EXCHANGE RATE MISALIGNMENT AND FINANCIAL LIBERALISATION: EMPIRICAL EVIDENCE AND MACROECONOMIC IMPLICATIONS FOR UGANDA, 1993-2004

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Abstract:

This study empirically investigates Uganda's equilibrium real exchange rate (EREER) during 1993M1 to 2004M12. Using *ARDL* approach to cointegration, we find that a long-run relationship exists between Uganda's REER and its determinants, driven largely by trade balance, openness, fiscal deficits, and capacity utilization. Consequently, we estimated a long-run EREER model. Comparing the actual REER and the EREER reveals that Uganda's REER is overvalued over the recent period, 2003-2004. The macroeconomic financial costs of this overvaluation are found to be quite high for the Ugandan economy. Policy-wise, the results suggest that appropriate policy must aim at avoiding exchange rate overvaluation in support of external macroeconomic stability.

Key Words: Exchange Rate Misalignment, Exports, Uganda, equilibrium exchange rate, Overvaluation.

[1] Authors acknowledges useful comments from members of the BOU MCPC, Ms Davis Fiona of MFPED, and other staff of BOU. All errors and omissions remain my own. The views expressed in this paper are my own and do not represent the official position of the BOU.

I Introduction

In the literature, the concept 'overvaluation of the exchange rate' refers to conditions when the exchange rate is below its long-run equilibrium levels based on the fundamental factors driving it (e.g. see Richaud, Varoudakis, and Veganzones, 2000). It is widely perceived that one of the consequences of exchange rate overvaluation (or trying to defend an overvalued exchange rate) is the frequent cause of balance of payments crises. To overcome this, governments usually pursue polices that avoid overvaluation. Since November 1993, Uganda adopted a floating exchange rate regime aimed at supporting export-led growth and poverty reduction strategy. Consequently, after an initial appreciation, the shilling depreciated steadily (both in nominal and real effective terms) to January 2003 and helped to support export sector growth. However, the exchange rate has since started the appreciation trends from mid-2003 and there are risks that the underlying appreciation and overvaluation might adversely affect future export growth, and undermine macroeconomic stability.

Although the global decline in the value of the US$ against major currencies might have contributed to the appreciation of the shilling, the recent appreciation pressures since mid 2003 seems to be aggravated by BOU's current sterilization policy, which aims at selling foreign exchange whenever opportunities arise[2]. The rationale for BOU's current sterilisation policy is currently understood to mean assisting BOU in its efforts to mop up liquidity. In this framework, it is difficult for one to exonerate BOU's actions to be adding to the appreciation pressures, beyond that caused by the weakening of the US$, and donor inflows. Although there is no apparent misalignment between the 'interbank' and 'bureau' rates, a recent study (BOU and Government, 2004) of Uganda's exchange rate and its effect on exports performance suggests that although Ugandan exports are hypothesized to break-even at Shs1755/US$ (Dec, 2004), the shilling has continued to perform below that level. This situation is not helped by the fact that Uganda's recent headline inflation rate of 8.4% (January, 2005) is higher than that of her weighted major trade partners, by a difference of about 5-6 percentage points, which suggests further that Uganda's nominal exchange rate should be depreciating at approximately that differential rate per year.

[2] It is however, worth noting that the shilling is not overvalued in the traditional sense where the BOU sells forex to defend a fixed level. Rather, because of the overvaluation of the shilling, BOU is not able to continue selling FOREX given the problems facing the export sector.

The consequences of the recent exchange rate appreciation on the Ugandan economy cannot be underestimated. Already, the Uganda Exporters Association have sought audience with BOU to raise their concerns about the appreciating shilling. This has invited the Ministry of Finance and Research Dept of BOU to initiate a joint study to investigate the competitiveness of the export sector. Likewise, Uganda has also agreed to offer subsidies to the cotton farmers in the East. A more recent adverse development pertains to tobacco production and procurement in Western Uganda, whereby BAT (U) Ltd has declined from any more purchases of extra (and purported 'surplus') tobacco supplies in that region. BAT's argument that tobacco producers must be punished for overproducing appears to be counterproductive to government's strategy of export-led growth and poverty eradication. Among other traded goods, there are also complaints from the sugar industry in Uganda that it is facing unfair competition from cheap imported Brazilian sugar[3]. Although some export sectors such as flowers and tourism might not be as vulnerable as tea, cotton, tobacco, or maize, the general early-warning signals suggest a need to investigate the problem of exports and exchange rate overvaluation further. Against this background, it is intuitive for one to argue that the appreciation of the exchange rate threatens to retard Uganda's future economic growth rates and overall macroeconomic stability. This raises a fundamental question: Is Uganda's exchange rate overvalued, and what is the likely effect of this on the economy?

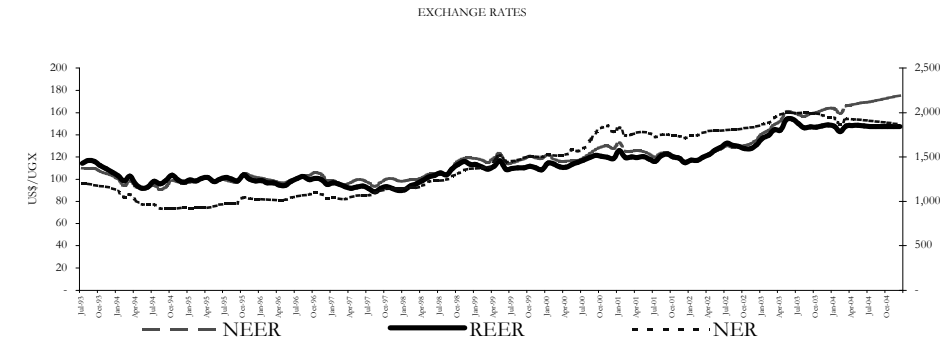
This paper examines this question from four main perspectives. First, it highlights the recent trends in Uganda's NER, NEER, and REER vis-à-vis exports and trade balance, in which it is shown that the exchange rate has assumed its appreciation trend in recent times. Secondly, it highlights the empirical evidence regarding the equilibrium REER in the context of Edwards (1989) theoretical model. The results show that Uganda's real exchange rate has been overvalued, particularly from mid 2003 onwards. Thirdly, it examines the consequences of maintaining an overvalued NEER and REER on the budget, the exports, and monetary management. The results show that it is too costly for Uganda to rely on forex sterilization that exacerbates appreciation and overvaluation pressures, particularly at a time when government is a net saver of foreign exchange and the export sector is on a strong growth trend. On the contrary, increased use of domestic OMO and REPO instruments appear to be more appealing for

