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Occasional Paper April 2005 Number 17

NEPAL RASTRA BANK

The Editorial Board, Economic Review: Occasional Paper (ISSN 1608-6627), has the pleasure of placing this seventeenth issue of the Review, incorporating the different contemporary issues of the economy on the occasion of the *Golden Jubilee Anniversary* of the Nepal Rastra Bank (NRB).

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- Anderson, T.W., and C. Hsiao. 1982. "Formulation and Estimation of Dynamic Models Using Panel Data." *Journal of Econometrics* 18: 47–82.
- Chu, K., E. C. Hwa, and K. Krishnamurty. 1983. "Export Instability and Adjustment of Imports, Capital Inflows, and External Reserves: A Short Run Dynamic Model." In David Bigman and T. Taya, eds., *Exchange Rate and Trade Instability*. Cambridge, Mass.: Ballinger.
- Goldstrein, Morris, and Mohsin Khan. 1985. "Income and Price Effects in Foreign Trade." In R. W. Joners and P. B. Kenen, eds., *Handbook of International Economics*, vol. II. New York: Elsevier.
- Hemphill, William. 1974. "The Effect of Foreign Exchange Receipts on Imports of Less Developed Countries." *IMF Staff Papers* 21: 637–77.

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ECONOMIC REVIEW

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Public Service Delivery Mechanism and Rural Poverty in Nepal

Prof. Dr. Parashar Koirala[*]

Nepal is a least developed country with a per capita income of $240. The population living below poverty line is 44.6%, in which the rural poverty is over and above the urban in percentage terms. In total, about 10 percent of the population live in the urban areas where the population living below the poverty line is 17.8 percent; in the remaining 90 percent residing in the rural areas, 46.6 percent of them are living below the poverty line. With regard to rural poverty, the delivery mechanism developed in rural and urban areas consists of Village Development Committee (VDC), Municipality, and District Development Committee (DDC). There is a division of work among the VDC, Municipality, DDC and the line ministries. The VDC is the lowest institution at the grass root level, which send development plan for necessary funding to DDC and the DDC to the Ministry of Local Development and to the National Planning Commission. This mechanism has been in operation for the last forty years. There has been some progress in development works such as in education, electricity, telephone, road and possession of radio. But the report and data show that the level of poverty has been increasing since FY 1976/77. To find out the impact of development activities on per capita income, a regression coefficient of each development activity has been estimated through the method of least squares. Through test statistics, it is demonstrated that there is a significant difference of the impact of independent variables (electricity, literacy, road, radio and telephone) on the dependent variable (per capita income).

I. INTRODUCTION

Nepal stands at the bottom range of even among the least developed countries of the world. At present, about half of its population live below the poverty line with basic items like food, clothing and shelter unfulfilled. The economic opportunities are not accessible to them because of low quality of skill and sub-standard education. With respect to human development index, the position of Nepal is lower than all its South Asian neighbors except Bangladesh. Besides, the quality of higher education is not satisfactory as compared to better education institutes of the South Asian countries.

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Concern over the poverty of the people had always been a priority in the development plans of the country. Its seriousness increased since the Ninth Plan (1997-2002), which adopted poverty alleviation as its sole objective. Based on this objective, the long-term and short-term goals were identified in different sectors with required target levels and accordingly plans and programs were developed. Poverty was classified in terms of "human poverty" (literacy, infant mortality, maternal mortality, and average life expectancy at birth) and "income poverty". Development through poverty alleviation was a theme of the development plan guided by the principle of sustained and broad-based growth. The detailed plan for the development of infrastructure, industry and agriculture as well as for the development of rural infrastructure and social priority sectors was prepared and implemented accordingly. Besides, the specific programs targeting the poor were formulated and involved NGOs and INGOs along with government and local institutions in the implementation process.

II. IMPLEMENTATION MECHANISM

For the reduction of poverty at the grass root level, simply improving planning and policy framework are not enough. Strong attention must also be provided towards the implementation aspect. Making good planning and developing policies is one aspect of development effort that remains incomplete in the absence of its proper implementation. In the least developed countries like Nepal, plans and policies are developed either from the technical assistance of the donor agencies or the local talents are used. As a result, the planning part of the development effort remains generally good as against implementation. Sound implementation is possible only by strengthening and capacity building of institutions involved and by laying down systematic processes and systems. Hence, proper attention is needed in the service delivery mechanism, generally an area of low priority in the country. Until service attention is paid in this respect, substantive changes at the grass roots level as would be felt by the people may not be brought about. The introduction of new operation systems requires a kind of change in work culture and operating climate, which is a most difficult job in Nepal. Holding a centralized authority means controlling the work rather than encouraging and making adjustments for smooth operation. Delaying delivery, that too is not transparent on one hand and duplicating work on the other hand, is one of the serious obstacles in the Nepalese delivery system. However, there are infrastructures developed up to the grass root level for the delivery of public goods. Thus, this paper attempts to analyze the existing service delivery mechanisms and impact thereof in development activities.

III. SERVICES AT THE LOWEST LEVEL

Nepal is divided, administratively, into 75 districts and 3915 VDCs, and 58 municipalities. VDCs and municipalities are the lower administrative units in the district. Each VDC is comprised of nine wards and wards in municipality range from

9 to 35 depending upon the size of population. At present, headquarters of the 66 districts are connected by the road network. Telephone facilities are available in 74 districts though the telephone lines per thousand people are inadequate in most of the districts. Because of the availability of potential rivers for hydroelectricity generation, electricity generation from small hydropower and its distribution is developed in some districts. In the rural area where there is no availability of electricity facility, radio is the only medium of receiving information. His Majesty's Government has used this medium for all types of information dissemination. For the development of education, there are 24,943 primary schools, 7,340 lower secondary schools, and 4,113 secondary schools extended throughout the country. Literacy programs generally feature as entry points of NGOs and INGOs before launching their development programs.

The NGO culture was introduced in Nepal in 1958 with the establishment of Family Planning Association of Nepal though earlier references are also available. However, its real growth took place after the emergence of the multiparty democratic system in 1990. The number of NGOs registered with the Ministry of Social Welfare, at present, comes to about 15,000. The Nepalese rural work culture is fully dependent on mutual cooperation of households. They do not have any institution to tie them together. Their common interest rests on agriculture production and selling of agriculture produce, which bring them together. Various activities like construction of a trail in the village, construction of a well for drinking water, and other village welfare activities bind the villagers together.

IV. INSTITUTIONAL ARRANGEMENT AND OPERATIONAL MECHANISM

Institutions working at the lowest level of administrative mechanism of the government are VDCs and municipalities. The educational institutions like primary and lower secondary schools, which are mostly available in each VDC, work as opinion leaders. The level of knowledge to the VDCs increases since the increment of the level of educational program. The NGOs are popular among educated people in villages and municipalities but these may not have become institutions of common interest of villagers. There is a provision of village working committee of each party at the village level in a multi party democratic system in Nepal. Nepalese Congress Party and United Marxist and Leninist Party are the two major parties having their respective village working committees in each VDC. Increasing the number of party members and active party members in the villages is the function of these committees.

The government mechanisms handling development activities have not been able to prove its efficiency in service delivery. Delay in progress is a common feature in most of the project works. Lower productivity of labor, higher per unit cost and sub-standard performance are some of the characteristics among others in development activities. However, the Ministry of Physical Planning and Works is responsible for the construction of highways, feeder roads, and roads in municipalities and towns. To strengthen the local self-governance system, the responsibility to construct roads

in municipalities and towns has now shifted to the Ministry of Local Development since 2004. The Electricity Authority, for power generation and distribution, and the Department of Irrigation for irrigation facility, which come under the Ministry of Water Resources, are the authorities conducting their functions through their network extended to different regions and districts. Financial assistance for small irrigation facility comes under the purview of the Ministry of Local Development. Telephone Corporation, a public enterprise, under the Ministry of Information and Communication, has its own network for telephone distribution in municipalities and towns. For the facility in rural area, it is left to the private sector. The Ministry of Education and Sports is the authority for higher education and school education in the country. Besides, the Ministry of Education is involved in adult education program in order to increase the literacy rate. Other organizations involved in increasing the literacy rate are the NGOs, INGOs and CBOs (community based organizations). In each of the socio-economic projects run by them in the rural areas, literacy development remains a major component. Radio possessing is an individual interest. It is a popular medium of communication in the rural area. Farmers' development program of the Ministry of Agriculture has been disseminated through radio.

