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Foreign Exchange Policy: Its Effectiveness in the Nepalese Economy

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Abstract

Exchange depreciation is a significant outcome of the market mechanism. In the Nepalese economy, effective exchange rate index shows a sharp rise in exchange rate of foreign currencies. It implies that the nominal depreciation of domestic currency leads to a rise in general price level, which in turn lowers aggregate demand and thereby causes economic recession. Furthermore, the existence of incompetence situation in foreign trade, the deterioration of social security condition, and the slackness in government supervision on the efficacy of monetary and fiscal policies are the major responsible factors of increasing price level and exchange instability in Nepal. Thus, an appropriate exchange rate policy should be assigned a task, which it can perform successfully in achieving stability in the economy by maintaining internal as well as external balance.

Background

By Foreign exchange we mean a reserve of foreign currency in the domestic economy. More precisely, foreign exchange (forex) is the rate at which the national currency of a country is bought and sold against the international currency of another country in the forex market. If the supply of foreign currency is greater than the demand, it will fall below the par exchange and the value of domestic currency will appreciate. On the contrary, if the home currency is in greater supply, people have eager demand for exchanging the foreign currency. Thus, in aggregate the demand for forex arises from the payments items and its supply generates in receipts items of the balance of payments (BOP).

The central bank or monetary authority of a country either adopts fixed or flexible exchange rate policy in order to determine the forex rate. When the exchange rate between the domestic and foreign currency is fixed by the monetary authority and is not allowed to fluctuate beyond a limit, it is called fixed or pegged exchange rate (Mukherjee, 1994:848). Under this system, the monetary authority of a country fixes the official value of its currency in terms of a reserve currency or a basket of key currencies. The exchange rate so determined is known as currency's

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par value. The other exchange rate determined by market is called floating or flexible exchange rate. It is often argued that flexible exchange rate causes destabilization in exchange, uncertainty and speculation. However, the proponents of the flexible exchange rate have put forward strong arguments in favour of flexible exchange rate. They argued that flexible exchange rate policy provides a good deal of autonomy in respect of domestic policies (Dwivedi, 2003: 442).

Nepal as an open economy has been adopting dual exchange rate system. It is dual in the sense that Nepalese currency (NC) has been pegged with the Indian currency (IC) at currency basket regime whereas it floats daily with other convertible currencies. The basket system has two important features: *first* the currency basket, at which NC is pegged, is never disclosed. *Second,* although the NC has pegged to a currency basket, the rate of NC vis-a-vis IC has remained constant (Thapa, 2002:19).

No doubt, the open border of Nepal-India has presented an intimate relationship between the two countries. However, from the economic point of view, it has created some problems viz., price-hike inflation, exchange rate instability, smuggling, and penetration from illegal immigrants or refugees. Under these circumstances, an appropriate exchange rate policy might prove to be a tool for economic growth where both volume of trade and BOP are adversely affected.

Regarding an appropriate exchange rate regime, the existing system of full convertibility of NC vis-à-vis IC at officially pegged exchange rate appeared anomalous and needed to be considered for its discontinuation. Moreover, in the wake of the fixed exchange rate in the basket system, Nepal made a ground to expect that NC would have greater strength in the near future and holding of IC was no more secured from the view point speculative purposes (Gaudel, 2003:132).

Currently, seventeen commercial banks and fifty-six financial companies are involving in the Nepalese forex market. In this regard, it has been observed that Nepal cannot keep the NC overvalued against the US dollar relative to the IC and US dollar. In this case it would be difficult for Nepal to meet the demand for the US dollar. Also it would be possible that the private remittances and export earnings will be routed through India if NC in relation to IC is overvalued against the US dollar. Thus, in such a situation, the exchange rate between NC and US dollar may be effected by the emergence of broken cross rate of NC vis-à-vis US dollar and IC vis-à-vis US dollar. At this juncture, if the NRB does not keep pace the forex rate with the broken cross rate, the exchange arbitrage opportunities will immediately occur in the Nepalese forex market. Taking these facts into consideration, this paper attempts to investigate the effectiveness of foreign exchange rate policy in Nepal with the following specific objectives:

Objectives

The objectives of this study are:

- to highlight the structure of the foreign exchange rate determination in the Nepalese economy,

- to construct the foreign exchange index for the effectiveness of forex policy,
- to test the empirical results for forex policy implication, and
- to analyze the forex management policy implemented by the NRB.

