterpart item, but no distinction is made between interest and principal repayment. It is difficult to make appropriate corrections (by public and private sector) in the consolidated capital accounts for this potential source of discrepancy.

Finally, in the computation of net domestic asset of the *private* sector (wealth indicator data) we have assumed total money supply (as inferred from the monetary base) to represent gross domestic asset of the private sector. However, it is possible that the public sector could have a part in it and our domestic asset of the private sector could be overstated by that amount. The difficulty of getting disaggregated data may force us to accept this limiting assumption.

Despite these problems, it is clear that the database construction brings together seemingly separate statistical sources of information and shows, ideally, the data should match given the logic of integrated accounting framework that ties the variables together (See equation (3)).

## 5. CONCLUSION

By using different data sources, the above integrated macro framework is applied. The result shows that it is possible to produce analytically consistent database. The major contribution of this work should be sought in its effort to organize Ethiopia's macro data in analytically consistent framework so as to investigate the macro economic condition in general and the public private sectors interaction in particular. It is also desirable that data supplying institutions (i.e. the National Bank, Ministry of Finance, Ministry of Economic Development and Cooperation, Central Statistical Authority, among others) organize the domestic data in such consistent analytical framework. If the diagnosis is wrong the remedy is sure to fail.

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### Notes

1. Institute of Social Studies, The Hague, The Netherlands.
2. It is possible to use domestic sources.
3. Data for 20 African countries build on the basis of this alternative assumption will be reported in Alemayehu (1995) (forth coming, ISS working paper). Interested researchers could contact the author for the electronic data.
4. In terms of the variable codes in the Balance of Payments Statistics it is:  
$$Nlg = 1G1A4 + 1G1B4 + 1G3A4 + 1G3B4 + 1H1A4 + 1H1B4 + 1H2A4 + 1H2B4$$
$$Gr = 1H1A4 + 1H1B4$$
$$Rem = 1M1A4 + 1M1B4 + 1K.A4 + 1K.B4$$
$$Nlp = 1EA4 + 1E1B4 + 1E2A4 + 1E2B4 + 1G3A4 + 1G3B4$$
5. Alternatively it is possible to define the current account BALANCE as  $CAB = X - M + N$
6. In the IMF's *Government Finance Statistics* total revenue and grants is reported in domestic currency units in line AI. Line VI should be subtracted from it to arrive at the current revenue and grants (T) which can also be

obtained as the sum of Line AIII and VII. Government current expenditure (G) is given in line CIII. It is this value which is used. For most countries the *International Financial Statistics* (IFS) reports a much longer series for current government revenue (T) (as the sum of lines 81 and 81z). Only total government expenditure figures are available (reported in line 82) which have to be adjusted for government capital expenditure to arrive at current expenditure (G). The *World Tables* also report current revenue and current expenditure but for some developing countries the current revenue is actually the total revenue.

7. The external asset position of the private sector could be computed as the sum of line 7a.d of the *International Financial Statistics* (though it is limited to banks) and FpURCA and FpURNA under the assumption of no statistical errors and the existence of unrecorded transaction.

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## APPENDIX 1: SYMBOLS USED

A	Change in total external asset position
Ap	Change in external asset position of the private sector
Ag	Change in external asset position of the public sector
Au	Unrecorded net accumulation of private external assets
Bg	Bank claims on private sector (domestic outstanding liabilities)
BOPS	Balance of payments Statistics (of the IMF)
CAD	Current Account Deficit of the balance of payments
DRS	Debtor Reporting system of the World
DSg	Short term external liability of the public sector
DSp	Short term external liability of the private sector
e	Nominal exchange rate
F	Total net capital inflows (or foreign saving)
Fg	Net capital inflow to the public sector
Fp	Net capital inflow to the private sector
FpURCA	Errors and omission of the BOP, which are assumed to reflect unrecorded short term private capital movements from abroad (if positive; and to abroad, if negative)
FPURNA	Discrepancy between CAD estimate in the National Accounts and that in the Balance of payments statistics
G	Current Government expenditure
GDS	Gross Domestic Saving
(Sd)	Government Financial Statistics (of IMF)
GFS	Grants
Gr	Gross Domestic Investment
I	Private Investment (or private gross capital formation)
Ig	Public Investment (or public gross capital formation)
id	Domestic nominal interest rate on deposits