At the lowest level of operational mechanism, VDC in the rural area and municipalities in the urban area are institutions acting on behalf of the government. Local self-governance is the policy adopted to run them. Under the local self-governance system, there is a maximum participation of the local people in bringing out social equality in mobilizing and allocating resources for the all-round development of their respective regions. The DDC is an institution at the district level. The Ministry of Local Development acts as a coordinator of the local level development activities, and in case of necessity, provides technical and financial support to them.

V. FUNCTIONS OF LOCAL INSTITUTIONS

The objective of self-governance is to make VDC and DDC effective in delivering their duties. Accordingly, a detailed workout of their nature of jobs was identified in different areas of concern and the respective authority and responsibility were delegated to them. The scope of VDC refers to the functions relating to agriculture, rural drinking water, works and transport, education and sports, irrigation and soil erosion and river control, infrastructure development and housing, health services, forest and environment, language and culture, tourism and cottage industry and others. The DDC is the highest body at the district level. For the people's representation, the DDC comes next to the VDC and the Parliament (house of representatives), which comes next to DDC, is the highest body. The scope and functions of the DDC is broader than the VDC and it covers the area that has not been touched in the VDC. It refers to the functions relating to agriculture, rural drinking water and habitation development, hydropower, works and transport, land reforms and land management, upliftment of women and helpless people, forest and

environment, education and sports, wages for labor, irrigation and soil erosion and river control, information and communications, language and culture, cottage industry, health service, tourism as well as functions relating to controlling these activities.

VI. LINKAGES BETWEEN VDC AND DDC

A District Council works as a parliament in the district. It is composed of a chairperson and a deputy-chairperson of each VDC in the district, mayor and deputy-mayor of each municipality in the district, members of the DDC, members of the House of Representatives and the National Assembly within the district, and six persons nominated by the District Council. The functions, duties and authority of the district council are as follows.

- To pass the budgets, plans and program submitted by the DDC.
- To evaluate the development programs in operation by the DDC
- To make discussion on the audit report of the DDC
- To approve the by-laws of the DDC
- To delegate some of the authorities conferred on it to the DDC.

Being members in a District Council, the chairperson and deputy chairperson of the VDC could acquire information relating to the development activities of the DDC on one hand and on the other, the development plan of the VDC would come to the knowledge of the Council members. It is a kind of a forum for effective interaction between the Council members. Figure 1 shows the linkages between VDC and DDC.

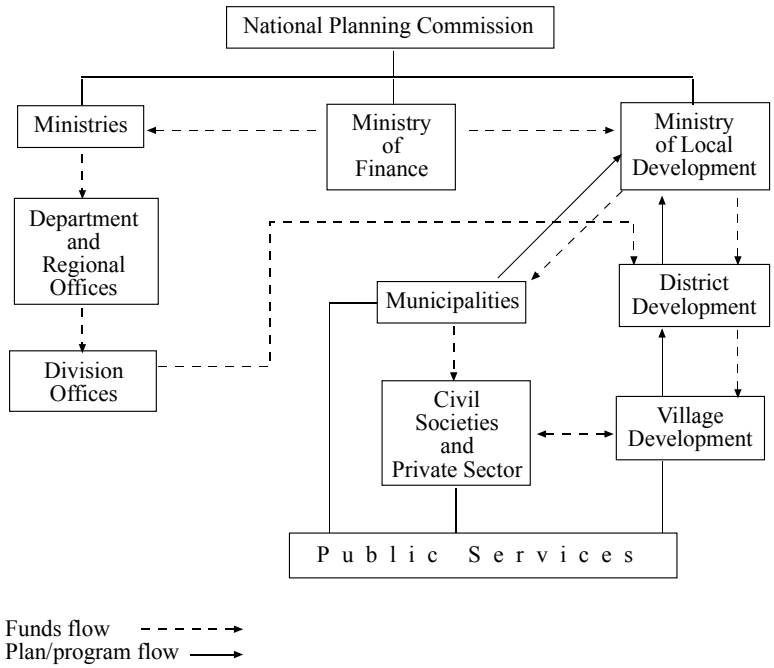
For the development of rural areas through local self-governance system, the roles of National Planning Commission, the Ministry of Local Development, and other ministries are supportive, corrective and coordinating in nature and they are grouped into the following perspectives:

- Taking policy initiatives,
- Coordinating at national level,
- Developing central level programs,
- Setting standards and goals,
- Availing basket fund to DDC for administration, recurrent and investment purpose,
- Providing budget to implement national priority programs and
- Authorizing DDC to approve their annual plan.

The department and regional offices and division offices of the ministries provide the following functions.

- To provide technical assistance to DDC,
- To implement the central level programs,
- To strengthen capacity of DDCs, municipalities and VDCs in the sectoral areas and
- To coordinate national programs.

Figure 1



The Civil Society and Private Sector, on the other hand, act as service providers.

The DDC prepares and approves the district level plans and budget for basket fund and internal resources, and authorizes the VDCs for implementation. It supervises and monitors programs implemented through the VDCs. The municipalities and VDCs also possess the authority to prepare and approve their plans and budget, authorize agencies for implementation, and supervise and monitor the programs implemented.

VII. DUTIES AND RESPONSIBILITIES OF EACH LEVEL OF INSTITUTION

Duties and responsibilities for different types of development activities are shared among different institutions right from the central government (CG) to the Village Development Committee (VDC). In a line of authority and responsibility, NGO, in terms of community organization and private sector participation, stay at the background but their roles remain important forever in development activities. The institutions involved for rural development activities are as follows.

TABLE 1. Institutions Involved in Rural Development Activities

Duties and Responsibilities	CG	DDC	MUN	VDC	CO	Pvt. Sector
Road, Transport and Physical Planning						
High ways, national roads, international roads and bridges	√					
Intra-district roads and bridges		√				
Urban roads			√			
Trail improvement/maintenance		√		√		
Suspension bridge construction	√					
Settlement plan, development			√	√		
Venders market development			√	√		
Irrigation						
Construction and rehabilitation of surface irrigation scheme	√				√	
Operation and management of surface irrigation scheme		√				
Construction and rehabilitation groundwater irrigation	√	√	√	√		
Operation and management of groundwater irrigation		√				
Education						
Pre and primary education	√					
Non-formal education	√					
Secondary education	√					
Higher secondary education						√
Technical and vocational education	√					
School building construction /infrastructure	√	√	√	√		
Higher education	√					
Higher technical education	√					
Special education	√					
Water Resources and Electricity						
Large hydropower plants	√					
Small and mini-hydro plants	√					
Micro-hydro plants		√	√	√		
Electricity line extension	√					
Electricity distribution	√					

TABLE 1 (continued)

Duties and Responsibilities	CG	DDC	MUN	VDC	CO	Pvt. Sector
Agriculture, Livestock and Cooperatives						
Research	√					
Agriculture and livestock extension	√					
Agro-fertilizers and pesticides	√					√
Agro-vet technical services	√					
Market collection centres, market information						√
Processing and post harvest services						√
Cooperative services						√
Economic Activities						
Industrial policy development	√					
Industrial development	√					√

Source: Ministry of Local Development.

In the aforesaid supply function, the central government has been playing a major role. It seems the local self-governance mechanism, in the absence of active cooperation from the central government and its effective network, cannot make effective its delivery mechanism. Table 1 shows a mechanism in which a person, responsible to make contact to the central government office repeatedly until the required work gets done, has to stay at the centre. This is because, out of 34 listed development activities in Table 1, the central government is directly responsible for 22 activities. Necessary consent needs to be taken for other activities that are difficult to state but is not overlooked. The DDC is involved in seven activities, and the municipality, VDC and private sector, each of them is assigned for six activities. The community organization is being involved in only one activity.

VIII. LOCAL INSTITUTIONS IN RETROSPECTIVE

The local institutions were working during the absolute monarchy system of Panchayat government for about 30 years before 1990. They were structured by the names of district panchayat, municipality and village panchayat. Their functions were more or less similar to the functions of the local institutions working at the present day. However, local institutions, nowadays, are made more development oriented. In the organization structure, a junior clerk as a representative of the Ministry of Local Development is deputed in a VDC. Likewise, an officer level staff is deputed in the municipality and a local development officer works as a member cum secretary in the DDC. This type of linkage was in practice under the Panchayat System of district, municipality and village administration.

IX. STATUS OF POVERTY POSITION

Poverty has become a national character, in spite of all Herculean efforts made to prepare a plan and program for poverty reduction and its implementation. The record shows it has been increasing rather than following a decreasing trend. Table 2 shows the status of poverty position from FY 1976/77 to FY 1995/96.