Hypothesis of the Study

A nominal depreciation of the Nepalese currency (NC) leads to rise in general price level, This lowers aggregate demand, which in turn causes economic recession. This hypothesis formulates the view that nominal depreciation or devaluation of the domestic currency leads to economic recession in the Nepalese economy.

Methodology

In order to determine nominal foreign exchange index, 12 foreign currencies at buying rates have been taken into account from mid-July 1990 to mid-July 2002. For the same period, the effective exchange rate, often called *trade-weighted* indices have also been computed by taking IC and US dollar as representative foreign currencies. For this purpose, secondary data have been gathered from the Economic Survey of Ministry of Finance, HMG and from the Quarterly Economic Bulletin of the Nepal Rastra Bank. For statistical measurement, multiple regression models have been tested on the basis of 13 years time- series annual data from mid-July 1990 to mid-July 2002.

Forex Rate Determination

Forex rate between the two countries is the price at which exchange between the two currencies takes place. It is important to note that each exchange rate can be reported in two ways. Taking an example of the US dollar and NC exchange rate, it can be said that either an unit of US dollar buys Rs.73.24 or a Nepali rupee can buy 0.01365 US dollar (since 0.01365 =1/73.24).

The NRB fixes forex rate at buying & selling rates in the case of Indian currency (IC). Accordingly, Nepali rupee 160.00 has been fixed since long time per 100 Indian rupee. However, for other foreign currencies, open market exchange rates have been determined daily on the basis of market forces. Under the open market exchange rate system, the exchange rate quoted by different banks may differ daily due to their marketing activities. Out of 14 foreign currencies, 9 currencies such as the dollar of USA, Australia, Canada and Singapore, Euro, pound sterling, Swiss franc, Japanese yen, and Chinese Yuan have found publishing at both buying & selling rates in daily newspaper for the purpose of Nepal Rastra Bank Rest of the other 5 currencies, such as Swedish and Danish croner, Hong Kong dollar, Saudi Arab and Katari riyal have also been given only in buying rates (see, Appendix-A). Comparing the exchange rate of different foreign currencies, the buying/selling rate of pound sterling unit is the highest (i.e. Rs.140.08) and the value of Euro currency unit receives the second position (i.e. Rs.94.73) in open market exchange rates published by forex department of the NRB.

Construction of Forex Indices

1. Nominal Exchange Rate Index (NERI)

A study carried out by Thapa (2002) reveals that Nepal quoted her currency with 12 foreign currencies at both buying and selling rates and 8 foreign currencies quoted by NC were only at buying rates. For the purpose of this study, the nominal exchange rate of NC has been calculated with 12 foreign currencies at buying rates only. The harmonic mean (H.M) has also been computed to measure their standard average value (see, Appendix B). Then NERI has been constructed by taking 1990 as a base year period index. In this case, a rise in NERI represents a nominal depreciation of the domestic currency in the economy. Algebraically, the nominal exchange rate (NER) has been presented in the following form:

$$NER_i = \sum_{n=1}^{12} NER_i$$

(Based on the buying rate of US dollar on February 18, 2004.)

The nominal exchange rate of NC vis-à-vis other major trading currencies shows a depreciating trend in 2002 over the exchange rate of NC in 1990.With the help of nominal exchange rate and the price ratio of domestic country over foreign country, we can calculate the real exchange rate (RER) in the following form:

Thus, $RER = NER \times P_d/P_f$

where, P_d = price level in domestic country
P_f = price level in foreign country

In this case, it is argued that if the RER is low, foreign goods are relatively expensive and the domestic goods are relatively cheap and vice versa (Mankiw, 1993:190).

2. Effective Exchange Rate Index (EERI)

While calculating EERI, the NER of domestic currency is adjusted for trade sharing partner countries. The appropriate rate of exchange for a particular currency can be calculated by using a trade weighted exchange rate. Under this system, the share trade between the partner countries has weighted each exchange rate. Because of the limitation of time- series data on trade share with the different trade partner countries, the EERI is constructed with respect to IC and US dollar only. The main reason of taking US dollar for the third countries is that most of the trade with the third countries other than India is carried through US dollar. Thus, US dollar has been chosen as a representative rate for other countries. Hence, effective exchange rate (EER) can be computed as

$$EER_i = \sum_{i=1}^{2} (NER_{IC} \times TW_{in}) + (NER_{\$} \times TW_{oc})$$

where, EER = Effective Exchange Rate
NER_{IC} = Nominal Exchange Rate of NC with the Indian Currency
TW_{In} = Trade Share with India
$NER_{\$}$ = Nominal Exchange Rate of NC with the US dollar
TW_{oc} = Trade Share with Other Countries

After determining EER, EERI can be computed taking exchange rate of 1990 as a base period index. In this case, EER index shows its increasing trend up to 2002 (see Appendix C). Thus, a rise in EERI justifies the hypothesis that the nominal depreciation of domestic currency leads to a rise in general price level. This lowers aggregate demand, which in turn causes economic recession.

