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BUDGET DEFICIT, CURRENT ACCOUNT IMBALANCE AND THE PROBLEM OF EXTERNAL DEBT ACCUMULATION IN BANGLADESH

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Abstract: The budget deficit affects current account balance through the trade deficit, and the current account deficit is an important source of foreign indebtedness. By linking these variables with other relevant macroeconomic variables in a path diagram framework, this study reveals that although remittance and trade surplus positively affect the current account balance, an increase in home GDP negatively affects the current balance by worsening the trade balance. Exchange rate depreciation positively affects the current account balance by improving the trade balance. However, the combined effect of world GDP, home GDP, and the exchange rate on the current account balance (CAB) is negative. A long-term negative position in CAB causes the external debt to accumulate and poses debt repayment and amortization problems for countries such as Bangladesh, which are characterized by a heavy debt service ratio and a low reserve-to-external debt ratio. Efficiently utilizing external resources, increasing net exports, and reducing budget deficits by curtailing less important projects are some possible options for resource-constrained countries to avoid rapid external debt accumulation problems.

Keywords: Budget Deficit; Trade Deficit; Current Account Imbalance; External Debt; Remittances; Debt Service Ratio; Balance of Payments.

1. INTRODUCTION

An important feature of all national budgets passed in the parliament of Bangladesh since independence is that the total expenditure allocations are

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higher than the total revenue receipts targets in all these budgets. The resulting budget deficits are financed by bank borrowings, nonbank borrowings and external debts. The weights of deficit financing sources, of course, vary across years. A budget deficit is an example of an expansionary fiscal policy that should lead to higher employment and output in a country with unemployed resources. However, beyond the real economy, budget deficits also have impacts on the financial and asset markets of the economy.

Depending on the sources of deficit financing, interest rates, inflation rates, and exchange rates may respond differently. Inflation is affected if the budget deficit is money financed (i.e., by borrowing from the central bank or printing money, also known as quantitative easing). If money growth surpasses real output growth, inflation occurs (Friedman, 1956, Mishkin, 2021). An increase in the money supply reduces the interest rate in the short run, but an increase in inflation requires the interest rate to rise in the long run. The money market and the foreign currency market are also closely tied. Given output growth, increases in money supply growth lead to equivalent increases in the nominal interest rate, depreciation of the domestic currency, and increases in inflation in the long run (Dornbusch, *et al.* 2013). Since the budget deficit is an over-expenditure phenomenon, it often leads to a trade deficit. Salvatore (2006) discusses the twin deficit hypothesis connecting the budget deficit with the trade deficit.

The trade deficit is a source of current account deficit, and the latter is largely offset by remittance flow in the case of Bangladesh. However, in the net term, the CAB is negative for Bangladesh for most years. The negative CAB must be financed by borrowing external resources, which appear as positive inflow in the financial account of the country's balance of the payment table. Lane and Milesi-Ferretti (2007) use an extensive dataset on external assets and liabilities to show the implications of current account balance for the external debt positions of various countries.

A persistent current account deficit leads to the accumulation of foreign debt and creates obligations for interest payments and amortization burdens. A country's CAB is considered sustainable if its present discounted value of future trade surplus equals or exceeds its current external indebtedness. In a seminal paper, Milesi-Ferretti and Razin (1996) discuss the issue of the sustainability of current account deficits and the conditions under which persistent deficits lead

to unsustainable levels of external debt. They particularly emphasize the role of willingness to pay and willingness to lend as additional factors in determining current account sustainability. The role of exchange rate adjustment in mitigating the current account imbalance is discussed in Gourinchas and Rey (2014). Macroeconomic variables are, of course, interlinked and should be studied together wherever possible.

The purpose of the current paper is to study the empirical implications of the linkages among relevant macroeconomic variables in the context of path analysis to explain the CAB and external debt problems in Bangladesh. The rest of the paper is organized as follows. Section 2 examines the nature of budget deficits in Bangladesh. Section 3 examines the implications of the budget deficit on the trade balance, which is a major component of the current account balance, with the other being remittance, for Bangladesh. The role of the global economic situation in the current account balance through remittance is also explored in this section. Section 4 then discusses how negative current account balance (CAB) leads to stockpiling of external debt and may create the possibility of a foreign currency crisis in an economy with inadequate foreign currency reserves. Finally, Section 5 concludes the paper with few remarks on policies to avoid excessive debt accumulation problems.

2. NATURE OF BUDGET DEFICITS IN BANGLADESH

Historically, Bangladesh has consistently followed deficit budget policies. The total sizes of the deficits have increased annually, although in relative terms, for example, as a share of GDP or as a share of the total budget, the deficits have fluctuated. The evolution of budget deficits as a share of total GDP is shown in Figure 1, and that as a share of the total budget is shown in Figure 2. The former indicates the capacity of the government to carry deficits, and the latter is an indication of the strength of expansionary fiscal policy. The heights of the bubbles in these charts indicate the absolute size of the budget defects in various years, and the relative sizes of these bubbles are deficits as shares of GDP in Figure 1 and as shares of the total budget in Figure 2. The bubble colors correspond to political regimes.

The fact that bubbles in both these figures have monotonically moved up over time but their relative sizes have changed means that although total deficits have increased over time, the deficit size relative to GDP and relative to the

total budget has fluctuated. The increase in the budget deficit also accelerated, especially after 2016, and we will see later in Section 4 that external debt also accelerated after 2016. The recent budget passed in 2024--2025 seems to be a turning point in the trend of total deficits. The rising total deficit was halted in the current fiscal year 2024--25. Budget deficits inevitably accompany rising debt and the obligation for interest payments. Interest payments have already taken the top position in terms of budget allocation. The government has now realized that to avoid fiscal crisis, it has to limit the budget deficit and is acting accordingly. The recent deficit reduction also reflects the IMF conditionality of the 4.7 billion dollar loan Bangladesh has taken recently (Shithi, 2024).

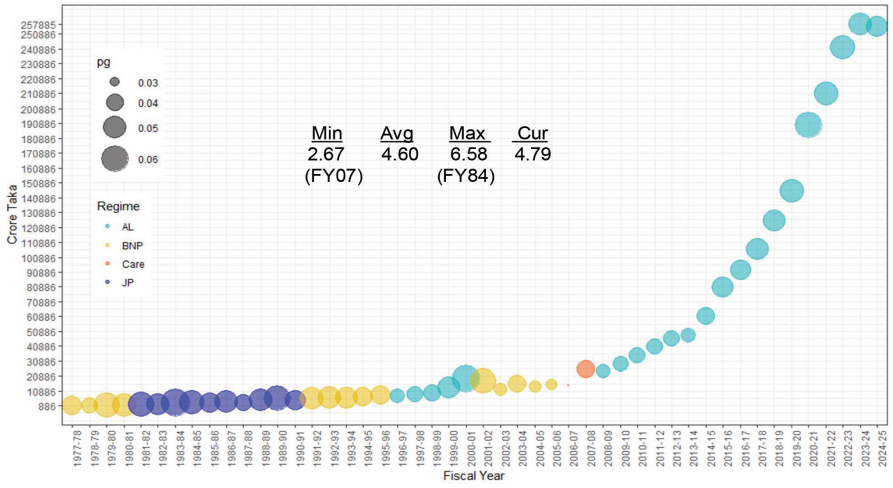

Figure 1: Budget deficit in Bangladesh since 1978

Note: Bubble sizes reflect deficits as a percentage of GDP

Note: Regimes are AL – Awami League, BNP – Bangladesh Nationalist Party, Care – Caretaker Government, and JP – Jatya Party