TABLE 2. Status of Poverty Position

Survey Year	Percent of Population below Poverty Line		
	Rural	Urban	Nepal
1976/77 Survey (Breakdown by ecological belt is not accessible)	33	22	33
1984/85 Survey			
Terai	35.4	24.1	34.5
Hills	52.7	14.5	50.0
Mountains	43.1	-	44.1
Total for Nepal	41.4	19.2	44.1
1995/96 Survey			
Terai	37.3	28.1	36.7
Hills	52.7	14.5	50.0
Mountains	62.4	-	62.4
Total for Nepal	46.6	17.8	44.6

Source: World Bank (1999).

Table 2 shows the changes in poverty percentage over the period of time in which the percentage of poverty is reducing in urban area from 22 percent in FY 1976/77 to 19 percent in FY 1984/85 and 17.8 percent in FY 1995/96. The rural poverty, on the other hand, has increased from 33 percent in FY 1976/77 to 43.1 percent in FY 1984/85 and 46.6 percent in FY 1995/96. By ecological belt, rural poverty is highest in Mountains followed by Hills and Terai in FY 1995/96 but in 1984/85, the percentage of poverty looks higher in Hills followed by Mountains and Terai. From this information, it is clear that the level of poverty is highest in rural parts of the Mountains and Hills and the people in the Mountains and Hills have less access to the economic opportunity as compared to Terai region. Further, the urban area of Hills possesses more economic opportunity than that of Terai.

X. EFFECT OF ECONOMIC OPPORTUNITY ON PER CAPITA INCOME

Jean Dreze and Amartya Sen in their book *Economic Development and Social Opportunity* explain that the economic opportunities are the function of a variety of factors such as the state of educational and health services, the nature and

availability of finance, the presence of markets, and the form and reach of bureaucratic control in general, among others. The presence of market is possible since there is a good network of road and communication facilities. The telephone is taken as a medium for two-way communication which is proved to be a most effective tool. And the radio and the television are the media for one-way communication used for mass communication.

Access to opportunity of an individual increases one's per capita income. The opportunity in this study is expressed in terms of access to education, electricity, telephone service, road facility, and radio service. If they are arranged in a vector form, each element of economic opportunity acts as an independent variable affecting the per capita income of an individual. So, the per capita income and economic opportunity at time t for a particular country can be represented by the vector:

$$Y_t = (x_1, x_2, x_3, x_4, x_5)_t. \quad (1)$$

where,

Y_t = per capita income; x_1 = electricity; x_2 = literacy rate (education); x_3 = roads; x_4 = radio facility; and x_5 = telephone.

Economic opportunity expressed in terms of electricity, literacy rate, roads, radio facilities and telephone service of the seventy-five districts has been ranked using the composite index (Central Bureau of Statistics, National Planning Commission). It addresses the smallest value of the indicator to 0 and the largest value to 1 and other values between 0 and 1. The smallest value 0 represents the worst condition of development and the largest value 1 represents the best condition of development. The formula used for the composite index is as follows:

Let, x_{ij} denote the value of the j^{th} indicator in i^{th} district; max_j and min_j denote the corresponding maximum and minimum values of the j^{th} indicator in all the 75 districts, then the composite index for the j^{th} indicator in the i^{th} district, say C_{ij} is computed by using the following expression:

$$C_{ij} = \frac{x_{ij} - \min_j}{\max_j - \min_j}$$

The relation $Y_t = (x_1, x_2, x_3, x_4, x_5)_t$ is expressed in the multiple regression form as:

$$Y_t = ß_0 + ß_1x_1 + ß_2x_2 + ß_3x_3 + ß_4x_4 + ß_5x_5 + E_t \quad (2)$$

where Y_t = per capita income; $ß_0$ = constant term; $ß_1$ = regression coefficient with regard to x_1; $ß_2$ = regression coefficient with regard to x_2; $ß_3$ = regression coefficient with regard to x_3; $ß_4$ = regression coefficient with regard to x_4; $ß_5$ =regression coefficient with regard to x_5 ; and E_t =error term.

By applying the method of least squares, one can estimate all the regression coefficients. The estimated value of regression coefficient is given by

$$\hat{\beta} = (x^1x)^{-1}x^1Y$$

where $\hat{\beta} = (\hat{\beta}_0, \hat{\beta}_1, \hat{\beta}_2, \hat{\beta}_3, \hat{\beta}_4, \hat{\beta}_5)^{-1}$

By using the econometric SPSS package, the following estimated values are arrived at:

$$Y = 11967.695 + 13937.718x_1 + 1951.394x_2 - 12275.238x_3 - 2214.831x_4 + 25073.044x_5 \quad (3)$$
$$(9.775) \quad (4.417) \quad (0.760) \quad (-1.967) \quad (-0.837) \quad (3.877)$$

$R^2 = 0.613$ Adjusted $R^2 = 0.585$ Std. Error of Estimate = 4041.157

ß values of the road facility and radio show that the negative impact on Y means that with the increase in the amount of Y no obvious relationship was exhibited between the road facility and possession of radio with the income level. In Nepal, even in the districts with no network of road connection, income has increased. The reason behind it is open for discussion. $ß_1$ and $ß_5$ are statistically significant at the 1% level and $ß_2$, $ß_3$ and $ß_4$ are not statistically significant at the 5% level. R^2 explains the regression equation affecting about 61.3 percent in total variation of per capita income. The remaining 38.7 percent is attributed to factors included in the error term.

The tabular value of F at 5% level of significant with (5, 69) degree of freedom is 2.37. The tabular value of F is less than the calculated value (21.84), which indicates that there is a significant difference on the impact of independent variables (electricity, literacy, road, radio, and telephone) on the dependent variable i.e. per capita income. It means that each of the independent variables has different degree of impact on the dependent variable.

XI. DISCUSSION OF THE RESULTS

Access to road facility in the district is naturally expected to raise the per capita income of the people as the economic activities of the district increase. The results, however, show a lower amount of per capita income of the individuals in the districts connected by the national road as compared to some of the districts not connected by the national road network. For example, the per capita income of the individuals in Manang and Mustang districts located in the Mountain region is Rs 37,153 and Rs 33,365 respectively while the per capita income of the people in Mahottari and Sarlahi districts located in Terai region is simply Rs 10,674 and Rs 10,850 respectively. Terai is a plain land taken as a paradise for agriculture production and is connected by the national highway and several feeder roads and is highly accessible from any perspective. Mahottari and Sarlahi districts, too, have national highway and several feeder roads. Furthermore, agricultural activities are severely limited in Mountain region such as Manang and Mustang districts. These two districts are neither connected by highway nor have any feeder road. It means that the development oriented thinking and commitment to hard work of the population in the district is the major guiding principle to increase the per capita income rather than connecting by road network only. As per the comparative

advantage of the district, the initiation of some economic activities in the districts to be connected by road can uplift the economic status of the people. There are different types of development programs focusing on agriculture farmers communicated through radio. These programs do not seem to have attracted enough listeners towards development programs though in rural Nepal, radio is a popular medium among villagers for entertainment and for all types of information seeking. For the improvement of literacy rate, all the programs run by the government and NGOs do not show significant impact on per capita income implying that the literacy programs may have less link with development activities. Past research has shown that the literacy knowledge of the people starts declining since that does not come to use in daily business matters. There is a need to gear the literacy programs to equip some form of necessary and usable skills and other productive activities. Only then will these programs have meaningful impact on economic development. It is true that the research conducted by the World Bank and numerous other researchers have proved a close linkage between the level of literacy and level of development. Lack of a significant relationship therein in Nepal may indicate that the focus may have been more on quantitative targets rather than qualitative improvement. The significant impacts of electricity supply and telephone facility on per capita income show a hope for Nepal for economic development by improving these means. It reemphasizes that improvement in basic infrastructure has a direct impact on economic improvement.

XII CONCLUSION

Developing better plans and policies is just a beginning for the reduction of poverty, which gets speeded up from its effective public service delivery mechanism. Delivery mechanism in Nepal lacks proper expertise and commitment on the one hand and coordination among local institution, line ministries, and the National Planning Commission on the other. As a result, the percentage of population living below poverty line in rural area is increasing continuously since FY 1976/77 to FY 1995/96. The development activities like electricity, literacy rate, road, radio, and telephone have different degree of impact on the per capita income. Some development activities like the road facility and the possession of radios by persons in rural area have no impact on increasing the per capita income. It signifies that transport linkage should be developed along with other economic packages simultaneously. Otherwise simply building roads or improving linkages will not help the people of the remote areas to improve trade and services as the very foundation may not exist. But infrastructure development is essential as it has varying degree of sound relationship with development. Literacy drives in the country needs to be substantially reoriented encompassing packages of skill and productivity drives.