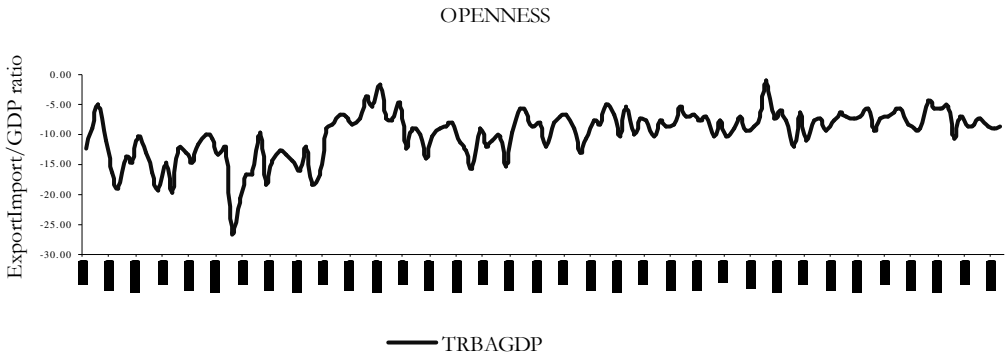
[3] The complaints from the domestic sugar industry comes at a time when Government argues that the sector is already protected by tariff barriers on imports. One might argue that such protection is not pro-poor as domestic producers are forced to buy more expensive sugar and that although protection might create jobs in the sugar industry, the benefits of these jobs to the economy is offset by welfare losses to all other consumers.

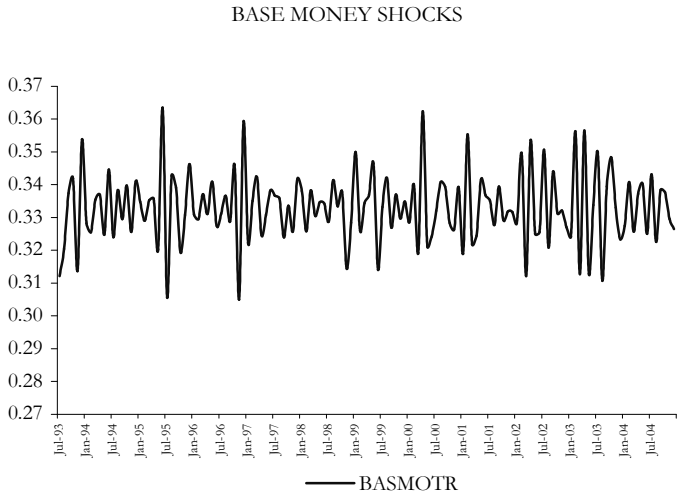
managing liquidity than forex sterilization. Hence, more weight should be attached to domestic instruments as tools of domestic liquidity management as compared to sterilization using forex.

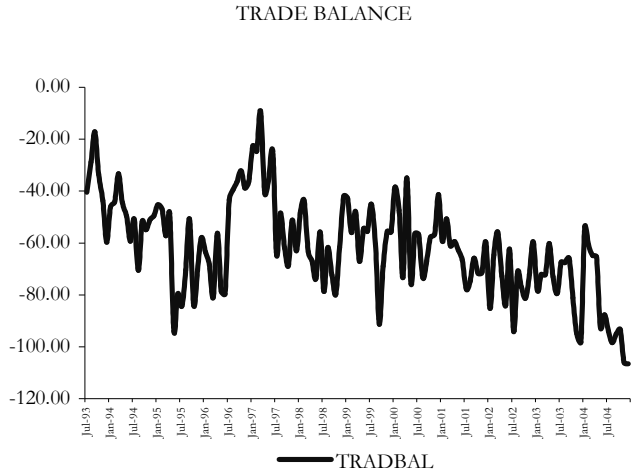
II Recent Trends in Leading Indicators and Evidence from the Literature

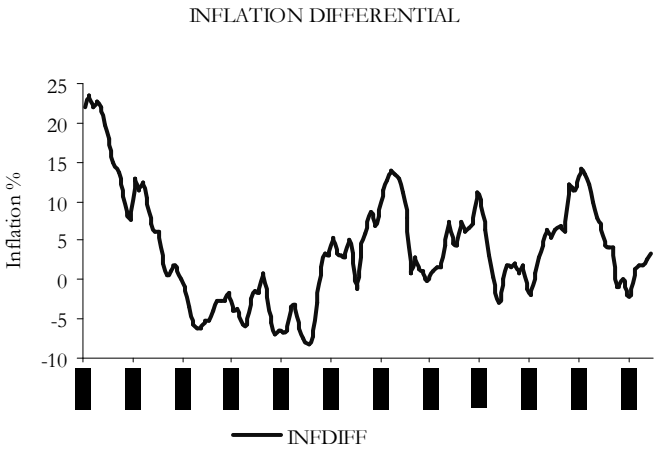
In the literature, several factors are known to influence a country's real exchange. Key among these include terms of trade, productivity, government deficit, trade balance, openness of the economy, and monetary shocks (Edwards, 1989). Recent trends are as indicated in figure (1) below.