Empirical Analysis

Table: 1 Linear Regression Model **Observations: 13**

Dep.var.	Constant	Coefficients of Independent Variables				Adj. R^2	Fvalues	DW
		ForexT	ForexG	EERI	CPI			
1. NGDP	14491.9	20.906	44.519			.902	56.424	2.151
t-values	(0.538)	(6.167)***	(5.366)***					
2. NGDP	-196698	17.070	2333.72			923	73.224	1.785
t-values	(-4.758)***	(5.208)***	(6.277)***					
3. RGDP	133262	8.220	16.038			.908	59.995	2.220
t-values	(13.487)***	(6.606)***	(5.266)***					
4. RGDP	57607.3	6.860	836.019			.924	73.656	1.667
t-values	(3.701)**	(5.559)***	(5.972)***					
5. T.Def.	9230.67		-462.03	934.34		.849	34.622	1.169
t-values	(0.788)		(-2.964)**	(6.732)***				

* Significant at 10% level ** Significant at 5% level *** Significant at 1% level
Source: Appendix D.

Table 1 depicts the regression results obtained from the different equations of nominal GDP, real GDP and trade deficit functions. The estimated equations confirm a priori notion in terms of both signs and magnitudes. The coefficients of foreign exchange earnings from tourism (forexT) and Gorkha remittances (forexG) are found significant, indicating quick responsiveness to the national income. In the same way, the coefficients of effective exchange rate index (EERI) and the consumer price index (CPI) have also remained statistically

significant. Both the significant coefficients in model (5) suggest that the increase in international competitiveness represented by EERI reduces the trade deficit by a large amount on the one hand and the increase in inflation proxy by CPI raises trade deficit by a big volume on the other. Thus, the use of effective exchange rate index seems to be more responsive to increase national income and to reduce the trade deficit in the Nepalese economy. From the statistic it is clear that the percentage of variance explained by the adjusted R^2 for degrees of freedom is more than 90 % for all models except in model (5). Again the size of F statistic in all cases is significant at 1% level. The DW statistic in all equations lies in the zone of acceptance. So, it is apparent to conclude that there is not presence of autocorrelation in all regression models. Thus, by evaluating the entire statistic, it can be inferred that the variable used for forex earning from Gorkha remittances appears to be the most appropriate determinant in all national income equations and the inclusion of EERI variable seems to be more relevant to reduce trade deficit in Nepal.

Table: 2 Linear Regression Model **Observations: 13**

Dep.var.	Constant	Coefficients of Independent Variables				Adj. R^2	Fvalues	DW
		ForexT	ForexG	T bill	CPI			
1. EERI	90.532	.0002	.0017			.771	21.20	2.280
t-values	(8.541)***	(1.509)	(5.161)***					
2. EERI	56.365	- .01	0.74			.642	11.749	0.732
t-values	(1.952)*			(-.055)	(3.851)**			

* Significant at 10% level ** Significant at 5% level *** Significant at 1% level
Source: Appendix D.

The regression results in Table: 2 show that all the coefficients have expected signs. However, the coefficients of forex earnings from tourism (forexT) and Treasury bill rate have not found statistically significant. To influence EERI, the foreign exchange earnings from Gorkha remittances (forexG) and the general price level (CPI) appear to be the best determinant in both regression models. From the statistic, it is clear that the adjusted R^2 in both models is more than 64 percent and the size of F values in all cases is significant at 5 percent level. The DW statistic in the first case shows the absence of autocorrelation, while in the second case it lies below the lower limit of critical values, suggesting that the null hypothesis of no positive serial correlation can be rejected. Furthermore, the statistical insignificance of Treasury bill rate suggests that the interest rate regime is not an appropriate channel for determining effective exchange rate index and implementing forex policy in Nepal.

Despite these, for policy implication the overall empirical results present the evidence that the use of effective exchange rate index as an important macroeconomic variable would be better for reducing the large volume of trade deficit and thereby making foreign exchange stabilization in the Nepalese economy.