APPENDIX 1. Economic Opportunity Using Composite Index

Districts	Y	x_1	x_2	x_3	x_4	x_5
	Per Capita Income (Rs)	Electricity	Literacy	Road	Radio Facility	Telephone
Bhaktapur	25189	1	0.90636	0.73963	0.85855	0.30731
Kathmandu	46511	0.99182	0.95406	1	1	1
Lalitpur	27857	0.89366	0.88163	0.42551	1	0.72712
Manang	37153	0.81697	0.91166	0	0.7053	0.01198
Chitawan	23204	0.69734	0.92049	0.17448	0.34774	0.14499
Kaski	23088	0.6953	0.99823	0.10046	0.88998	0.25766
Kavre	21262	0.64622	0.82332	0.14317	0.77996	0.06298
Rupandehi	18373	0.62577	0.79329	0.10714	0.3556	0.14499
Makwanpur	24843	0.62065	0.79152	0.06591	0.49705	0.05504
Syanja	18037	0.54294	1	0.08786	0.8723	0.01245
Mustang	33365	0.53885	0.70495	0	0.47741	0.01977
Palpa	15792	0.5317	0.93286	0.10545	0.72495	0.02921
Nuwakot	16733	0.52352	0.58304	0.11909	0.57171	0.0203
Banke	18537	0.49591	0.59541	0.07931	0.37917	0.08113
Surkhet	14721	0.48671	0.76855	0.06562	0.79568	0.03928
Dhankuta	14904	0.46728	0.91343	0.10672	0.78193	0.04493
Parsa	19021	0.46319	0.30565	0.12084	0.11591	0.14499
Dolakha	13054	0.46217	0.61661	0.0534	0.69548	0.00984
Dhanusa	13448	0.45194	0.46466	0.28157	0.18664	0.06506
Bara	29163	0.44376	0.31802	0.13101	0.01572	0.03147
Tanahu	16071	0.43865	0.85866	0.12689	0.75246	0.023
Illam	16440	0.43456	0.9364	0.10742	0.53242	0.02279
Gorkha	16484	0.43047	0.78975	0.01829	0.52456	0.01131
Sunsari	18682	0.43047	0.72615	0.1821	0.36346	0.13988
Saptari	12703	0.41616	0.45053	0.11053	0.21218	0.02536
Nawalparasi	17719	0.41513	0.61837	0.05627	0.11591	0.01627
Baglung	15484	0.40286	0.87102	0.00712	0.68566	0.0094
Kanchanpur	18148	0.38446	0.70495	0.0707	0.44008	0.05011
Morang	21871	0.35992	0.69788	0.18029	0.36935	0.09707
Dang	14371	0.3364	0.70141	0.08729	0.59332	0.0418
Rasuwa	24379	0.32924	0.18551	0.03132	0.20236	0.0316
Jhapa	17617	0.32822	0.86572	0.18042	0.32809	0.06846
Udayapur	13196	0.32311	0.62014	0.04826	0.17289	0.00869
Siraha	11900	0.32209	0.30919	0.12269	0.06876	0.02206
Kailali	16020	0.31902	0.52473	0.06915	0.47151	0.04249
Lamjung	17369	0.31493	0.83922	0.03107	0.6778	0.01667
Doti	12779	0.3047	0.27562	0.04499	0.38703	0.022
Sankhuwasava	16999	0.30164	0.73322	0.00496	0.62083	0.01566
Sarlahi	10850	0.28937	0.20141	0.19715	0.08251	0.00929

APPENDIX 1 (continued)

Districts	Y	x_1	x_2	x_3	x_4	x_5
	Per Capita Income (Rs)	Electricity	Literacy	Road	Radio Facility	Telephone
Sindhuli	14593	0.28834	0.53534	0.01867	0.45187	0.00397
Kapilbastu	15171	0.28425	0.28975	0.09408	0.06483	0.0215
Sindhupalchowk	16147	0.27505	0.39399	0.03982	0.56189	0.0032
Rautahat	11777	0.26176	0.12367	0.09777	0.12574	0.01133
Myagdi	16362	0.26074	0.80565	0.00423	0.52456	0.01232
Parbat	16504	0.2546	0.86572	0.05028	0.75835	0.00878
Mahottari	10674	0.25358	0.18905	0.22711	0.09627	0.00792
Bardia	13115	0.22597	0.40989	0.07296	0.34185	0.00973
Baitadi	12046	0.22188	0.56537	0.07835	0.43615	0.00519
Dadeldhura	17870	0.20859	0.5477	0.05532	0.389	0.01398
Jumla	14942	0.1953	0.0636	0	0.52456	0.01503
Dailekh	9192	0.16973	0.45583	0.05432	0.52849	0.00571
Pyuthan	10202	0.16564	0.5053	0.06831	0.35953	0.01079
Salyan	10694	0.15746	0.4841	0.0667	0.87819	0.00069
Gulmi	10279	0.14826	0.85159	0.07805	0.61493	0.00466
Dhading	14539	0.13701	0.5159	0.06381	0.55206	0.00716
Solukhumbu	19679	0.13088	0.58304	0	0.59136	0.02561
Terhathum	16861	0.12372	0.89399	0.03356	0.66994	0.01206
Humla	13724	0.11861	0	0	0	0.00004
Arghakhanchi	15281	0.091	0.77208	0.08713	0.69745	0.00675
Darchula	15901	0.07873	0.5477	0.0112	0.45383	0.01028
Taplejung	15814	0.07669	0.74205	0.00486	0.51081	0.01355
Rukum	13551	0.0726	0.30565	0.00671	0.63261	0.00043
Ramechhap	13646	0.06544	0.38693	0.0248	0.44794	0.0039
Okhaldunga	12876	0.05215	0.59894	0.01855	0.55403	0.01309
Achham	10421	0.05215	0.10777	0.02777	0.28094	0.00309
Mugu	14948	0.05215	0.00707	0	0.01768	0
Bhojpur	13556	0.04908	0.78445	0.00097	0.69548	0.00647
Bajura	12271	0.04806	0.18021	0.00244	0.23183	0.00681
Kalikot	10491	0.04703	0.13781	0	0.72102	0.00833
Bajhang	11167	0.04703	0.13428	0.00784	0.16306	0.0052
Panchathar	14504	0.04601	0.83746	0.06886	0.3831	0.00888
Khotang	12905	0.03476	0.67314	0	0.44401	0.00561
Rolpa	11861	0.03374	0.29682	0.01391	0.44204	0.00048
Jajarkot	11351	0.00102	0.24558	0.00479	0.6169	0.00017
Dolpa	17296	0	0.11307	0	0.40275	0.00027

Source: National Planning Commission.

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Deficit Financing: Implications and Management

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Developing countries usually mobilize part of their resources by borrowing from internal as well as external sources to finance their development activities. These sources gradually build up the debt stock of the country. Such debt stock demands regular debt servicing, that is, principal and interest payment, which consumes scarce resources that can be used for financing development. Therefore, excessive deficits and heavy borrowing to finance that deficit drain out the resources of the developing countries. Liquidity is also involved while borrowing and servicing. Thus, both of these transactions are conducted in such a way that the country concerned always finds itself in a comfortable position with regard to the liquidity, which is known as the debt management.

I. INTRODUCTION

Government budget deficit is defined as the excess of spending over revenue. This is the phenomenon primarily of the post World War II period. Before the war the trend was of the balance budget. Then, the governments were not allowed to spend more than their means. The classical economists, namely, Adam Smith and others had warned the then governments not to incur budget deficit. During World War I countries involved in the war had no other choices than to go for budget deficits. Even during the war countries like England tried to mobilize additional revenues to defray war expenses than going for deficit financing. The introduction of the income tax system is the glaring example for this. In peacetime the governments seemed to have refrained from spending more than the revenue.

During the peacetime generally, the governments either payback the debt taken during the wartime or save for the future. This can be proved from the fact that the governments did not dare incurring the budget deficits when the private investments had sharply declined and the world economy had taken a sharp downturn during the period of the Great Depression of the 1930s. J.M. Keynes had to strongly advocate that during the period of economic crisis when the private investment is not forthcoming the governments must enhance investments even incurring budget deficits. He had said this to reactivate the world economy suffering from the protracted depression. Keynes' arguments had a great impact

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upon the governments in relation to their expenditure pattern. However, the impact in practice was seen only after World War II. Budget deficit seems historically to have arisen due to the increase in expenditure rather than the slowing down of the revenue mobilization.