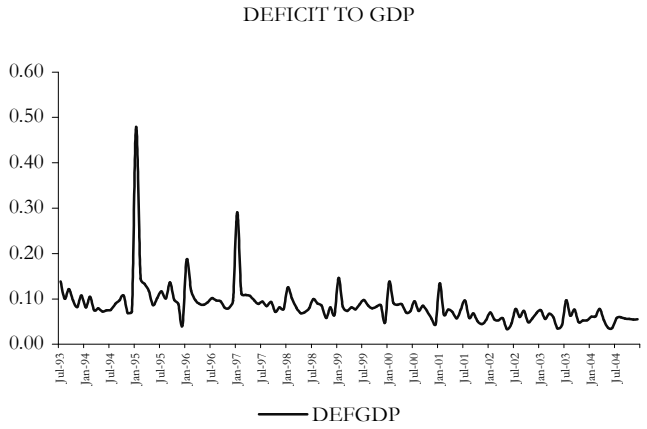












In the literature, four main studies (Musinguzi and Mutambi, 2002; Atingi-Ego and Sebudde (2000) Adam and Bevan (2002: cited in MacDonald, 2004); and McDonald (2004)) have attempted to investigate the extent of exchange rate overvaluation in Uganda. The study by Musinguzi and Mutambi (2002) used monthly data spanning 1993M8 to 2001M5. The main explanatory variables were terms of trade, productivity, government debt, government consumption of non-tradables, and capital inflows. Although the authors do not discuss the episodes of overvaluation/under-valuation, the results of their study suggested that the exchange rate was overvalued during 2000, and slightly undervalued in early 2001. However, their study does not explain the extent of overvaluation and under-valuation during the recent period of 2003-2005, as their study covers the period only up to 2001M5. The study by Atingi-Ego and Sebudde, (2000) examined Uganda's equilibrium REER based on annual data (1970-1999).

The main determinants were openness, terms of trade, Govt. expenditure and Capital flows. The resulting relationship was obtained in the form:-

1 reer = 0.503 lopen – 0.238 lge – 0.201 lflow – 0.831 ltot ……..……..……. (1)

Over the recent period (1996 –98), the study by Atingi-Ego and Sebudde (2000) produced results which suggested that REER was close to its equilibrium levels. However, although the coefficients were consistent with economic theory, the authors did not report the corresponding t-statistics, which makes it difficult for one to ascertain the suitability of the results of their study. Secondly, the period covered spanned several economic policy regimes, the significant ones being varying exchange rage regimes, as well as controlled vas liberalized trade regimes. Based on both accounts, it is difficult for one to ascertain the reliability of the results. Furthermore, since their study was confined to the period 1970 to 1998, it does not help one to explain whether or not Uganda's exchange rate is overvalued in the recent period (2003-2005)

In Adam and Bevan (2003), an attempt was made to investigate Uganda's equilibrium real exchange rate (REER) using quarterly data from 1993Q3 to 2003Q3. The authors applied OLS estimation methods. The main determinants of the REER in their model were log of terms of trade (tot), log of government expenditure as ratio of GDP and log of net capital flows. The authors focused on the internal REER as the main dependent variable, and obtained results in the form:-

REER = -0.10 l tot – 0.33 lge – 0.17 l flows ……..… ..(2)
(1.77) (1.83) (3.93)

Although the results appeared to be in line with economic theory, the authors did not proceed to report the results of misalignment. In general, both studies (Atingi-Ego and Ssebudde, 2000; and Adam and Bevan, 2003) do not help one to answer the question of whether or not Uganda's exchange rate is overvalued over the recent period. Against this background, this study re-examines the question of exchange rate overvaluation in Uganda's recent times. The present study invokes the theoretical model suggested by Edwards (1989) which is then adapted to take into account both 'fundamental factors' over the medium and long-run (e.g. terms of trade, productivity, investment) as well as 'short-run macroeconomic variables' (such as monetary shocks, fiscal deficits/GDP ratios, inflation differentials,

and exchange rate devaluations). The trends for each of the main indicators are as shown in Chart 1 above.

III The Model, Hypothesis and Estimation Methods

The Model and Hypothesis

Consistent with the theoretical perspectives suggested in Edwards, (1989) and Montiel, (1999), we adopt an augmented analytical framework of exchange rate determination for developing countries since it is considered to encompass the main theoretical economic issues pertinent to foreign exchange markets pertinent to economically liberalizing LDCs such as Uganda. For example, we adapt the Edwards (1989) model by taking into account the effects of inflation differential between Uganda and her major trading partners. Secondly, we introduce the terms of trade factor to take into account the 'small-open country assumptions'. This is because Uganda lacks the necessary market power to influence terms of trade and other prices on the world market. Thirdly, we introduce the capacity utilisation factor to take into account other costs and structural supply issues likely to affect the exchange rate (e.g. see supply of exports (Gotur, 1985; IMF, 1984). Fourthly, we adapt the public expenditure pressures into the model to reflect the fact that the influence of fiscal operations may have a major effect on exchange rate. The composition of fiscal expenditures between traded and non-traded goods has been theorized to affect the exchange rate in Uganda (See Adam, 2004). Finally, we introduced trade openness factor to capture the the influence trade pressures on the exchange. In line with the theoretical perspectives suggested in Edwards (1989), Uganda's real effective exchange rate (REER) can be postulated as[4]:-

$$\log \quad REER_t = \alpha_0 + \alpha_1 \log FISC_t + \alpha_2 \log TOT_t + \alpha_3 \log CU_t + \alpha_4 \log LOPEN + \alpha_5 \log LBASM_t + \alpha_6 INFDIF_t + \alpha_7 KAPFLOW + \mu' \quad \ldots..(3)$$

$$\alpha_0, \quad \alpha_1, \quad \alpha_2 > 0, \quad \alpha_3 > 0; \qquad \alpha_4 < 0; \qquad \alpha_5 < 0; \quad \alpha_6 < 0; \vdots \quad \alpha_7 < 0$$

Where,

$FISC_t$ Is Uganda's public expenditure pressures/GDP, measured as fiscal deficit to GDP ratio;

TOT_t Is Uganda external terms of trade index measured on the basis of trade-weighted prices of exports in relation to the trade-weighted price of imports.