Source: Constructed by the author from data published by the Ministry of Finance, Bangladesh

In relative terms, the highest budget deficit in the sample period was 6.58 percent of GDP observed in the fiscal year 1983--84, and relative to the total budget, the deficit was the highest at 52.7 percent, which was also in the same year. The lowest budget deficit was 2.67 percent of GDP and 21.1 percent of the total budget, both in 2006--2007, when Bangladesh was going through a transition period of the caretaker government. Deficit budgets are popular, as they involve more government expenditure and/or less tax. As a nonpolitical

entity, the caretaker government had no incentive to incur large budget deficits. The current budget deficit is 4.79% of GDP, which is 0.36 points lower than the previous budget deficit of 5.15% of GDP. In terms of the percentage of the total budget, the current deficit is 32.1, which is 1.8 points lower than the previous year's value of 33.9% of the total budget. Even in absolute terms, the total deficit fell from 257,885 crore taka to 256,000 crore taka. Since the total budget has increased over the previous year, the reduced total deficit implies that the tax has increased more than the increase in government expenditure over the previous year.

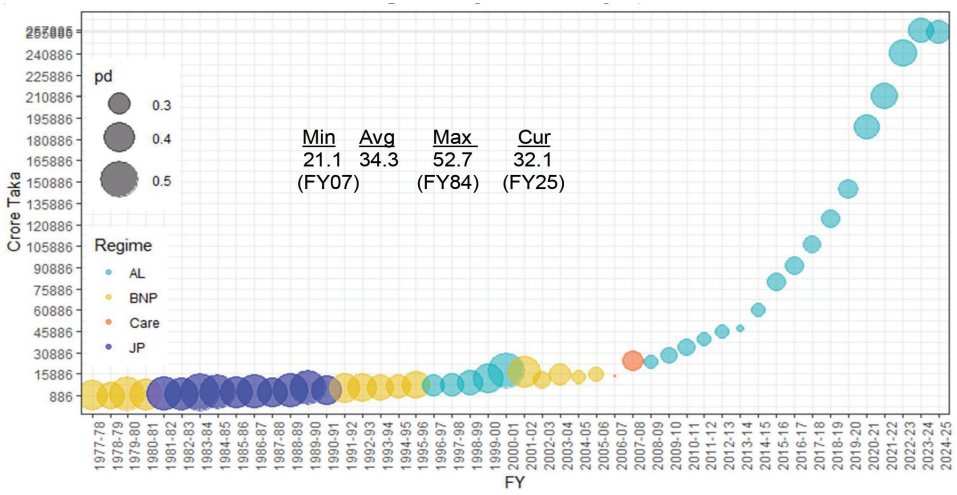

Figure 2: Budget Deficit in Bangladesh Since 1978

Note: Bubble sizes reflect deficits as a percentage of the budget.)

Note: Regimes are AL – Awami League, BNP – Bangladesh Nationalist Party, Care – Caretaker Government, and JP – Jatya Party

Source: Constructed by the author from data published by the Ministry of Finance, Bangladesh

Although we understand how the budget deficits relative to GDP and budget deficit relative to budget size moved over time, a clearer picture of the movement of these two variables and their mutual relationship can be found in Figure 3. The budget deficit relative to the total budget is more volatile than the budget deficit relative to GDP. The budget deficit relative to GDP is stable at approximately 5% of GDP, whereas the budget deficit relative to the total budget fluctuates between 20% and 60%, approximately, of the total budget. Although these two series fluctuate at different rates, their directions of

movement closely follow each other, and the correlation between them is 0.77. Each budget deficit translates, to a large extent, into a trade deficit and then into a current account deficit if not propped up by sufficient remittance inflow. This situation ultimately leads to the accumulation of foreign debt and higher interest costs in subsequent budgets.

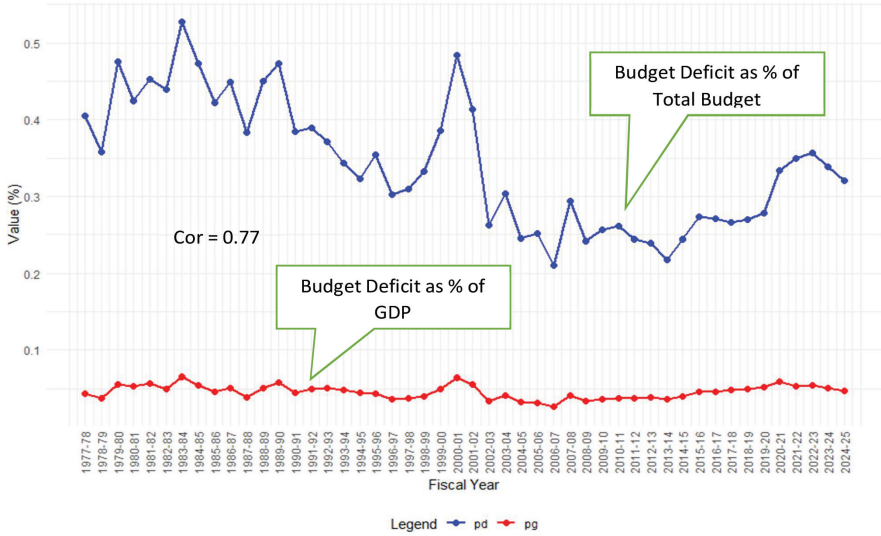

Figure 3: Budget Deficit as a percentage of GDP and percentage of total budget

Source: Constructed by the author from data published by the Ministry of Finance, Bangladesh

3. FROM BUDGET DEFICIT TO TRADE DEFICIT

The government budget deficit is an overspending phenomenon. If the government wants to depend on domestic resources, it must extract savings from the home economy, depriving the private sector of domestic investment funds. Otherwise, it has to resort to foreign savings or depend on unilateral transfers from foreigners. The familiar national income identity for an open economy clearly indicates the direct link between the budget deficit and the trade deficit. The national income identity,

$$Y = C + I + (G - T) + (X - M)$$

can be rearranged as,

$$(X - M) = (Y - C) - I + (T - G)$$

or,

$$(X - M) = (S - I) + (T - G) \text{ --------- (1a)}$$

or

$$(M - X) = (I - S) + (G - T) \text{ --------- (1b)}$$

Given private sector savings and investment behavior (S – I), equation (1a) means that the budget surplus is reflected in the trade surplus, or equivalently, the budget deficit is shown as a trade deficit (1b). Thus, the trade deficit appears to be a natural response to the budget deficit and excess investment over savings by the private sector in the economy. Given the behavior of the private sector, the budget deficit thus directly translates into a trade deficit. The trade deficit, and hence the budget deficit, along with overinvestment by the private sector must be financed in some way. Bangladesh finances a major portion of the defects of remittances.