Government budget deficits in industrial countries have been growing as a percent of gross domestic product (GDP) for the past 20 years. Large deficits emerged after the oil crisis in the mid-1970s and widened dramatically after 1980, largely the result of government overspending rather than the meager tax receipts. Government expenditures in industrial countries rose from 28 percent of GDP in 1960 to 50 percent in 1994. These deficits have sharply pushed up the public debt, which jumped to 70 percent of GDP in 1995 from 40 percent in 1980.

During the 19th and early 20th centuries, fiscal deficits and surpluses were small in the major industrial countries. World War I (1914-18) altered the picture radically, as its participants emptied their national treasuries and borrowed heavily against the future in a desperate struggle for survival. The interwar period saw a return to normalcy that brought huge deficits. World War II (1939-45) and the immediate postwar years repeated the fiscal experience of World War I and the interwar period—immense deficits in all countries followed by surprisingly satisfactory progress toward fiscal balance. Nevertheless, a disturbing trend began in the 1960s and gained seemingly irresistible momentum by the 1970s. Most economists agree that commitment to social welfare programs, demographic trends, and fundamental macroeconomic shifts are the main causes of the deterioration of the fiscal positions across the industrial world. The Great Depression elicited a reconsideration of the government's role in the economic life of the countries, forcing governments to social action. Still others suggest that the activism of the governments during World War II in providing health care, pensions, and other assistance to the members of the armed forces changed perceptions of the social responsibility of the government. Whatever the starting point, clearly a profound shift occurred in political philosophy between the start of World War I and the end of the World War II. In response, the governments, especially in Europe, established generous pension, national health care, family and child welfare programs, an extensive system of public education and long-term unemployment insurance.

These programs have sent government spending skyrocketing. By the mid-1960s, spending was up in all industrial countries. In Canada, France, Italy, and Japan, it climbed by 8-11 percentage points during 1975-93, while in the United States, Social Security and Medicare rose to 22 percent of general expenditures in 1992. As a percent of total spending, U.S. public welfare spending nearly tripled during the period.

The oil embargo of 1973 caused havoc on an unprepared and oil-dependent industrial world. What is well remembered, however, is that those price hikes occurred during a period of steadily rising prices, which contrasted with the long-term price stability prevalent in the industrial world.

Budgetary issues in developing countries differ from those in industrial countries. Usually, developing countries have other goals from those of industrial countries, focusing, for example, to a greater degree on building infrastructure, creating an industrial base, and encouraging new businesses. Their population are younger and less skilled, and they have limited access to capital. Fiscal policy in developing countries faces unique challenges. Budgets are smaller, personal incomes are lower, and tax collection is often erratic. Much employment opportunities are created outside the formal economy, making transactions difficult to tax. Financial markets in developing countries are often inefficient, making it hard for governments to finance their deficits. With lower government revenues, most developing countries have lower public expenditure than industrial countries. Developing countries in Asia and the western hemisphere have been spending the least and those in Africa, the Middle East, and the Eastern Europe spend the most. Yet, the majority of developing countries run deficits, with the occasional exception of the middle-income countries.

Fortunately for their fiscal prospects, the developing countries do not spend as much on social welfare programs (pensions, health care, and unemployment insurance) as industrial countries do. Younger population put less spending pressure on governments, and in many countries there is joint family system and elderly members are taken care of by their own families.

Large and persistent fiscal deficits push up interest rates, reduce investment, and create a burden of indebtedness that is difficult for the governments and taxpayers to bear. Deficits also interfere with the effective functioning of markets at home and abroad. Most important, they compromise the living standards of current and future generations.

II. NEPAL'S BUDGETARY DEFICITS

Nepal, being a least developed country, has been incurring fiscal deficits from its very beginning. In the first budget of the country, i.e. of 2008 B.S. revenue was estimated at Rs.30.5 million and total expenditure at Rs. 52.5 million incurring thus the fiscal deficit of Rs.22.0 million. This trend has continued uninterruptedly until now. The level of deficit, however, has varied from year to year. Table 1 illustrates the trend of Nepal's deficits for the last one and half decade.

Table 1 shows that Nepal's fiscal deficit can be said to be neither too high nor too low in comparison to other countries standing at the similar level of development. It is seen that since FY 1993/94 the fiscal deficits has stood at a rather low level and this is mainly due to entering into Enhanced Structural Adjustment Facility or the ESAF with the International Monetary Fund or the IMF. Following this agreement, Nepal introduced the economic liberalization program under which determination of bank interest rate, exchange rate of Nepalese currency vis-à-vis other convertible currencies and price control were deregulated and this function was given to the market. Such liberal policy required the macroeconomic stability. And fiscal deficits had to be kept at as low level as

TABLE 1. Budgetary Deficits of Nepal (Rs. in Million)

Fiscal Year	Total Expenditure	Total Revenue	Foreign Grants	Deficits		After Grants Deficits as % of GDP
				Before Grants	After Grants	
1987/88	14,105.0	7,350.4	2,076.8	-6,754.6	-4,677.8	6.4
1988/89	18,005.0	7,776.9	1,680.6	-10,228.1	-8,547.5	10.0
1989/90	19,669.3	9,287.5	1,975.4	-10,381.8	-8,406.4	8.4
1990/91	23,549.8	10,729.9	2,164.8	-12,819.9	-10,655.1	9.2
1991/92	26,418.2	13,512.7	1,643.8	-12,905.5	-11,261.7	7.8
1992/93	30,897.7	15,148.4	3,793.3	-15,749.3	-11,956.0	7.2
1993/94	33,597.4	19,580.8	2,393.6	-14,016.6	-11,623.0	6.1
1994/95	39,060.0	24,575.2	3,937.1	-14,484.8	-10,547.7	5.0
1995/96	46,542.4	27,893.1	4,825.1	-18,649.3	-13,824.2	5.8
1996/97	50,723.7	30,373.5	5,988.3	-20,350.2	-14,361.9	5.3
1997/98	56,118.3	32,937.9	5,402.6	-23,180.4	-17,777.8	6.1
1998/99	59,579.0	37,251.0	4,336.6	-22,328.0	-17,991.4	5.5
1999/00	66,272.5	42,893.8	5,711.7	-23,378.7	-17,667.0	4.8
2000/01	79,835.1	48,893.6	6,753.4	-30,941.5	-24,188.1	6.2
2001/02	80,072.2	50,445.5	6,686.1	-29,626.7	-22,940.6	5.7
2002/03	84,006.1	56,229.8	11,339.1	-27,776.3	-16,437.1	3.8

Source: Ministry of Finance (2004, 2004a).

possible to maintain such macroeconomic stability. Moreover, the IMF had included the maintenance of fiscal deficit at the stipulated level into the list of performance criteria. Therefore, since then Nepal has been conscious enough about the negative impact of large fiscal deficits upon the economy and the country has been trying to maintain low fiscal deficits even after the expiry of the ESAF. Nepal has sometimes sacrificed even growth to maintain macroeconomic stability by slashing down development expenditures especially in the years when revenue mobilization fell short of the target. And this has contributed also in maintaining stability in inflation, exchange rate, interest rate and balance of payment. This has also helped in maintaining a relatively low level of debt burden upon the country.

III. IMPACT OF FISCAL DEFICIT ON GROWTH AND STABILITY

The conclusion about the impact of fiscal deficit on growth and stability is that higher the level of fiscal deficits higher may be the growth rate but there will also be higher probability of macroeconomic instability. Because the higher level of fiscal deficit means the higher level of money supply and since money supply has a direct positive relationship with the price, higher fiscal deficits may push up the price level unleashing thus the forces of macroeconomic instability. As higher price level reduces the export competitiveness resulting thus in the decline in exports and increase in imports, this ultimately results in the adverse balance of payment and depletion of the international reserves of the country. And this exerts pressure on the strength of the domestic currency or domestic currency is depreciated. This also lowers the level of interest rate since the higher level of money supply pushes up

the level of liquidity in the economy. Thus, the higher level of fiscal deficit results in the macroeconomic instability.

However, the liberal economic policy has different arguments in this regard. It says that if the government finances higher level of fiscal deficit through internal borrowings, private sector is crowded out in terms of using domestic resources and, therefore, private sector investments is squeezed resulting thus in the lower growth rate. This implies that higher level of fiscal deficits does not always ensure higher growth rate. Another argument along the similar line is that private sector investment does not come forward in the condition of macroeconomic instability. Thus, economic growth does not take place in the instable macroeconomic situation resulting from the large fiscal deficits. From this standpoint also, large fiscal deficit does not necessarily result in the higher growth rate. Therefore, under the liberal economic policy under which private sector is considered as the engine of growth, maintenance of macroeconomic stability is much emphasized. And for this, the government must incur as less fiscal deficit as possible to maintain macroeconomic stability in the country. This is what the IMF, World Bank, Asian Development Bank and others have been emphasizing over these years. Nepal also has been pursuing the similar policy since the beginning of the 1990s.