Foreign Exchange Policy

- The Nepalese exchange rate policy has been strongly influenced by the exchange rate of NC vis-à-vis IC. The pegged exchange rate between Nepal and India has existed for more than four decades. It necessitates that any change in the exchange rate of IC vis-à-vis convertible currencies will have to be immediately followed by Nepal (Maskay, 2001:36). If it does not follow, then a currency arbitrage will occur in the economy. Thus, the policy of making stable exchange rate between NC and IC would be a better guideline to facilitate foreign trade and to cope with the adverse BOP situation.
- The Nepalese rupee has continued to depreciate against some of the major international currencies in each year. It is a fact that the Nepalese export base has remained fragile for a long period of time. On the other, there are many underlying disadvantages of keeping NC undervalue against major trading currencies. Thus, the policy of earning forex reserve and controlling unnecessary fluctuation in forex rate through the different instruments should be implemented by the NRB.
- In line with the open and market liberalization policy, it is imperative to create an economic environment that can compete with the outside world in a sustainable way. Moreover, to keep the current account deficit in a small volume by stabilizing NC exchange rate, more efforts need to be made to bring all kinds of remittances through the banking network.
- Under the policy of market intervention, it seems better to sell or purchase foreign currency (or US dollar) by the NRB with a view to control unnecessary fluctuation in forex rate and thereby making a balance between the demand for and supply of foreign exchange reserve.

Policy Implications

- For the settlement of payments in foreign exchange, credit cards have also gained popularity in developing countries. Many tourists traveling in Nepal have found using the card for their payments. With a view to regulating such transaction, NRB has appointed local agents or merchants through whom payments have been accepted by the credit cards.
- Under the provision of exporting jewellery, NRB has made available silver to the jewel exporters at concessionary rates through the commercial banks. In accordance with the HMG policy, NRB has also made a provision of rebate to the waste incurred during jewellery making. This policy has encouraged to exports of silver items and thereby making foreign exchange earning.
- According to the simplified rule of exchanging IC, the people since 1989 have received the facility of exchange up to 10 thousand IC on the basis of an application stating purposes. Prior to this, all customers had to present the document of evidence to mention the reason for buying IC in a large amount (Annual Report, 1990/91: 29).
- NRB has granted permission since April 2002 to the private sector to involve in the transfer of money with a view to ensuring the flow of remittance from Nepali nationals working

abroad through the formal channels. Prior to this, money earned abroad by Nepali workers mostly came through unauthorized channels.

Despite these, the existence of uncompetitive situation even if open and liberal economic policy has been implemented, the deterioration of security situation, large volume of trade imbalance and current account deficit, slackness in government supervision and monitoring upon monetary and fiscal policies, and the frequent devaluation of NC in terms of major trading currencies are the responsible factors of increasing exchange instability in Nepal. Thus, an effective exchange rate policy is needed for promoting forex earning activities and thereby maintaining exchange rate stability in the economy.

Conclusions

From the foregoing discussion, it can be concluded that the Nepalese forex policy has been strongly influenced by the fixed exchange rate between NC vis-à-vis IC. The selection of effective exchange rate as an intermediate target variable for economic growth shows its significant relationship with the nominal GDP, real GDP, trade deficit, foreign exchange earnings from Gorkha remittances etc. For policy implication, the NRB should continue to keep constant real exchange rate and the use of effective exchange rate index would be a potent tool for maintaining exchange stability in Nepal.

Appendix A

Currency Trading@

Exchange Rates Fixed by Nepal Rastra Bank

CURRENCY	UNIT	BUYING	SELLING
Indian Rupee	100	Rs. 160.00	Rs.160.15

Open Market Exchange Rates

For the purpose of Nepal Rastra Bank

CURRENCY	UNIT	BUYING	SELLING
U.S.Dollar	1	Rs. 73.24	Rs. 73.85
Euro	1	Rs. 93.94	Rs. 94.73
Pound Sterling	1	Rs.138.92	Rs.140.08
Swiss Franc	1	Rs. 59.68	Rs. 60.18
Australian Dollar	1	Rs. 58.35	Rs. 58.84
Canadian Dollar	1	Rs. 55.80	Rs. 56.26
Singapore Dollar	1	Rs. 43.73	Rs. 44.09
Japanese Yen	10	Rs. 6.94	Rs. 6.99
Chinese Yuan	1	Rs. 8.85	Rs. 8.92