When remittances are not sufficient to cover the deficit, the current account balance becomes negative. In that case, the country must borrow externally, which appears in the financial account of the balance payment account of the country. External borrowing can be avoided at the expense of depleting foreign exchange reserves or by bringing in foreign direct investment. Another drastic measure would be to free float the currency and accept its disastrous socioeconomic consequences, especially if the economy is marked by factor immobility among sectors and high dependence on imports for necessary items. Table 1 shows a recent balance of payment (BOP) table for Bangladesh, where international transactions on major items in the current account and in the financial account for the years 2021--22 and 2022--23 are listed.

The BOP table shows that the trade account has been deficient in the last two years, but the trade balance has improved from a 33 billion USD deficit in fiscal year 2021--22 to a 17 billion USD deficit in fiscal year 2022--23. The improvement took place through a reduction in imports and an expansion of exports over the year, which can be considered a very positive development for the Bangladesh economy. Like the trade account, the services account is also in deficit, and the deficit has increased from 3.987 billion USD in 2021–22 to 4.384 billion USD in 2022–23. One major component of the services account is interest payments on foreign loans, and since the stock of foreign loans is increasing, so are interest payments and service account deficits.

The only consolation in the current account is the remittance inflow included under the secondary income category. In both 2021-22 and 2022-23,

remittances contributed approximately 22 billion USD in the current account. Adding the four components of the current account, trade balance, service account, primary account (which includes interest payments), and secondary account (which includes remittances), the current account balance, however, becomes negative. The CAB was -18.196 billion USD and -2.665 billion USD in fiscal year 2021--22 and fiscal year 2022--23, respectively.

The CAB deficits reflect higher current expenditures than current earnings, which are financed from foreign savings and need to be paid back by incurring lower current spending than current earnings, sometimes in the future. In other words, the lifetime net present value of all CAB flows should be zero. In a particular year, CAB deficit is financed by creating surpluses in capital and/or financial accounts. The fiscal year 2022--23 was exceptional in this regard, as both the current account and the financial account were negative, and the burden of the balance fell on the central bank, which sold 8.222 billion USD reserves in that year. A major component of the financial account was trade credit, which was negative (-6.436 billion USD) in that year. Trade credits are not unconditional dollar loans but are simply loans to be used to buy commodity or project material from the creditor countries, thus enabling the creditor country to sell their products to the debtor country by extending them loans.

In 1921--22 and 2022--23, remittances helped offset the negative current account balance by approximately 22 billion USD. A large part of the remaining negative current account balance of -18.2 billion USD and – 2.67 billion USD in those two years had to be financed by taking medium- and long-term loans and selling reserves from the central bank (see Table 1 below). The overall balance in the BOP table, which arises after adjusting for capital accounts, financial accounts, and errors, is the reserve loss or the BOP deficit (surplus if positive) for the country. These reserve losses are reflected in the depleted reserve stocks of the central bank in the subsequent years.

4. EXTERNAL DEBT ACCUMULATION PROBLEM

As indicated in the previous two sections, a budget deficit leads to a trade deficit, and if other unilateral transfers, notably remittances for Bangladesh, fail to offset the negative trade balance, then a current account deficit occurs. To offset the current account deficit, funds must inflow in the form of foreign

Table 1: Balance of Payment Table for Bangladesh, 2021-22 and 2022-23

(in millions of USD)

Item	*2021-22[R] July June*	*2022-23[RP] July June*	*% Changes (4 over 2)*
Trade balance	**-33250**	**-17163**	
Export f.o.b.(including EPZ)	49245	52332	6.27
Of which : Readymade garments	42613	46992	10.28
Import f.o.b. (including EPZ)	82495	69495	-15.76
Services	**-3987**	**-4384**	
Credit	8531	6971	-18.29
Of which : Government services	2635	2068	-21.52
Debit	12518	11355	-9.29
Primary income	**-2726**	**-3407**	
Credit	345	443	28.41
Debit	3071	3850	25.37
Of which : Official interest payments	518	1030	98.84
Secondary income	**21767**	**22289**	
Official transfers	65	88	
Private transfers (net)	21702	22201	2.30
Of which: Workers' remittances inflows	21032	21611	2.75
Current Account Balance	**-18196**	**-2665**	
Capital account	**610**	**475**	
Capital transfers	610	475	
Financial account	**16691**	**-2078**	-22.13
Foreign direct investment (gross inflows)	4636	4428	
Of which : Net FDI liabilities*	1827	1649	-4.49
Portfolio investment (net)	-158	-30	-9.74
Of which : Investment by NRBs	114	118	
Other investment (net)	15022	-3697	3.51
Net aid flows	8768	6959	
Medium and long-term (MLT) loans	10295	8704	-15.45
MLT amortization payments	1527	1745	14.28
Other long term loans (net)	1443	434	
Other short term loans (net)	3315	-1883	
Trade credit (net)	311	-6436	
DMBs and NBDCs (net)[1]	1185	-2771	
Assets	791	799	
Liabilities	1976	-1973	
Errors and omissions	**-5761**	**-3954**	
Overall Balance	**-6656**	**-8222**	
Reserve Assets	**6656**	**8222**	
Bangladesh Bank (net)	6656	8222	
Assets	-4987	-8766	
Liabilities	1669	-544	
Memorandum Items :			
Gross official reserves	41827	31203	
Gross official reserves (as per BPM6)	33386	24754	
Valuation adjustment	-854	134	
In months of imports of goods and services (prospective)	6.2	4.9	
In months of imports of goods (cif) (prospective)	6.7	5.3	

Note: * Net FDI has been accounted for in the financial account, and Bangladesh Bank assets have been computed as per BPM6. (P: Provisional, R: Revised)
[1] DMB - Deposit Money Bank; NBDCs - Non bank Depository Corporations

Source: https://www.bb.org.bd/en/index.php/econdata/bopindex retrieved on 18 August 2024.

loans or sell assets to foreigners. In the case of Bangladesh, this takes place through taking medium- and long-term loans and selling reserve assets (see Table 1 above). If the pattern continues for several years, international debt will accumulate, and depleted reserve stock will simultaneously signal interest and debt repayment problems.

The external debt, budget deficit, trade balance, world economic situation, home GDP, and exchange rate for the Bangladesh economy are closely tied together. The patterns of pairwise correlations among these variables are shown in Figure 4 below. The bilateral correlations between most of the variables are greater than 70 percent and are significant at the 5 percent level.