This, however, does not mean that the governments should not spend more. They can spend more as much revenue as they can mobilize. This only implies that they should spend as per their means and they must not spend beyond their means.

Another growth hampering impact of the large fiscal deficit is that higher the fiscal deficit higher will be the debt burden of the country. And higher the level of debt burden, higher will be the level of debt servicing expenditure of the government and higher the level of debt servicing expenditure lower will be the government's investment for growth. Ultimately growth will be hindered if the government spends substantially higher than its means.

IV. DEBT MANAGEMENT

Internal

Public debt management may be defined as those official policies, which alter the size and composition (i.e., maturity and holders) of government debt. It is a peculiar area of public finance in that it bridges the gap between taxation and public expenditure and strict monetary policy (the control of the supply of money and changes in the rate of interest). The public debt raises finance for government expenditure, as do taxes, but in so doing it influences the rate of interest and liquidity in the economy.

Public debt can be defined in various other ways. The most comprehensive definition would encompass all claims against the government bonds, treasury bills, saving certificates, post office savings accounts, the deposit obligation of the central bank (the balance held by the central bank on behalf of other financial institutions) and finally all currency—which is the most liquid (instant) claim on the government. This broad definition of the national debt focuses our attention on a most important characteristic of debt –its liquidity. The national debt can cover

the whole spectrum of liquidity; it can be wholly liquid (e.g., currency) or it can be almost totally illiquid (e.g., irredeemable bonds).

Debt management can therefore be thought of as the control of this liquidity. Depending on the size of the national debt held domestically, it can be at the same time one of the most potent influences on the economy and one of the most opaque or difficult to understand.

A narrower definition of the national debt would include only government bonds and small savings. This, of course, can still cover the spectrum of liquidity from a day (a bond about to be redeemed) to the irredeemable, but it omits currency. It is this narrower definition which national debt statistics usually refer to, though it is worth keeping in mind the larger emphasis on liquidity.

The objectives of the debt management are as follows:

- To influence the size and maturity of debt;
- To influence the appropriate pattern of interest rates;
- To affect the type of holder of the debt;
- To achieve short-term stabilization of bond prices;
- To limit debt service cost;
- To create capital market;
- To give priority to domestic over foreign issues on domestic market, and,
- To give priority to public sector borrowing.

The following instruments are used to achieve the above-mentioned objectives of the debt management:

- Open market operation;
- Timing of issues;
- Coordination among authorities and banks on issues;
- Bonds innovations tailored for issues;
- The privileges;
- Queuing;
- Pressure to favor government bonds, and,
- Restrictions on foreign access to the market.

In Nepal, the domestic debt management is mainly being carried out with the objectives of maintaining appropriate interest rates, affecting certain type of holder of the debt and short-term stabilization of bond prices. The size is not currently being considered. The maturity of debt is sometimes taken care of. And to achieve these objectives, the first three instruments are being used. Open market operations of government treasury bills are being effectively conducted in the Nepal Rastra Bank. The Debt Management Committee represented also by the Ministry of Finance considers also the timing and the size of the bills to be transacted.

External

Developing countries like Nepal use external borrowing as a mechanism to address the gap between the government revenue and its investment and the export-import gap. Such borrowing adds to the total resources available to the government

over a given period and enables the government to make higher expenditure than would otherwise be possible. If properly utilized such resources can benefit the borrowing countries and contribute to its economic growth and poverty reduction. However, when inefficiently allocated, the cost of borrowed external resources can contribute to macroeconomic management problems in the form of high or even unsustainable levels of external debt-servicing obligations. The use of borrowed external resources should contribute not only to increased supply of goods to meet the domestic needs, but generate—by increasing the country's capacity to export—adequate real resources to service the liabilities incurred. External debt management is, thus, an integral part of macroeconomic management involving the planned acquisition, deployment, servicing and retirement of external loans to foster economic growth, poverty reduction and sustainable development without creating external payment difficulties.

Therefore, external debt management involves coordinating several major aspects of economic decision making that have a bearing on loan contracting, utilization and the debt servicing needs and capabilities. Very often, there is a lack of coordination and cooperation among these principal agencies that results in inappropriate levels and terms of borrowings or incomplete records of a country's debt stock, and difficulties in meeting debt service obligations in a regular and timely manner. Such uncoordinated borrowing not only complicates the debt management, and in particular debt monitoring, but is also a source of wider problems for macroeconomic management.

V. ESSENTIAL ELEMENTS OF EFFECTIVE EXTERNAL DEBT MANAGEMENT

The key elements of an effective external debt management are as follows:

- Policy guidelines on the appropriate level, terms and purpose for foreign borrowing;
- Reorganization of the existing stock of external debt so as to maintain an optimum debt structure;
- Monitoring the operations relating to loan commitments, disbursements (loan utilization) and debt servicing on all borrowings preferably on a loan-by-loan basis;
- Accurately recording and maintaining detailed loan-by-loan information;
- Preparing projections of debt and debt service levels to facilitate domestic cost budgeting and foreign exchange management;
- Liaison with various creditors, keeping them informed of macroeconomic developments;
- Regular portfolio reviews on a sector and/or creditor basis. In a portfolio review it should be possible to cancel projects, which are not performing well, and stop new loan disbursement so as to contain future debt service costs.

While the external loans increase resources available in the disbursement period, it has long term repercussions associated with the call on future productive resources to service it. The growth of external debt should, therefore, be planned.

The level of new external borrowing and the terms on which it may be contracted should be clearly established. A forward-looking analysis of the country's external debt-servicing capacity should be an integral component of the external debt management process. This involves analysis of the existing stock of external debt and the streams of future debt service obligation in relation to the country's economic performance taking into account its GDP growth, export growth, import requirement and the level of reserves.

Such analysis and records should allow the calculation of the most common debt indicators: the debt service ratio, the present value of debt outstanding to exports of goods and services, external debt to GDP ratio, the reserves to import ratio (reserve coverage), and reserve to short-term debt ratio. The least developed countries like Nepal should have goals to reduce non-concessional loans to a minimum, obtain the most concessional terms possible and maximize grant receipts from the donors. The database should also have the existing debt stock with respect to the currency composition, maturity profile and the interest rate structure. External debt management may also include debt rescheduling, if necessary, in which payment of principal and/or interest due during a specified period are restructured with a new repayment schedule and terms.

For the effective external debt management, a comprehensive inventory of all the loan agreements with detailed information on each loan needs to be compiled and centrally maintained. The basic loan details required are generally available from the original loan agreements. Such information include:

- The type of instrument, creditor institution or country;
- The debtor, that is, whether the funds are for the central or local government or state enterprise and whether it is guaranteed by the central government or not;
- The amount committed and currency of the loan, commitment fees, rate of interest, grace period and number of installments per year;
- The agreement date, the date from which commitment fees accrue, date of effectiveness, events of default and the terminal date for disbursements;
- The purpose for which funds have been borrowed and prior conditions for the loan to be effective or drawn down;
- Amount and currency of disbursement, and undisbursed balance;
- The method of disbursement, that is, whether it is by direct payment to suppliers on a reimbursement basis, or by other means such as advances; and
- A disbursement schedule.

External debt management is necessary for the indebted countries for avoiding the debt servicing obligation difficulties. This also helps the borrowing countries to effectively utilize the external resources. Therefore, in recent years, the IMF, World Bank and the Asian Development Bank have been providing financial as well as technical assistance for establishing the scientific system of the external debt management in the developing countries.

VI. DEBT STOCK OF NEPAL

Nepal has also been receiving external loans from the beginning to bridge the resource gap. However, being a least developed country, Nepal has been receiving concessional external loans from the International Development Agency or IDA of the World Bank, which is established to provide the concessional loans to the least developed countries. The loans from that institution are for the period of up to 40 years and with a grace period of up to 10 years. And the interest rate (service charge) also is less than 1 percent. The loans taken from that institution by Nepal constitutes around 75 percent of the total external loan stock of the country. Therefore, it is not likely to face debt-servicing difficulties in the near future.

Table 2 presents the total debt outstanding of Nepal up to the FY 2003/04, which shows that Nepal's total outstanding debt has reached a little more than two-third of the national income of the country. In view of the level of the development and the per capita income of the country, this level of outstanding public debt should be taken as burdensome. However, due to the high proportion of the concessional loans, the debt servicing is rather low relative to the debt stock.