## APPENDIX I (...continued)

ii	Domestic nominal lending rate on deposits
IFS	Internal Financial Statistics (of the IMF)
L	Change in total external liability position
Lp	Change in total external liability position of the private sector
Lg	London Interbank offer rate (on 3 months on US dollar deposit)
LIBOR	Imports of goods and non-factor services
M	Net factor payments and net current transfer from abroad
N	Net factor payments and net current transfer from abroad to the private sector
Np	Net factor payments and net current transfer from abroad to the public sector
Ng	Net factor payments from abroad
NFP	Net interest payments on external debt by the public sector
NIg	Net interest payments on external debt by the private sector
NIp	Other (non-interest) net factor payments and current transfer to abroad by the private sector
NTR	Net current transfer from abroad
Pd	Domestic price index (GDP deflator)

Appendix II. Public and Private Sectors Assets and Liabilities

<i>Description</i>	<i>BOPS Line NO.</i>	<i>Variable Name</i>
<b>PRIVATE SECTOR</b>		
Change in Assets		
Direct investment abroad	45-48	3LX4
Portfolio investment	56+59	6B1X4+6D1X4
Other long-term capital of Banks#	69-71	5C1Y4+5C1W4+5K1X4
Other long-term capital of other sectors	77-79	8C1Y4+8C1W4+8K1X4
Other short-term capital of Banks	89	5L2X4
Other long-term capital of other sectors	93-94	8C2X4+8K2X4
Change in Liabilities		
Direct investment in the country	49-52	3Y.X4
Portfolio investment (excluding bonds)	60+61	6V1X4+6S1X4
Other short-term liabilities:		
Banks	90-92	5U2X4+5V2X4+5X2X4
Other Sectors	95-97	8W2X4+8P2X4+8S2X4
Other long-term liabilities*		
<b>PUBLIC SECTOR</b>		
Change in Assets		
Portfolio investment	53	6A1X4
Other long-term capital of official sectors	62-64	4C1Y4+4C1W4+4K1X4
Other short-term capital of official sectors	84-85	4C2X4+4K2X4
Change in liabilities		
Portfolio investment	54-55	6T1X4+6Q1X4
Other short-term liability of official sectors	86-88	4W2X4+4P2X4+4S2X4
Other long-term liabilities*		

Source: International Monetary Fund (IMF), 'Balance of Payments Statistics Yearbook'

\* For these variables the source is "The Debt Reporting System (DRS) of the World Bank

NOTE: One major problem is that the institutional set up of the source of capital (creditor) is assumed to be similar to that of the recipient. In such set up most likely public sector long term liabilities could be understated by the amount of capital inflow from private sector (with similar amount over statement of the private sector).

# Unlike other countries, in Ethiopia's case the Banks should be included under the public sector. In the data this change is made.

## Appendix III. Factor Payments and Current transfers

<i>Description</i>	<i>BOPS Line NO.</i>	<i>Variable name</i>
<b>FACTOR PAYMENTS</b>		
<b>PRIVATE SECTOR (Excluding 27+28)</b>		
Investment income		
Reinvested earning on direct investment	11+12	1E1A4+1E1B4
Other direct investment	13+14	1E2A4+1E2B4
Other investment income	19+20	1G3A4+1G3B4
Other investment income (of foreign official)	17+18	1G2A4+1G2B4
Others:		
Property income	29+30	1M2A4+1M2B4
Other goods, services and income	31+32	1M3A4+1M3B4
Other foreign official sector	25+26	1I3A4+1I3B4
<b>PUBLIC SECTOR</b>		
Investment income		
Other investment, inter official	15+16	1G1A4+1G1B4
Other investment income	19+20	1G3A4+1G3B4
Other investment income		
Inter official, n.i.e.	21+22	1I1A4+1I1B4
Other official	23+24	1I2A4+1I2B4
<b>CURRENT TRANSFER</b>		
<b>PRIVATE SECTOR</b>		
Worker's remittances	27+28+33-38	1M1A4+1M1B4 +1K.A4+1K.B4
Other transfers	43+44	
<b>PUBLIC SECTOR</b>		
Grants	39+40	1H1A4+1H1B4
Other transfer	41+42	1H2A4+1H2B4