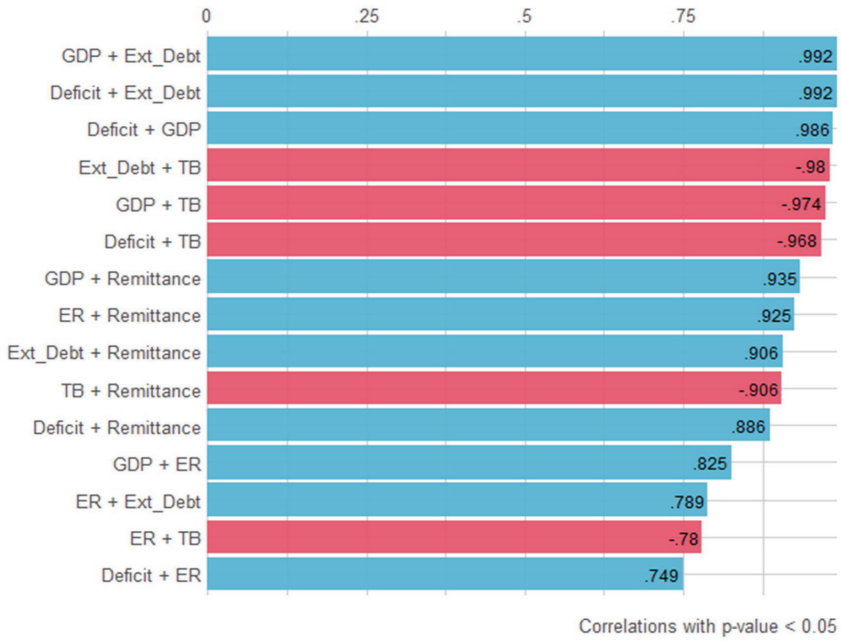

Figure 4: Ranked Cross-Correlations (Top 15)

Source: The Author's construction from the sample data.

Although we observe very high pairwise correlations among these variables, their theoretical links are more complex. If external debt is used to finance projects that contribute to GDP, then it will be positively correlated with the GDP. The government may consider increased GDP as an indicator of greater capacity to carry external debt. External debt may again result from deficit budgets, and the latter is a cause of the trade deficit. If the trade deficit

is not fully offset by unilateral transfers such as remittance and foreign aid, then a current account deficit will emerge, which will necessitate external debt and/or reserve loss. The complex links among these variables are estimated with path coefficients, which are the basis for estimating the direct, indirect and total effects of one variable on others. The pattern of links and the estimates of the path coefficients among the variables used in the hypothesized model are shown later in Figure 6.

Before the model was estimated, however, all the variables were converted into standardized variables by subtracting them from their means and dividing the results by their standard deviations. Because of standardization, the coefficient values can now be used to compare the strength of links among different variables. The regression coefficients among the original variables and the regression coefficients among the corresponding standardized variables are not the same. To understand the link between the original and standardized coefficients, consider the following simple example (used for pedagogic purposes only), where we want to regress graduate income per hour (X2) on the graduate CGPA (X1). The standardized versions of these two variables are Z2 and Z1.

Suppose that X1 = 3.4, 3.5, and 3.6, with a mean of 3.5 and standard deviation of 0.1, and that X2 = 10, 25, and 30, with a mean of 21.67 and standard deviation of 10.41. The relationships between the original and standardized variables can be visualized in Figure 5.

The original X1 is measured from zero at the CGPA points, but Z1 is measured from the mean of X1, which is 3.5, with a standard deviation of X1, that is, at a 0.1 unit interval. Therefore, a one standard unit increase in the graduate CGPA means a 0.1 unit increase in the original graduate CGPA (that is, $\Delta Z1 = 1 \Rightarrow \Delta X1 = 0.1$). Similarly, X2 is measured from zero in dollars per hour, but the standardized X2, that is, Z2, is measured from the mean of X2, which is 21.67, with a standard deviation of X2, that is, 10.41, is one unit now. Since the correlation measure is independent of the origin and scale of measurement, the correlation between X1 and X2 is the same as the correlation between Z1 and Z2. However, the regression coefficient of X2 on X1 is not the same as the regression coefficient of Z2 on Z1, although they are related. The benefit of standardization is that the strength of the dependence between various variables expressed by the regression coefficients is comparable, as the variables are made unit free during the standardization process[1].

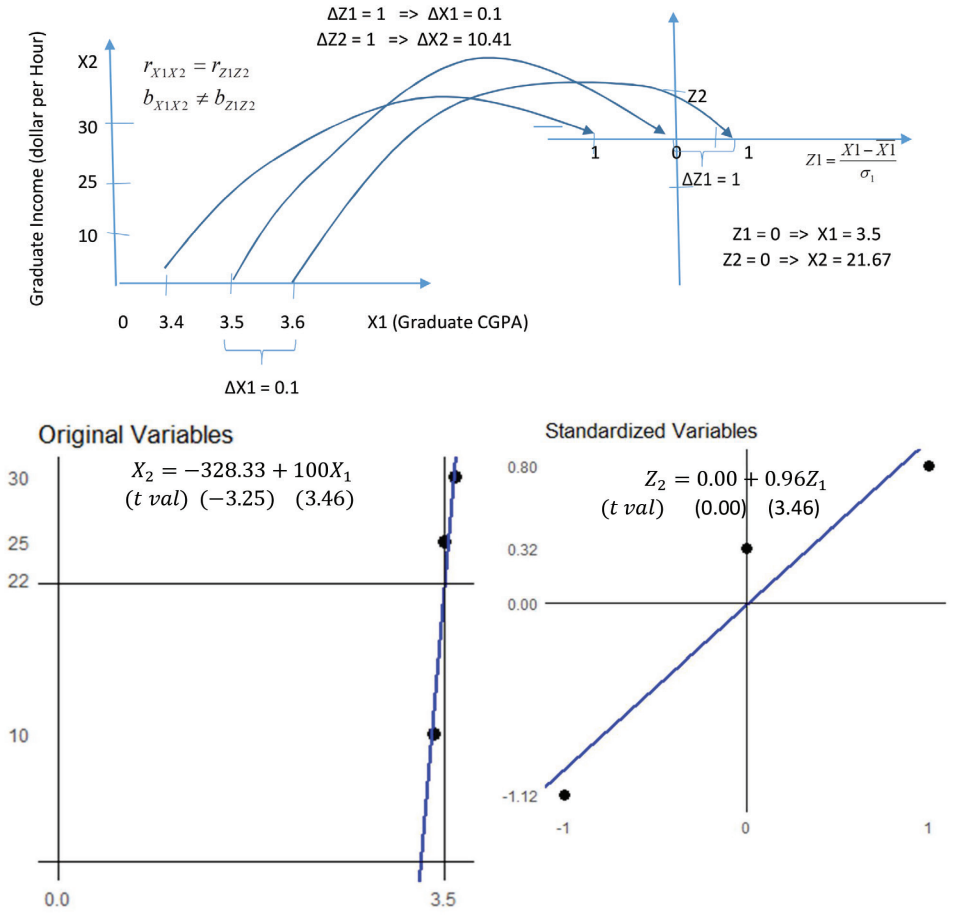

Figure 5: Correspondence between the Original and the Standaridized Variables

Keeping in mind the relationship between the standardized variables and original variables, we now interpret the estimated model in Figure 7. The estimated results show that the world economic situation, measured by world GDP, has a positive effect on remittance, which in turn has a positive effect on CAB. The CAB is also directly affected by the trade balance. That is, a positive trade balance contributes to a positive current account balance. The trade balance is first negatively affected by GDP, as a part of GDP is spent on imported goods, and second, by budget deficits, also negatively affected, as established before from the national income identity in equation (1), and third, positively affected by exchange rate depreciation, as imports become more expensive and exports become more competitive in foreign markets.