TABLE 2. Nepal's Total Debt Stock (Rs. in Million)

Fiscal Year	External	Internal	Total Debt	GDP	Total Debt as % of GDP
1987/88	20,826.0	11,636.0	32,462.0	73,170.0	44.4
1988/89	29,216.9	12,887.9	42,104.8	85,831.0	49.1
1989/90	36,800.9	14,673.1	51,474.0	99,702.0	51.6
1990/91	59,505.3	20,855.9	80,361.2	116,127.0	69.2
1991/92	70,923.6	23,234.9	94,158.5	144,933.0	65.0
1992/93	87,420.8	25,456.1	112,876.9	165,350.0	68.3
1993/94	101,966.8	30,631.2	132,598.0	191,596.0	69.2
1994/95	113,000.9	32,057.8	145,058.7	209,974.0	69.1
1995/96	128,044.4	34,241.9	162,286.3	239,388.0	67.8
1996/97	132,086.8	35,890.9	167,977.7	269,570.0	62.3
1997/98	161,208.0	38,406.7	199,614.7	289,798.0	68.9
1998/99	169,465.9	49,669.6	219,135.5	330,018.0	66.4
1999/00	190,691.2	54,357.0	245,048.2	366,251.0	66.9
2000/01	200,404.4	60,043.7	261,594.3	393,563.0	66.5
2001/02	220,125.6	73,620.7	293,746.3	405,632.0	72.4
2002/03	223,433.2	84,645.3	308,078.5	435,531.0	70.7
2003/04	245,211.4	83,020.9	328,232.3	472,424.0	69.5

Source: Ministry of Finance (2004).

Table 3 presents the debt servicing position of Nepal. Due to the concessional nature of external loans, interest payment on this loan is low compared to the principal and in case of internal loan interest payment is far greater than the

principal one. External debt service ratio is around 7 percent according to the IMF's calculation.

TABLE 3. Nepal's Debt Servicing (Rs. in Million)

Fiscal Year	Principal		Total	Interest		Total	Total Debt Servicing
	External	Internal		External	Internal		
1987/88	297.5	100.0	397.5	293.5	750.6	1,044.1	1,441.6
1988/89	388.6	145.5	534.1	312.7	873.9	1,186.6	1,720.7
1989/90	701.8	100.5	802.3	421.8	1,055.1	1,476.9	2,279.2
1990/91	589.0	150.0	739.0	497.5	1,170.9	1,668.4	2,407.4
1991/92	942.2	264.8	1,207.0	722.7	1,867.4	2,590.1	3,797.1
1992/93	1,252.9	345.0	1,597.9	879.0	2,083.6	2,962.6	4,560.5
1993/94	1,468.2	430.0	1,898.2	1,020.5	1,936.4	2,956.9	4,855.1
1994/95	1,828.2	825.0	2,653.2	1,156.5	2,273.6	3,430.1	6,083.3
1995/96	1,987.7	859.8	2,847.5	1,316.6	2,551.3	3,867.9	6,715.4
1996/97	2,102.4	1,350.9	3,453.3	1,247.0	2,826.9	4,073.9	7,527.2
1997/98	2,780.2	1,151.0	3,931.2	1,421.0	2,330.6	3,751.6	7,682.8
1998/99	3,196.5	1,446.2	4,642.7	1,549.0	2,531.3	4,080.3	8,723.0
1999/00	3,681.01	1,531.6	5,212.7	1,640.3	3,179.8	4,820.1	10,032.8
2000/01	4,500.6	1,190.0	5,690.6	1,700.8	2,997.0	4,697.8	10,388.4
2001/02	4,751.4	1,683.6	6,435.0	1,816.1	3,954.1	5,770.2	12,205.2
2002/03	5,497.5	4,062.0	9,559.5	2,021.7	4,610.1	6,631.8	16,191.3

Source: Ministry of Finance (2004).

VII. EXTERNAL DEBT MANAGEMENT IN NEPAL

Nepal does not so far have any system of external debt management worth the name. Several times, the country has taken external technical as well as financial assistance for developing the system of external debt management. And every time external consultants have developed the system for the purpose. However, the system does not proceed forward as the external consultants leave the country. The situation is such that concerned authorities and Nepal do not keep track even on when, how much, to which creditor and in which currency the principal and interest on external loan is to be repaid. They actually know the repayment schedule only when the creditors remind them in advance. Therefore, every year the gap between the budgeted amount and the actual amount of repayment remains very wide. Such absence of system has created no problems so far. But if it happens, the country

will have to pay a heavy price. Hence, it is suggested that urgent attention should be given to develop and operate a scientific system of external debt management.

VIII. CONCLUSION

Although Nepal's debt burden and its servicing should not be called as excessive, on the basis of its level of development, it is quite burdensome. In other words, debt burden has reached this level even to achieve such meager development. Nepal has not taken high growth path so far and once it takes it will require enormous amount of investment and that investment will have to be made through borrowing from both domestic as well as the external sources. At that time Nepal will have to borrow an unlimited amount of financial resources from both the sources. In other words, the time of heavy borrowing is coming to Nepal a little later. Therefore, until our growth rate takes momentum, we should be extremely judicious while borrowing to finance the budget deficits. Another worrying issue in this regard is that we have not, so far, developed and introduced debt management system in Nepal. Now it should not be delayed even a single minute to introduce this system to remain safe from paying heavy price sooner or later.

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An Examination of Central Bank Independence and Power

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The argument which stresses the role of an independent central bank in preserving the soundness of money by ensuring a low rate of inflation tends to be both narrow and inconsistent. However, much of the debate for independent central banks derives from empirical evidence rather than from theoretical propositions, and if low rates of inflation could be clearly demonstrated to lead to higher rates of economic growth and/or more stable rates of growth, it would provide an argument with which it would be difficult to disagree with the proposition that the market economy operates more efficiently at low rates of inflation. As macroeconomic policy has been developing at a fast pace in recent years, governments have increasingly moved in the direction of restricting themselves to the use of one instrument of policy. It is in this context that the role of the central bank has been accorded so much focus along with its governance. At the same time, there has been a significant move to increase the independence and power of central banks. This would appear to be placing macroeconomic policy almost entirely in the hands of central banks. Yet, monetary policy seems only likely to be effective when central banks behave in the way that financial markets expect and wish them to do so. Moreover, governments seem to have little control over the operation of financial markets. This appears to remove macroeconomic policy entirely not just from short-sighted politicians but from any institutions which might be expected to have the best interests of the entire economy at heart.

I. INTRODUCTION

Attitudes towards the central bank and its roles have changed regularly over time and has been different among countries. The world has experienced a major change across many economies as politicians and economists have shifted their stance in the direction of the 'independence' of central banks, moving strongly towards the adoption of the arrangements and procedures of the ideal central bank model. The basis was proposed looking at the arrangement of the Bundesbank. Other examples of a move towards 'independence' was the Bank of France at the beginning of 1994. In the United Kingdom, there have been some small moves in that direction as well as much discussion of the issue.

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It must be first noted that the usual discussion of the role of the central bank in this context concentrates on one aspect only of the full set of responsibilities borne by central banks in many countries—that of the operation of monetary policy. Specifically, it omits consideration of the supervisory role of many central banks[1] – the role of ensuring the financial probity and soundness of individual banks as well as the banking sector as a whole and hence the role of guarantor of the degree of public confidence in the system which is essential for the operation of an advanced market economy. The separation of monetary policy from bank supervision is easy enough to accept at one level particularly both because it is practised in several advanced economies (notably in Germany where the responsibility for bank supervision rests with the *Aufsichtsamt*, the Federal Banking Supervisory Office) and because there are some clear arguments for it based principally upon moral hazard. Nonetheless, this separation leads to a compartmentalization of the elements of the idea of the 'soundness of money' which is central to the needs of the market system. It also raises questions about the nature of the credibility of the central bank.

Against the above backdrop, the general meaning of 'independence' and what central bank independence implies for monetary policy are discussed.

II. THE MEANING OF AND STANDARD JUSTIFICATION FOR 'INDEPENDENCE'

In the modern debate over the independence of central banks, 'independence' has taken on the simple meaning of independence from the political institutions and processes of the country. This is nothing new. Politicians were always under suspicion of having a bias towards ‘easy money’ and ‘inflation' (Sylla, 1998). As such, some of the elements of the requirements of independence when the US Federal Reserve System was set up in 1913 were independence from a) duly constituted government authorities (executive and legislature); and b) partisan political interests.