[4] The theoretical basis of the Edward's model is generally consistent with 'optimal currency theory' framework.

CU_t Is capacity utilization, approximated by the index of industrial as a ratio its trended output levels.

$LOPEN_t$ Is trade openness approximated by the absolute sum of imports and exports as a ratio of GDP.

$LBASM_t$ Is the monetary shocks, measured as the ratio of base money relative to its trended levels.

$INFDIF_t$ Is the inflation differential, represented by Uganda's inflation rate less the rate of inflation of its major trade partners.

$CAPFLOW_t$ Is the capital flows, represented by Uganda's current account balance as a ratio of GDP (based on the principal that developments in the current account must be financed by developments in the capital account).

The ARDL Approach to Cointegration Methods of Analysis

On the basis of the above theoretical relationships, we follow analytical methods adopted in other studies (Kihangire et.al., 2005; Kihangire, 2004; Abbott, Darnell and Evans, 2001) to investigate the determinants of *EREER* based on *ARDL-ECM* approach to cointegration. Contrary to other methods of analysis, we consider the *ARDL* approach to cointegration appealing because it extends beyond the standard error correction methods (which call for strict I(0) or I(1) series, by accommodating other series that might be fractionally integrated (e.g. see Pesaran and Pesaran, 1997; and Pesaran, Shin and Smith, 2001). We estimate the *EREER* based on the model (3) in the form given by:-

$$\log \Delta REER_t = \beta_0 + \sum_{i=1}^{l-1} \alpha_{1i} \Delta \log FISC_{ti} + \sum_{i=1}^{m-1} \alpha_{2i} \Delta \log TOT_{ti} + \sum_{i=1}^{n-1} \alpha_{3i} \Delta \log CU_{ti} + \sum_{i=1}^{p-1} \alpha_{4i} \Delta \log LOPEN_{ti} + \sum_{i=1}^{q-1} \alpha_{5i} \Delta \log LBASM_{ti} + \sum_{i=1}^{q-1} \alpha_{6i} \Delta \log INFDIF_{ti} ..$$

$$+ \sum_{i=1}^{l-1} \alpha_{7i} \Delta \log CAPFLOW_{ti} + \phi \log REER_{t-1} + \phi_1 \log FISC_{t-1} + \phi_2 \log TOT_{t-1} + \phi_3 \log CU_{t-1} + \phi_4 \log LOPEN_{t-1} + \phi_5 \log LBASM_{t-1}$$

$$+ + \phi_6 \log INFDIF_{t-1} + \phi_6 \log INFDIF_{t-1} + \phi_7 \log CAPFLOW_{t-1} + \upsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

On the basis of the estimated parsimonious model in (4) above, we then carried out *bounds tests* using the calculated *F-statistic* and tested the null hypothesis H_0 of 'no long-run relationship' vis-à-vis H_A as:

$$H_0 : \phi = \phi_1 = \phi_2 = \phi_3 = \phi_4 = \phi_5 = \phi_6 = \phi_7 = 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(5)$$

$$H_A : \phi \neq \phi_1 \neq \phi_2 \neq \phi_3 \neq \phi_4 \neq \phi_5 \neq \phi_6 \neq \phi_7 \neq 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(6)$$

Consistent with Pesaran, Shin and Smith, (2001), support for the existence of a long-run relationship prevails if there is insufficient evidence to accept H_0 in (5) and hence the corresponding *ARDL-ECM* long-run parameter estimates are derived from (4) above in an equation of the form:-

$$\log REER_t = \psi_1 \log FISC_t + \psi_2 \log TOT_t + \psi_3 \log CU_t + \psi_4 \log LOPEN_t + \psi_5 \log LBASM_t + \psi_6 \log INFDIF_t + \psi_7 \log CAPFLOW \quad .(7)$$

Where

$$\psi_1 = \frac{\phi_1}{\phi}; \quad \psi_2 = \frac{\phi_2}{\phi}; \quad \psi_3 = \frac{\phi_3}{\phi}; \quad \psi_4 = \frac{\phi_4}{\phi}; \quad \psi_5 = \frac{\phi_5}{\phi}; \quad \psi_6 = \frac{\phi_6}{\phi} = \psi_7 = \frac{\phi_7}{\phi} \ldots\ldots\ldots\ldots\ldots\ldots(8)$$

IV Results and Discussions

The data for the various variables was obtained from *BOU's BOP, UBOS*, and Ministry of Finance. Based on monthly data over the period 1993M1 to 2004M4. The results of the general-to-specific *ARDL-ECM* (Table 2) revealed that a long-run relationship exists between the exchange rate and its determinants, driven largely by monetary shocks, inflation differentials, capacity utilization, openness, and capital flows. At the 5% level, the calculated F-statistics for bounds test was 4.18, compared to the tabulated F-statistic of *I(0)=2.365* and *I(1) = 3.553*.