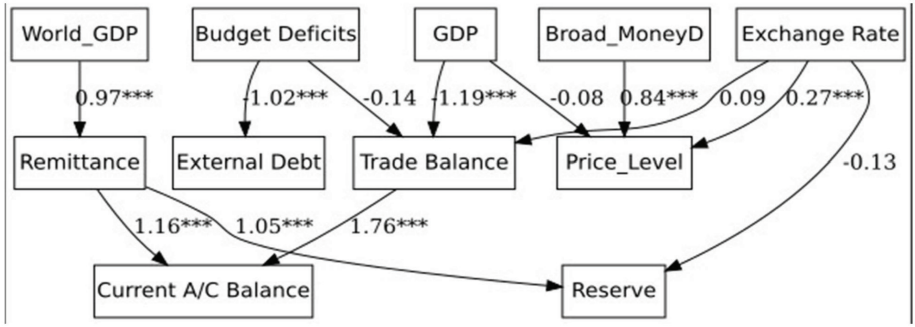

Figure 6: Estimates of the path coefficients in the hypothesized model

Note: *** means p-value less than or equal to 0.01

Source: Estimated via the Lavaan package (Rosseel, 2012) implemented in R.

The estimated result shows that the trade balance has a positive and significant effect on CAB. For each standard unit increase in trade balance, the improvement in CAB in the standard unit is 1.76, which is 3.56 billion dollars in this case. The trade balance is affected by three factors: the budget deficit, GDP, and exchange rate. The budget deficit negatively affects the trade balance. One standard unit increase in the budget deficit (5.88 billion dollars) will cause CAB to decrease by (-0.14 * 1.76) * 3.6 or -0.88704 billion dollars or -887.04 million dollars. Similarly, the indirect effects of GDP and the exchange rate on CAB are -1.20384 (= -0.19 * 1.76 * 3.6) billion dollars and 0.57024 (=0.09 * 1.76 * 3.6) billion dollars, respectively. If the deficit, world GDP, home GDP, and exchange rate change according to their trend values, where the trend values of these variables are -0.4487 billion dollars, 2,381 billion dollars, 9.207 billion dollars and 1.771 taka per dollar, respectively, then we can expect the CAB of Bangladesh to change by -0.213855 billion USD or -213.855 million USD[2]. In reality, the actual changes in various variables differ from their changes suggested by the trend values; consequently, the estimated change in the CAB differs from the actual value.

The top right portion of Figure 6 models the price level as functions of GDP, the broad money supply and the exchange rate. While broad money and exchange rate depreciation increase the price level, higher output or increases in home GDP reduce the price level. The estimated coefficients indicate that the money supply has the strongest effect on the price level (0.84) and that exchange rate depreciation has a moderate effect on the price level (0.27),

whereas GDP has a mild negative effect on the price level (-0.08). For trend changes in home GDP, broad money, and the exchange rate, the index of the price level responds by 1.564 points, which is close to the trend change in the exchange rate of 1.771 taka per dollar (see Appendix 2b). The results support purchasing power theory for Bangladesh data. An increase in the exchange rate is matched by an increase in the domestic price to keep the real exchange rate unchanged. The result also explains why the effect of the exchange rate on the trade balance is very weak and statistically insignificant (coefficient value of 0.09 with a p value of 0.29; see Appendix 3).

In the bottom right part of the diagram, the central bank reserve is modeled directly as a function of the exchange rate and remittance and indirectly as a function of world economic prosperity. The effect of the exchange rate on reserves is negative because as currency depreciates, the central bank sells reserves to buttress its fall to some extent, but the effect of remittance on reserves is positive, as it directly adds to reserves. Global economic prosperity also has a positive impact on reserves through remittance. The negative effect of the exchange rate on reserves is much weaker than the positive effect of remittances (-0.13 versus 1.16) in the dataset. One standard deviation (one unit) increase (depreciation) in the standardized exchange rate variable decreases reserves by 0.13 units of the standardized reserve variable. Although the coefficient of the exchange rate variable is small, its practical effect may be considerable, as the exchange rate frequently changes in Bangladesh. The negative sign of the coefficient also implies that as reserves decrease, domestic currency loses value, although at a different rate. (Note that $Y_i = a + bX_i + u_i$ implies $X_i = -\frac{a}{b} + \frac{1}{b}Y_i - \frac{1}{b}u_i$).

Although the current account deficit is a triggering factor for taking foreign loans, the external debt stock is not regressed on the current account balance here. The reason is that both falling and rising CAB can be consistent with rising external debt stock, as long as the CAB remains negative. For example, an increase in CAB from -2 billion to -1 billion will add to the debt stock, as a decrease in CAB from -1 billion to -2 billion will. A similar interpretation is applicable for falling external debt when CAB increases or decreases in the positive region. External debt and CAB are marked by a stock–flow relationship. Negative flows in CAB cause external debt to accumulate,

whereas positive CAB flows reduce the debt stock. Moreover, there are some episodes of positive CAB in the data (for example, from fiscal year 2011-12 to fiscal year 2015-16, when CAB was positive each year but the debt stock increased from 27 billion USD to 38 billion USD during that period). During this period, reserves also increased from 12.75 billion dollars in 2011-12 to 32.28 billion dollars in 2015--16. Obviously, the CAB surpluses as well as new loans were being used for accumulating reserves instead of paying for old external debt.

The external debt stock has rapidly increased in Bangladesh during the past two decades, increasing from 23.35 billion USD in 2008-09 to 96.25 billion USD in 2022--23, reflecting a 25% average annual growth rate of foreign loans. The outstanding external debt stock for Bangladesh since 2000-01 is shown in Figure 7. A large amount of interest is paid in the current account, and amortization payments are made in the financial account. In 2022-23, interest payments and amortization were 1.03 billion USD and 1.75 billion USD, respectively (see Table 1 above). Combining domestic and foreign debt, interest payments are now the highest expenditure item in the national budget, taking away a large chunk, approximately 22%, of the operating budget (it should be noted that the shares of education-technology and health in the operating budget in 2024--25 were 11.8 and 4.1, respectively. Relative to the total budget of 7,970 billion taka, the shares of interest, education-technology, and health are 14.2%, 14%, and 5.2%, respectively, in 2024-25).

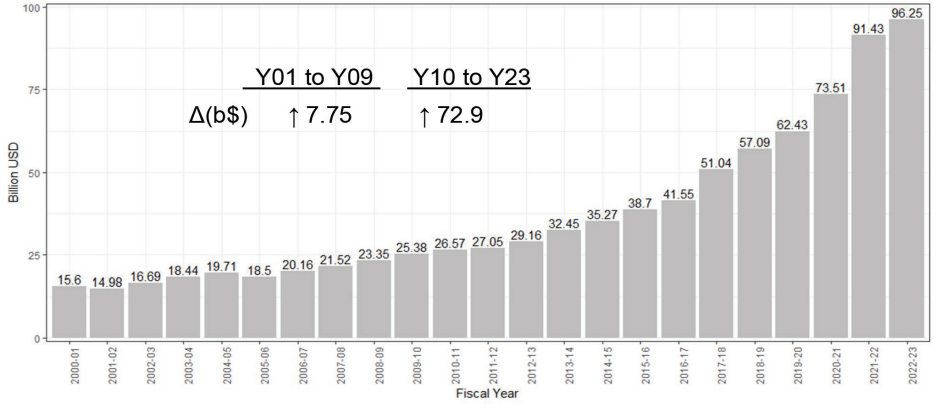

Figure 7: Bangladesh Outstanding External Debt (Billion USD)

Source: https://tradingeconomics.com/bangladesh/external debt

Among domestic debt and foreign debt, the latter deserves special attention. Paying for interest on foreign loans and a portion of the principle (amortizations) require foreign currency earnings from net exports (which have never been positive for Bangladesh) and/or managing new loans to pay for old loans, but this latter method increases debt stock instead of solving the debt problem. Another unpopular method would be to increase existing tax rates and/or introduce new taxes and reduce government expenditures. The experience of Kenya in mid-2024 in addressing the rising external debt problem in this way was not palatable at all[3]. The importance of access to foreign reserves can be seen from the recent inability of the Bangladesh Petroleum Corporation (BPC), a state-owned profitable corporation[4], to pay for fuel imports. It owes more than 500 million dollars to its foreign suppliers[5].