Buying Rates Only

CURRENCY	UNIT	BUYING RATE
Swedish Croner	1	Rs. 10.22
Danish Croner	1	Rs. 12.61
Hong Kong Dollar	1	Rs. 9.42
Saudi Arab Riyal	1	Rs. 19.53
Katari Riyal	1	Rs. 20.12

@ Exchange Rates for February 18, 2004, Foreign Exchange Department, *Nepal Rastra Bank.*

Source : The Rising Nepal, February 18, 2004

Appendix B

Nominal Exchange Rate Index (NERI)

Year (Mid-July)	Sum of Convertible Currencies (buying rates)	Harmonic Mean (H.M.)	NERI (1990=100)
1990	1.2586	8.7399	100.00
1991	1.1101	9.9090	113.38
1992	1.0306	10.6734	122.12
1993	1.1683	9.4154	107.73
1994	1.1638	9.4518	108.15
1995	1.1747	9.3641	107.14
1996	1.0738	10.2440	117.21
1997	1.1287	9.7457	111.51
1998	1.0323	10.6558	121.92
1999	1.1389	9.6584	110.51
2000	1.2582	9.5374	109.12
2001	1.2391	9.6844	110.81
2002	0.8848	9.0416	103.45

Source: Nepal Rastra Bank, *Quarterly Economic Bulletin*, Vol. 36 (4), Mid-July, 2002: 70-71

Appendix C

Effective Exchange Rate Index (EERI)

Year	NGDP	RGDP	C/A Def	T. Def.	Forex.T	Forex G	CPI	T. Bill
1990	99702	163893	7643.6	13168.7	3121.2	676.8	54.5	6.55
1991	116127	174908	9499.7	15839.0	3587.6	549.6	59.8	8.74
1992	144933	183371	10074.0	18233.5	5016.9	423.6	72.4	9.64
1993	165350	188780	9971.8	21939.1	5966.0	549.7	78.8	11.92
1994	191596	204397	8027.2	32277.4	8251.7	223.0	85.9	6.01
1995	209976	209976	11786.1	46040.3	8973.2	1842.9	92.5	8.33
1996	239388	221930	21542.2	54573.4	9521.2	716.0	100.0	12.80
1997	269570	233040	16508.0	70916.9	8523.0	979.9	108.1	5.60
1998	289798	240816	15188.2	61488.5	9881.6	1285.9	117.1	2.40
1999	330018	251738	-235.1	51849.0	12167.8	1627.0	130.4	3.30
2000	366251	267096	8965.8	58779.7	12073.9	1288.2	134.8	5.30
2001	393566	279749	10953.8	60120.5	11717.0	3557.5	138.1	4.94
2002	404482	278471	19536.5	59313.6	7798.5	4334.2	142.1	3.78

Year (Mid-July)	Buying Rates of $	Trade Share (%)	Buying Rates of IC	Trade Share (%)	T_w x $	T_w x IC	Sum	EERI (1990 =100)
1990	.0344	77.5	.5952	22.5	2.6660	13.3920	16.0580	100.00
1991	.0234	71.0	.6060	29.0	1.6614	17.5740	19.2354	119.79
1992	.0235	72.2	.6060	27.8	1.6967	16.8468	18.5435	115.48
1993	.0204	74.9	.6250	25.1	1.5280	15.6875	17.2155	107.21
1994	.0204	72.6	.6250	27.4	1.4810	17.1250	18.6060	115.87
1995	.0198	72.0	.6250	28.0	1.4256	17.5000	18.9256	117.86
1996	.0178	70.2	.6250	29.8	1.2496	18.6250	19.8746	123.77
1997	.0176	74.1	.6250	25.9	1.3042	16.1875	17.4917	108.93
1998	.0148	69.0	.6250	31.0	1.0212	19.3750	20.3962	127.02
1999	.0147	63.8	.6250	36.2	0.9379	22.6250	23.5629	146.74
2000	.0142	61.5	.6250	38.5	0.8733	24.0625	24.9358	155.29
2001	.0134	58.4	.6250	41.6	0.7826	26.0000	26.7826	166.79
2002	.0128	51.9	.6250	48.1	0.6643	30.0625	30.7268	191.35

Sources: Nepal Rastra Bank, *Quarterly Economic Bulletin*, Vol. 36 (4), Mid-July, 2002:70-71.
Economic Survey, fiscal year 2002/03, HMG, Ministry of Finance, 2003: 34.

Appendix D

Sources: Nepal Rastra Bank, *Quarterly Economic Bulletin* (Various Issues)

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