Table 1: Results of General to Specific *ARDL-ECM* EREER Estimations, 1994M1-2004M12

	MONTHLY LAGS												
	0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
C	0.6093*												
	(2.2749)												
DLogREER				0.2168**	0.1974*								
				(1.9970)	*(2.2586)*								
DLogFISC	0.0187*		0.0113	0.0192*									
	(2.1998)		*(1.6441)*	*(2.5775)*									
DLogTOT						-0.0344	0.05937						
						(-1.4110)	*(2.2740)*						
DLogCU				-0.1574*		0.0997**							
				(-3.7867)		*(2.3480)*							
DLogOPEN		-0.0666*		0.0647*	0.0378	0.0715**	0.0506						
		(-7.3666)		*(2.9402)*	*(1.4668)*	*(2.6444)*	*(2.4345)*						
DLogLBASM		0.6026	-0.4016	-0.1809	-0.1160								
		(-1.4272)	*(-1.4059)*	*(-1.3500)*	*(-2.0985)*								
DLINFDIF	0.0034*	-0.0012*	-0.0008**	-0.0011**	0.0011**								
	(7.2842)	*(-2.4113)*	*(-1.7027)*	*(-1.8922)*	*(2.3776)*								
DLKAPFLOW		-0.0228**											
		(-2.2062)											
LogREER $_{-1}$	-0.0948**												
	(-2.4109)												
LogFISC $_{-1}$	0.0397												
	(3.1207)												
LogTOT $_{-1}$	0.0186												
	(1.2909)												
LogCU $_{-1}$	-0.2725*												
	(-3.5534)												
LogOPEN $_{-1}$	0.0684												
	(3.5200)												
DLogLBASM $_{-1}$	0.6921												
	(1.3678)												
DLINFDIF $_{-1}$	-0.0009												
	(-0.3311)												
DLKAPFLOW $_{-1}$	-0.0202**												
	(-2.2684)												

R2-Bar		0.7705	
DW Statistic		1.6896	
RSSR		0.00521	
Serial Correlation	χ^2 (12) (LM version)	17.9207	*(0.118)*
Functional Form	χ^2 (1) (LM version)	0.2812	*(0.596)*
Normality	χ^2 (2) (LM version)	0.2193	*(0.896)*
Heteroskedasticity	χ^2 (1) (LM version)	0.0228	*(0.880)*

The results of the *ARDL-ECM* model based on Akaike information criteria suggest that:-

$$\Delta \log REER_t = 0.2930 + 0.1345\Delta \log FISC_t + 0.01922\Delta \log TOT_t + 0.0439\Delta \log CU_t - 0.07604\Delta \log LOPEN -$$

$$(2.5024) \quad (1.3204) \qquad (1.1127) \qquad (0.5272) \qquad (-5.7029)$$

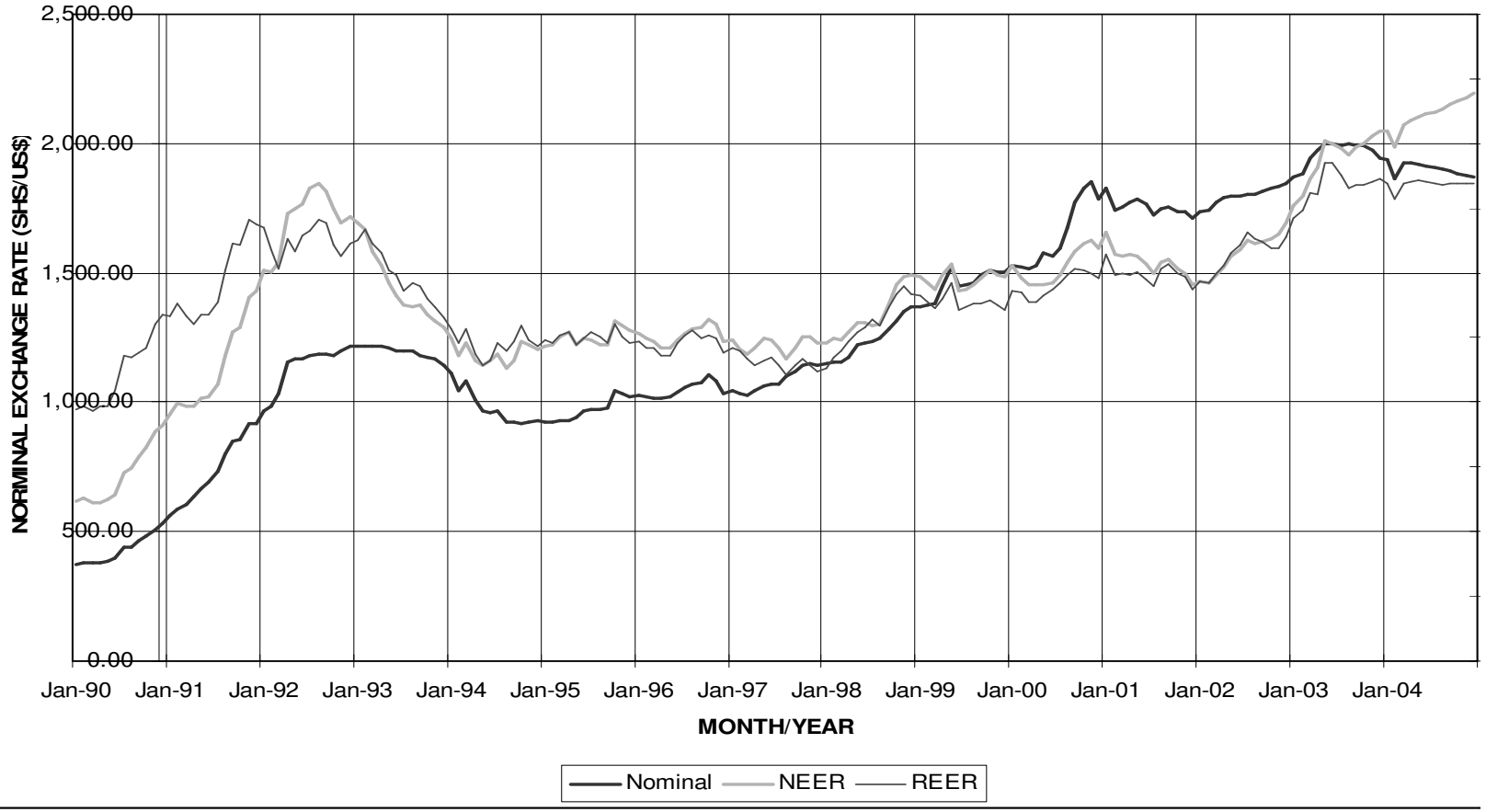
$$-0.1878\Delta \log LBASM_t - 0.0091\Delta INFDIF_t + 0.02401\Delta CAPFLOW_t - 0.1545 ecm$$