The increase in external debt can be compared to the cumulative Current Account Balance (CAB) value during the sample period from 1977-78 to 2022-23. During this period, external debt rose by $93.91 billion, while the cumulative CAB value was -$36.35 billion. This suggests that external debt was utilized not only to cover imports exceeding exports but also for capital flight abroad. Indeed, a report by the New York-based Global Financial Integrity (GFI) claimed that $149.20 billion was siphoned off from the country between 2009 and 2024 (cited in Islam, 2024). The GFI examines discrepancies in the export-import data of trading partners to identify illegal money transfers. However, methods of sending plundered money abroad, such as sending children for education overseas, may not be captured in their analysis.

EXTERNAL DEBT AND FINANCIAL CRISIS

While the budget deficit is rising annually, external debt is rising in tandem (the correlation between these two variables is 99.2 percent, which is significant at the 5 percent level). Since GDP is also rising, meaning that the external debt-to-GDP ratio is not rising quickly, one might think that rising external debt should not be a problem. However, rising GDP itself does not create foreign currency to repay interest and amortize payments. As previously mentioned, positive CAB and high central bank reserves enable a country to repay its foreign debt. If rising GDP fails to have positive impacts on these two variables, the possibility of a financial crisis emerges.

Debt service in relation to export earnings, known as the debt–service ratio (DSR) in the literature, is particularly important in this context. A debt service–export earnings ratio of 25% or more is considered alarming. During the mid-1980s, this ratio exceeded 25% for many developing countries, especially African and Latin American countries, and created an international debt crisis. (Hallwood and McDonald, 1992). A country's debt service may become vulnerable to abrupt changes in export earnings through external shocks or sudden increases in import prices, such as oil price hike for oil importers. In such situations, the country may be forced to reduce necessary imports or raise interest rates to stem capital outflow. Both of these measures adversely affect the economic performance of the country.

By definition, DSR = DS/X, so changes in DSR can be written as $\Delta DSR/DSR = \Delta DS/DS - \Delta X/X$. This means that if debt service grows faster than export earnings, DSR will increase. Hallwood and McDonald (1994) further breakdown the $\Delta DS/DS$ term to show that the DSR increases if the trade deficit, interest rate, and actual amortization increase or export earnings decrease. Figure 8 below shows the total debt service as a percentage of export earnings for some South Asian counties since 2000. For Bangladesh, the DSR fell until 2015, when it was nearly 5 percent, and since then, it has drastically increased and now hovered at approximately 12 percent. The current performance of Bangladesh in terms of this indicator is similar to that of Nepal and Bhutan. India's position is very strong in this regard, with DSR values slightly above 5%. In 2020, the performance of Pakistan and Sri Lanka was alarming, but of late Sri Lanka seems to have managed well on this indicator, while the poor performance of Pakistan continues, with DSRs above 40%.

Another indicator that might be of interest regarding vulnerability to external debt is the reserve–external debt ratio. This indicator shows how much reserve a country has per dollar (or per 100 dollars, if expressed in percentages) of foreign loans. The indicator is more relevant for countries that have little current account surpluses. Figure 9 shows the trend of this ratio for the same set of South Asian countries since 1998. Two countries that are in serious condition according to this indicator are again Pakistan and Sri Lanka. Both are below a 10% value for this index. Although Sri Lanka has improved the debt service-export ratio index, its situation has not improved in terms of the reserve-external debt ratio index. Bangladesh is also deteriorating in terms of

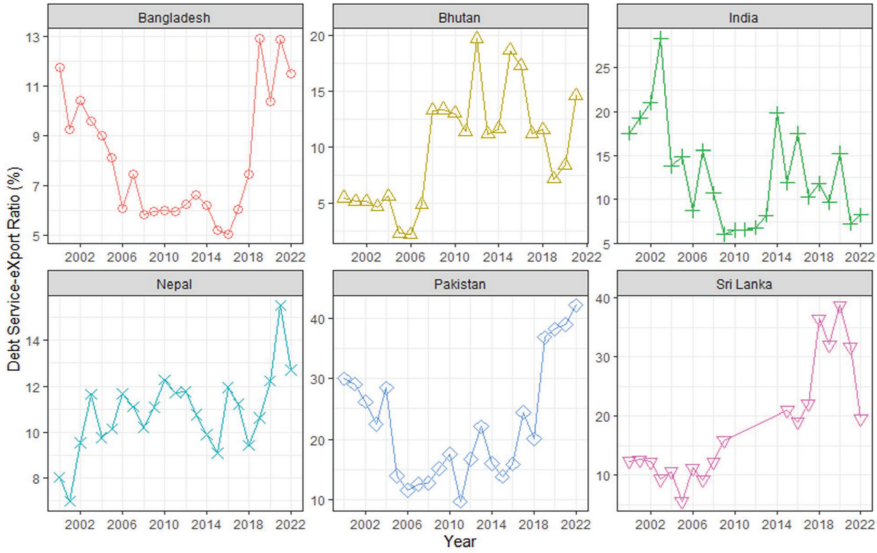

Figure 8: Debt Service as a Percentage of Export Earnings for Selected South Asian Countries

Source: Constructed by the author from WDI data.

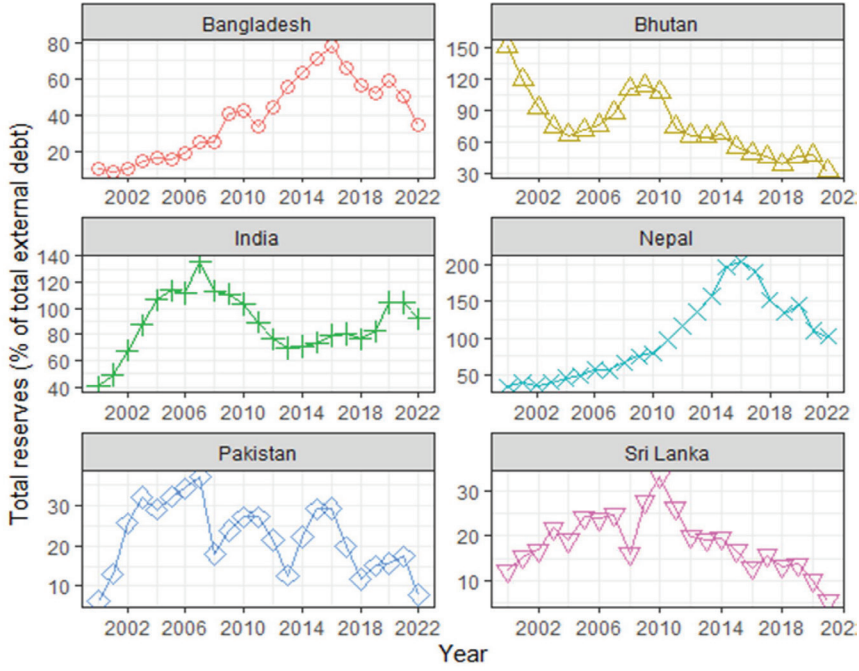

Figure 9: Total reserves as a percentage of total external debt stock

Source: Constructed by the author from WDI data.

this index, with a value slightly above 20%. India and Nepal are in a comfortable position on this index, both with values of approximately 60%, and Bhutan is sliding down, although it still remains above the 30 percent mark.