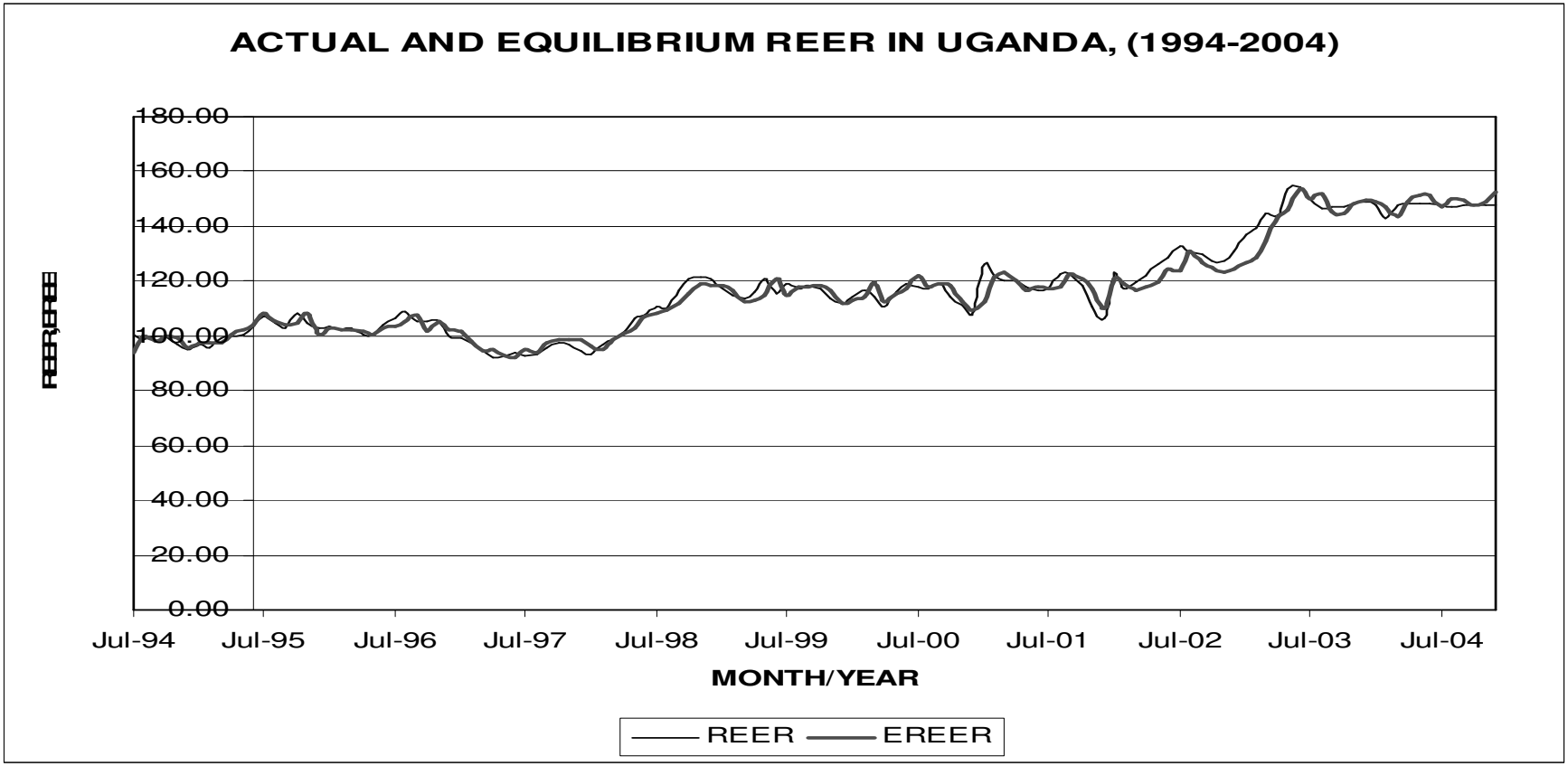
$$(-1.9701) \qquad (-3.0850) \qquad (-2.6884) \qquad (-3.6054) \ldots\ldots\ldots\ldots\ldots\ldots (9)$$

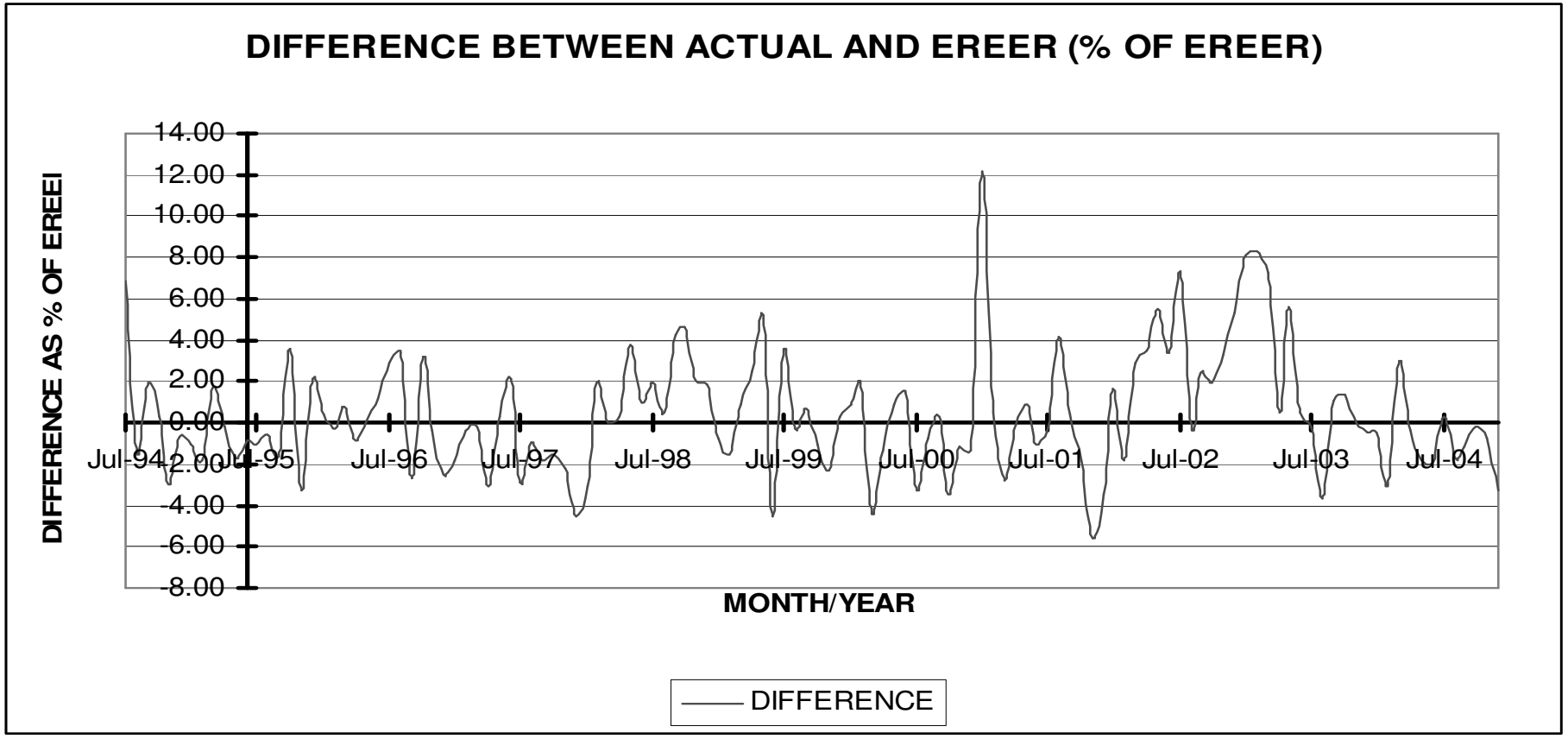
Whereby *ecm* is given by

$$ecm = \log REER_t - 0.2930 * C - 0.08706 \log FISC_t - 01244 \log TOT_t - 0.2840 \log CU_t + 0.4922 \log LOPEN +$$
$$+1.2156 \log LBASM_t + 0.0589 INFDIF_t + 0.1554 CAPFLOW_t \ldots\ldots\ldots\

TABLE 1: TRENDS IN NOMINAL, NEER, AND REER (1990-2004)




ACTUAL AND EQUILIBRIUM REER IN UGANDA, (1994-2004)
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Jul-94
Jul-95
Jul-96
Jul-97
Jul-98
Jul-99
Jul-00
Jul-01
Jul-02
Jul-03
Jul-04
MONTH/YEAR
REER
EREER


DIFFERENCE BETWEEN ACTUAL AND EREER (% OF EREER)
DIFFERENCE AS % OF EREER
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-2.00
-4.00
-6.00
-8.00
Jul-94
Jul-95
Jul-96
Jul-97
Jul-98
Jul-99
Jul-00
Jul-01
Jul-02
Jul-03
Jul-04
MONTH/YEAR
DIFFERENCE

IV The Macroeconomic Impact of Exchange Rate Overvaluation on Uganda's Economy

The macroeconomic impact of exchange rate appreciation and overvaluation can be examined under five main perspectives as shown in Table 1 below. The analysis takes into account changes in the exchange rate, using June 2003 as the base year[5]. The following conclusions can be reached:-

ITEM	*Jun-03*	*2003/04Q1*	*2003/04Q2*	*2003/04Q3*	*2003/04Q4*	*2004/05Q1*	*2004/05Q2*	*2004/05Q3*	*2004/05Q4*	*TOT. 03-04* (Shsbn)	*TOT.04-05* (Shsbn)
1.Import Support Inflows		37.25	127.31	46.89	227.26	66.06	146.86	74.93	202.42		
2.Govt imports of G&S, + Debt services		29.70	37.34	31.18	38.95	31.80	34.50	25.06	45.55		
3.Net Import-support inflows (US$mn)		7.56	89.96	15.71	188.31	34.27	112.35	49.87	156.87		
4.Sterilisation (US$mn)		-25.20	-7.25	-16.95	-91.45	-1.55	-6.55	-24.39	-50.60		
5.Total Exports US$mn (Merchandise only, BOP)		148.06	137.14	196.82	165.16	168.54	174.69	195.17	156.85		
6.Bank of Uganda Reserves US$mn (FEO)		968.71	1063.34	1042.64	1119.89	1140.49	1226.93	1247.46	1336.46		
7.Exchange Rate (Shs/US$, end-month average)	1998.23	1993.55	1942.38	1926.65	1818.66	1721.17	1738.02	1712.30	1712.30		
8.Costs to Government (ref to Jun03)		-0.04	-5.02	-1.12	-33.81	-9.49	-29.24	-14.26	-44.85	***-40.00***	***-97.84***
9.Costs to Exporters, (ShsBn) (ref to Jun03)		-0.69	-7.66	-14.09	-29.66	-46.70	-45.46	-55.81	-44.85	***-52.10***	***-192.81***
10.Costs to BOU (ShsBn) (ref to Jun03)		-4.54	-59.39	-74.63	-201.10	-315.99	-319.26	-356.69	-382.14	***-339.66***	***-1374.08***
11.TOTAL COSTS OF APPREC. (ShsBn) (ref Jun03)		-5.27	-72.07	-89.85	-264.57	-372.18	-393.95	-426.75	-471.84	***-431.75***	***-1664.73***
Stock of TBILLS (Shsbn)											
12.Domestic Interest Costs on Tbills (Shsbn)		44.66	51.41	53.92	44.78	39.70	36.20	36.10	40.60	***194.77***	***152.60***
(TOTAL COSTS TO GOVT: interest+appreciation)		44.70	56.43	55.04	78.59	49.19	65.44	50.36	85.45	***234.77***	***250.44***
13.Sterilisations Costs (Shsbn)		-50.24	-14.08	-32.66	-166.32	-2.67	-11.38	-41.76	-86.64	***-263.29***	***-142.45***