5. CONCLUDING REMARKS

This paper has examined some important links among macroeconomic variables, emphasizing the budget deficit as a source of external debt and the latter as a source of financial problems for developing countries such as Bangladesh constrained by foreign exchange earnings. The inadequacy of domestic resources or savings forces these countries to embark on foreign loans to expedite their development activities. However, the accumulation of foreign debt in relation to export earnings or foreign reserves has led to repayment problems and economic turmoil. To avoid insolvency or sovereign debt default, they resort to the IMF for bailouts with unpopular economic measures such as subsidy reduction, price corrections through devaluation and other measures, and reductions in government expenditures to reduce budget deficits. In South Asia, the economic problems faced by Pakistan and Sri Lanka in this regard are noteworthy. Bangladesh did well until 2016 but has shown signs of deterioration since then. Bangladesh has also been forced to take conditional IMF loans to obtain some relief from the foreign currency reserve problem. As a result, the rising trend of the budget deficit has been reduced by policy measures in the last 2024--25 fiscal year's budget. Compared with the previous fiscal year's budget, the budget share as a percentage of GDP and as a percentage of the total budget has also been reduced. It remains to be seen how Bangladesh recovers from the falling reserves and rising external debt problems. Obviously, success depends on generating sufficient current account surpluses for several years by increasing net export and remittance earnings relative to import expenditures.

The sources of the external debt accumulation problem and its remedy can be found in equation (1) mentioned in Section 2 of this paper. First, an increase in private investment, I, relative to private savings, S, an increase in government expenditure, G, relative to tax revenue collection, T, that is, an increase in the budget deficit, and an increase in imports, M, relative to exports, X, all contribute to worsening CAB and the accompanying foreign debt problem. The left-hand side of equation (1) can be expanded to include

interest payments on foreign loans and remittance earnings, and in that case, a higher stock of debt will require higher interest payments, a cause for a negative CAB, turning external debt into a self-sustaining phenomenon.

The IMF suggested measures such as liberalizing interest rates to increase domestic savings and restrain capital outflow, reducing budget deficits by reducing government expenditures (reducing subsidies, adjusting energy costs to conform to international prices, etc.), and liberalizing trade by removing trade restrictions, and reforming exchange rates, possibly correct the CAB imbalance and external debt problems. However, developing countries should be cautious about implementing these reform measures, as these countries are characterized by rigidities in resource allocation. Devaluation, for example, should theoretically shift resources from non-traded sectors to traded sectors, but unemployed resources in contracting sectors are seldom employed to expand the traded sectors because of the different skill requirements of these two sectors. The result of such measures then becomes greater inflation and aggravates the inequality problem. Therefore, any policy should be implemented gradually and accompanied by income redistribution programs.

Data Availability: The data are available from the author upon request

Conflict of Interests: The authors declare no conflict of interest.

Notes

1. Much like elasticity concept, we use to compare sensitivities of demand for commodities that are expressed in different units.
2. Details of the calculation are shown in Appendix 2a.
3. https://www.nytimes.com/2024/06/26/business/kenya-tax-protests-debt.html
4. BPC made Tk 5,858.95 crore profit in fiscal year 2022-23 and projected to make profit of over Tk 3,841.51 crore in 2023-24 fiscal year (Raana, 2024). (100 crores equal 1 billion)
5. Daily Azadi, 27 August, 2024, https://dainikazadi.net/শঙ্কা-নহৈ-জ্বালানি-তলে-সর/

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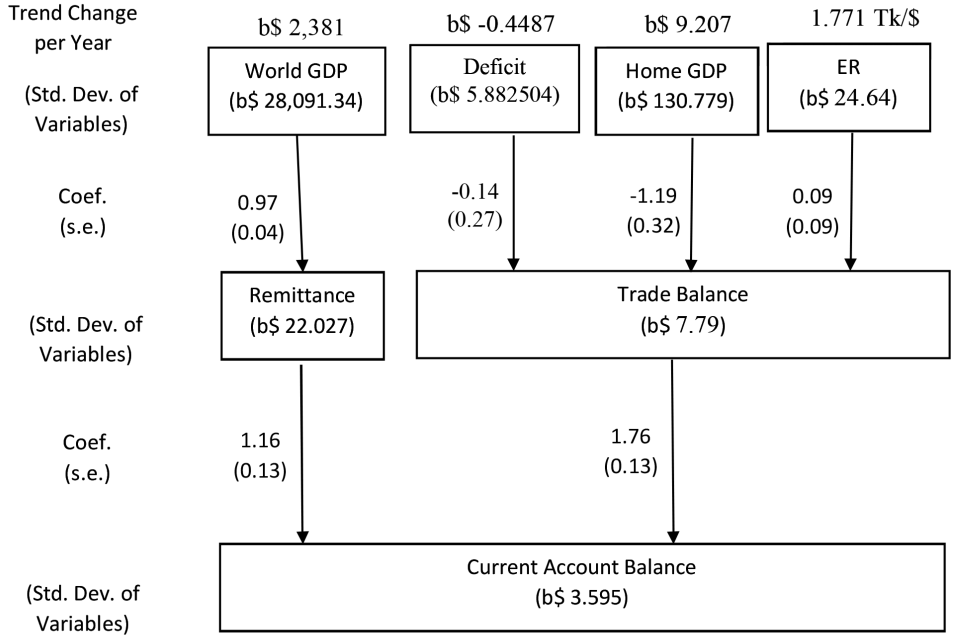
Appendix 1: Data Summary

Variables	Unit	Mean	Standard Deviation	Trend
World_GDP	Billions of USD	44,100	28,091.34	
GDP	Current USD	114,900,000,000	130,779,300,000	
Total Deficit	Billion USD	-5.38607	5.882504	
Remittance	Current USD	6,117,000,000	6,982,695,663	
External Debt	Current USD	23,460,000,000	22,027,581,426	
Exchange Rate	Taka/USD	53.89	24.64	
Current Account Balance	Current USD	-807,700,000	3,595,862,549	
Trade Balance	Billions of USD	-6.504	7.79	
Broad_Money	Billion USD	65.26788	72.354246	
Price_Level	1986-87 = 100	333.1	210.94	
Reserve	Current USD	9,279,000,000	13,250,953,786	