Source: BOU's Cashflow, the BOP, and Government's 2003/04 and 2004/05 budget Cashflows.

(a) Exchange rate overvaluation is very costly to the overall economy. In 2004/05, total losses (BOU, Govt, and Exporters) are estimated at Shs1664.7bn, up from the losses of Shs431.75bn incurred in the previous fiscal year.

(b) Exchange rate overvaluation is costly to government, particularly when it is a net saver of foreign exchange. For example, in 2004/05 government is estimated to incur implicit losses amounting Shs97.84bn had the exchange rate not to appreciate at least on nominal terms. There is a general view that if BOU sold more forex to sterlise liquidity, then domestic interest costs would have been lower. Summing the presumed lower interest costs already incurred plus the implicit losses from exchange rate appreciation suggests that total costs to government increased from Shs234.77bn in 2003/04 to Shs250.44bn in 2004/05.

[5] Since the bulk of the export sector uses a very small proportion of imported inputs (e.g. fish, coffee, gold, tea, flowers), the losses are estimated on the basis of export earnings multiplied by the difference between exchange rate at June 2003 and current period exchange rate. For BOU, since the Bank has minimum foreign liabilities, the estimated loss is simply the stock of foreign reserve holdings (net of IMF liabilities) earnings multiplied by the difference between exchange rate at June 2003 and current period exchange rate.

Government's case that interest costs to government of Shs152.6bn incurred in 2004/05 is at least lower than Shs195.2bn incurred in 2003/04 misses the point that the total costs to the budget are much higher in an environment of an appreciating exchange rate when the government is a net saver of foreign exchange.

(c) BOU has indirectly suffered from an appreciation and overvaluation of the shilling. The implicit total costs are estimated to amount to Shs1374.08bn, up from Shs339.75bn in 2003/04.

(d) In general, using foreign exchange sterilization as a tool of liquidity management at a time when the exchange rate is appreciating and the main agents are net savers of foreign exchange is more costly to the economy than using domestic OMO operations.

(e) Heavy reliance on foreign exchange sales for liquidity sterilization and less use of domestic instruments is very costly to BOU, government and exporters. Given the costs of exchange rate overvaluation to the economy, BOU's appropriate policy mix should be one that avoids nominal and real exchange rate overvaluation is support of external macroeconomic stability, while domestic policy aims at ensuring a low and stable inflation is support of internal macroeconomic stability.

(f) Management of domestic liquidity should be supported largely through the use of domestic instruments, and to a lesser extent sterilization of liquidity using foreign exchange. Although it is anticipated that this will cause a moderate rise in nominal and real interest rates, this will be beneficial as it will mitigate some of the MacKnown-Shaw hypothesis effects of financial repression, by supporting more savings which may in turn support more domestic investments. It is intuitive that higher domestic savings would be consistent with government's efforts to reduce donor dependence.

V Concluding Remarks and Policy Implications

This study has empirically estimated Uganda's equilibrium real exchange rate (EREER) during 1993M1 to 2004M12 using *ARDL* approach to cointegration. Overall, we find that a long-run relationship exists between Uganda's REER and its determinants, driven largely by trade balance, openness, fiscal deficits, and capacity utilization. Armed with these results, we then estimated a long-run relationship of the EREER model. On the basis the results obtained, we then compared the

actual REER and the EREER and obtained results from which we concluded that Uganda's REER is overvalued over the recent period, 2003-2004. The study then examined the macroeconomic financial costs of this overvaluation. We found costs to be quite high for the Ugandan economy. Policy-wise, it can be concluded that when an economy is a net saver of foreign exchange, then policy actions of government and the central bank must aim at avoiding exchange rate overvaluation in support of external macroeconomic stability.

On the basis of the analysis above, one can conclude that BOU's use of foreign exchange sales as policy instrument for liquidity management be revisited in the context of the exchange rate and its effects on external macroeconomic stability objective. In general, BOU's policy effort on liquidity management aimed at keeping inflation low need to be largely supported by issuance of domestic instruments, and other non-market related instruments, rather than heavy reliance on forex sales since this risks causing exchange rate misalignment.

Sustained overvaluation of the exchange rate risks one to reign in a 'Dutch Disease' unless action is taken to reverse the exchange rate trends. In the case of Uganda, it is difficult to sustain an overvalued exchange rate on the basis of aid inflows, unless this is supported by a sustained high growth and productivity in the export sector, augmented by large capital inflows. Policy-wise, allowing both the nominal and real exchange rates to depreciate moderately may provide incentives for the economy to build reserves and mitigate some of the losses in Uganda's exports sector. The consequences of this might be liquidity injections, which can be partly absorbed through issuance of domestic instruments, and/or increased government savings with the banking sector. The view that real domestic interest rates might increase, thereby risking crowding-out the private sector remains an area for future research. One could test the proposition that interest rates go up as government continues an expansionary fiscal policy stance, while the central bank remains committed to its low-inflation objective. It would also be a useful, future research to investigate the consequences of exchange rate misalignment from the viewpoint of an LDC economy that is a net user of foreign exchange.

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