Appendix 2a: Net Effect on CAB of Trend Changes in World GDP, Deficit, Home GDP, and Exchange Rate

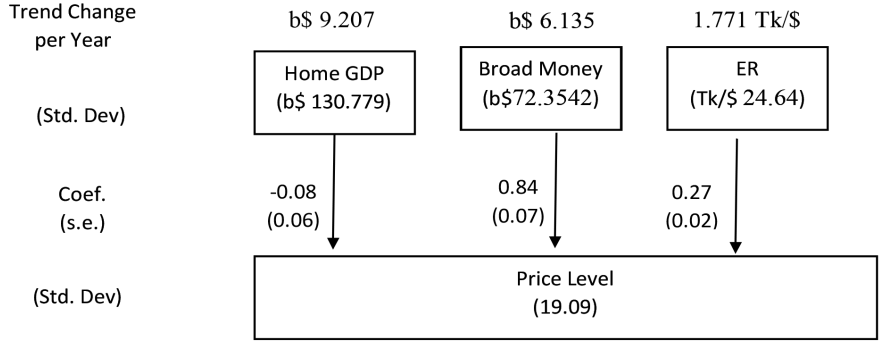


Net Effect on CAB

$$= \left(\frac{0.97*1.16*3.595}{28{,}091.34}\right)*2{,}381 + \left(\frac{-0.14*1.76*3.595}{5.882504}\right)*0.4487$$
$$+ \left(\frac{-1.19*1.76*3.595}{130.779}\right)*9.207 + \left(\frac{0.09*1.76*3.595}{24.64}\right)*1.771$$

= 0.342859 - 0.06756681 - 0.5300766 + 0.04092907
= b$ -0.2138554 or -213. 8554 million USD

Appendix 2b Net Effect on Price Level of Trend Changes in Home GDP, Money Supply, and Exchange Rates



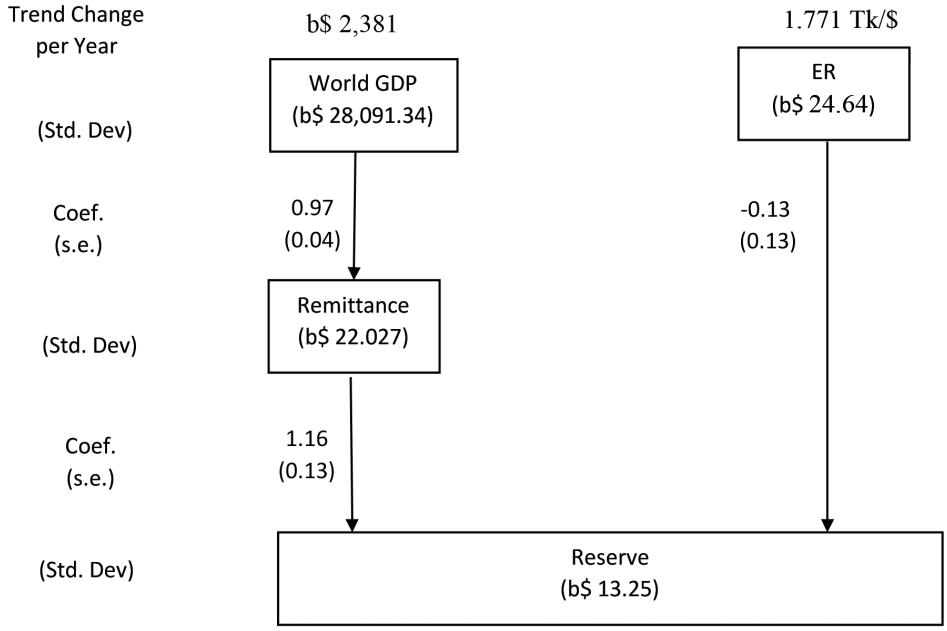
Net Effect on CAB

$$= \left(\frac{-0.08 * 19.09}{130.779}\right) * 9.207 + \left(\frac{0.84 * 19.09}{75.3542}\right) * 6.135 + \left(\frac{0.27 * 19.09}{24.64}\right) * 1.771$$

= -0.1075167+ 1.305546 + 0.366009 points

= 1.564039 points

Appendix 2c: Net Effect on the Reserve of Trend Changes in the World GDP and Exchange Rate



Net Effect on Reserve

$$= \left(\frac{0.97 * 1.16 * 13.25}{28.091.34} \right) * 2{,}381 + \left(\frac{-0.13 * 13.25}{24.64} \right) * 1.771$$

= b$ 1.100262 - 0.06666406 or 1.033597 billion USD

Appendix 3: Model It

```
>   summary(fit3a)
lavaan 0.6--18 ended normally after 95 iterations

  Estimator                                         ML
  Optimization method                           NLMINB
  Number of model parameters                        30

  Number of observations                            36

Model Test User Model:

Test statistic                               254.677
  Degrees of freedom                              27
  P value (Chi-square)                         0.000

Parameter estimates:

  Standard errors                            Standard
  Information                                Expected
  Information saturation (h1) model          Structured

Regressions:
                   Estimate Std.Err z value P(>|z|)
  Ext_Debt ~
    Deficit           1.016    0.020   51.261    0.000
  TB ~
```

```
    Deficit          -0.149    0.297   -0.501    0.616
    GDP               -0.866    0.349   -2.484    0.013
    ER                 0.047    0.088    0.532    0.595
CAB ~
    TB                 1.669    0.132   12.659    0.000
    Remittance         1.064    0.128    8.332    0.000
  Remittance ~
    World_GDP          0.975    0.037   26.196    0.000
  Reserve ~
    Remittance         1.008    0.147    6.870    0.000
    ER                -0.070    0.143   -0.489    0.625
  Price_Level ~
    GDP               -0.080    0.100   -0.797    0.426
    Broad_Money        0.782    0.102    7.639    0.000
    ER                 0.333    0.020   16.815    0.000

Covariances:
                   Estimate Std.Err z value P(>|z|)
 .Ext_Debt ~~
CAB               0.033    0.012    2.754    0.006
   .Reserve          -0.028    0.009   -3.140    0.002
   .Price_Level       0.004    0.002    2.529    0.011
 CAB ~~
   .Reserve          -0.062    0.030   -2.069    0.039
   .Price_Level       0.009    0.006    1.547    0.122
 .Reserve ~~
   .Price_Level      -0.007    0.004   -1.565    0.117
```

```
Intercepts:
                   Estimate Std.Err z value P(>|z|)
Ext_Debt          -0.000    0.022   -0.000    1.000
TB                -0.000    0.036   -0.000    1.000
   .CAB               -0.000    0.081   -0.000    1.000
   .Remittance        -0.000    0.037   -0.000    1.000
   .Reserve           -0.000    0.058   -0.000    1.000
   .Price_Level        0.000    0.012    0.000    1.000

Variances:
                   Estimate Std.Err z value P(>|z|)
Ext_Debt           0.017    0.004    4.243    0.000
TB                 0.047    0.011    4.243    0.000
CAB                0.237    0.056    4.243    0.000
Remittance         0.048    0.011    4.243    0.000
Reserve            0.119    0.028    4.243    0.000
   .Price_Level        0.005    0.001    4.243    0.000

>
```