Modern political and economic theory has, however, gone well beyond a generalized suspicion of politicians and has formalized the arguments in favor of this form of independence in a number of ways. Thus, there is the theory of political cycles as a criticism of the short-run motivation of politicians; public choice theory as a criticism of the self-interest of both politicians and bureaucrats; arguments for the irrelevance of demand-management policy based upon rational expectations; and the notion of time inconsistency developed by Kydland and Prescott (1977) and Barro and Gordon (1983) to adore this viewpoint. This is all

[1] In 26 countries investigated by Goodhart and Schoenmaker (1993), the central bank was fully responsible for bank supervision in 13, including Australia, Italy, the Netherlands, Spain and the United Kingdom. In another four, including Japan and the United States, supervisory duties were shared between the central bank and one or more other agencies. In the remaining nine, including Germany, Switzerland and Austria, there was a complete separation between monetary policy and supervision of the banking system.

supported by empirical evidence implying the absence of a long-run trade-off between inflation and unemployment and the apparent relative success in the control of inflation of countries with relatively independent (in the above sense) central banks.

Yet, several issues are fudged in the way in which these various propositions are put together. To begin with, the assumption is that if countries with politically independent central banks are successful at maintaining low rates of inflation, the central bank must in some sense have control over monetary policy and the monetary system. But, this may not be so always. The goal of monetary policy has come to be defined solely in terms of the rate of inflation. This derives from the absence of a long-run trade-off between inflation and unemployment, allowing the possibility that welfare may be improved through a reduction in inflation at no long-run cost in terms of loss of output and higher unemployment. More broadly, the low (or zero) inflation target can be seen as a more technical definition of the old idea of 'sound money' for which the money-issuing authority could reasonably be held to be responsible. The problem is that it represents an extremely limited view of 'sound money'.

There can be no doubt that rapid inflation, by reducing the real value of money, undermines public confidence in money as an asset and strikes at the basis of a modern monetary economy and hence an efficient market economy. However, international distrust of the currencies of high-inflation countries either undermines the international value of the currency (damaging the country's terms of trade) or requires risk premia to be built into national interest rates (in turn keeping interest rates high with potentially damaging impacts on investment). In this sense, continued high inflation rates damage the 'soundness' of money.

But the notion of the soundness of money may be hard hit in other ways, too. Vitally, since a high proportion of the money stock consists of the liabilities of banks, the willingness of the public to hold money may be undermined by the possibility of bank failure. This may also arise dramatically in the case of a too-tight monetary policy which forces banks into cash-flow problems and generates doubts in the public which may lead to runs on banks. Alternatively, it may arise as a result of the failure of individual banks due to unfortunate investment policies. If these are large banks, the great amount of interbank activity may cause problems for the system as a whole. Again, if the failure leads to a public suspicion that banks in general are not to be trusted and are inadequately supervised, problems may spread.

Thus, the difficulties in which international banks found themselves at the beginning of the 'debt crisis' of the developing countries in the early 1980s were in part due to the behavior of the banks themselves and in part due to the monetary policies of the developed countries. These difficulties raised serious doubts about the soundness of the international monetary system as a whole and hence about the soundness of the 'product' of that system. It must also be noted that the failure of the British merchant bank, Barings, raises doubts about the effectiveness of bank

supervision and the potential risks associated with speculation in complex derivative products. This, too, calls into question the soundness of money.

At an international level, the soundness of different currencies may only partially (and then only in the very long run) have anything to do with relative rates of inflation as has been witnessed recently in relation to the weakness of the US dollar. In a world of such complexity, it is surely simplistic to judge the soundness of money by the single measure of domestic inflation rates.

Even with domestic systems, inflation represents only one half of the problem since one should ask why the soundness of money is so vital for a market economy. For economists, the first answer must be in terms of resource allocation – the ability of the market system to combine the scarce resources of a country to produce high levels of economic welfare. Logically then, if the exchange mechanism is hampered by lack of confidence in money, the market system will not perform its economic task satisfactorily. But the market system also fails to carry out its resource allocation role effectively if there is a lack of co-ordination in the system and a distribution of income which does not ensure that those who need and/or wish to spend have access to the income required to carry out their plans. In other words, the 'soundness' of money is irrelevant to people who do not have wealth and for whom the decision as to how to allocate their portfolios consists entirely of dreaming what they will do, for instance, if they win a lottery. The soundness of money may be a necessary condition for the efficient operation of a market economy, but it is certainly not a sufficient case.

Indeed, it is arguable that the growth of domestic central banks in industrial countries was associated with bankers exercising control over monetary policy in an attempt to reduce the number and severity of slumps in the economy. That is, central banks arose out of a perceived need on the part of manufacturing and finance for greater stability and a fear of falling prices (Hicks, 1967).

The modern concentration on inflation, on the other hand, assumes that in all matters other than the issue of money itself, the market economy works effectively to co-ordinate decisions within the economy and to ensure that demand always matches supply in the long-run. Attempts to match demand more closely with supply in the short-run only interfere with incentives and cause problems for long-run supply. Free banking models assume that the market economy can also be trusted with the task of providing the economy's money. This has the virtue of both simplicity and logic.[2] There seems to be no *a priori argument* for suggesting that an uncontrolled market system can cope with the co-ordination of the vast number and range of complex decisions required to convert scarce resources into output desired by consumers but cannot cope with the relatively simple task of providing the economy with a medium of exchange (something which has been achieved even within primitive societies with no productive capacity).

Thus, the argument which emphasizes the role of an independent central bank in preserving the soundness of money by ensuring a low rate of inflation seems

[2] For a short outline of a free banking model, see Selgin (1994)

both narrow and inconsistent. However, much of the argument for independent central banks is based upon empirical evidence rather than from theoretical propositions; certainly, if low rates of inflation could be clearly demonstrated to cause higher rates of economic growth and/or more stable rates of growth, it would provide an argument with which it would be difficult to disagree with the proposition that the market economy operates more efficiently at low rates of inflation.

III. THE QUESTION OF CONTROL OVER MONETARY POLICY

The assumption underlying the case for independent central banks that the central bank must in some sense have control over monetary policy and the monetary system needs further elaboration. Clearly, if this is not true the correlation between measures of central bank independence and inflation rates[3] must then: (1) indicate that there must be reverse causality; (2) indicate that some other factor must be causing both the degree of independence and the inflation rate, or (3) be merely accidental. Thus, it needs to be explored in what sense this could be held to be true.

According to the basic monetarist theory, the central bank's power must come from control of the rate of growth of the money supply through control of the monetary base of the economy. Not only that, but this is meant to operate through the establishment of medium– or long-term monetary rules. It is known, however, that monetary base control is not usually practised by monetary authorities. Goodhart (1994), arguing from the perspective of central bankers, suggests indeed that monetary base control is impossible, although he notes that most economists go on believing mistakenly that the monetary base is controllable within a narrow margin. In practice, all central banks operate monetary policy through control of short-term interest rates. This is meant to influence the full spectrum of interest rates and through this aggregate demand, the demand for credit, bank deposits and hence the rate of growth of the money supply. The first question relates to the sense in which an .independent central bank is actually in control of short-term interest rates.

The bank will, in the terms of Fischer (1994), have operational independence but not goal independence. This is, it will have been given a broad objective which stresses control of the rate of inflation. This emphasis on control of inflation is both desired by financial markets and is used to generate expectations as to what the central bank is likely to do. The few attempts at the establishment of long-term monetary rules have had little apparent success. Nonetheless, economists continue to debate at some length whether interest rate policy should be decided on the basis

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[3] For the most detailed statistical analysis of this link, as well as the fullest statement of the case for independent central banks, see Cukierman (1992). Cukierman (1994) summarizes much of the argument.

of some measure of the money stock (despite the problems with definitions in several countries caused by financial innovation) or a final target such as nominal GDP, the level of prices or the rate of inflation. In practice, central banks are likely to make their decisions about interest rate policy on the basis of changes in a number of indicators chief among which are likely to be the rate of growth of the money supply, the rate of growth of demand (in relation to what is perceived to be a 'sustainable' medium-term real rate of growth for the economy), unemployment figures and other evidences concerning pressure within labor markets, the rate of inflation shown by a variety of price indices, and exchange rates. Interest rate changes occur quite regularly in all the industrial countries and policy accords much more with the 'discretionary' level which used to be attached to Keynesian policies than with the idea of a monetary rule. All of this is true even for 'independent' central banks, the Bundesbank or the European Central Bank.

Many of the changes in interest rate are small, often 0.25 or 0.5%. Why are such changes believed to work in the way that the central bank wishes ? We have moved a long way in recent years from belief in Keynesian interest – inelastic investment demand curves, but it remains that very few people are likely to think that a change of 0.25% in short-term interest rates would, of and by itself, produce a significant change in the investment decisions of firms or the consumption decisions of households. But, the mechanism which is generally held to operate is that of credibility and reputation.

It is generally viewed that the central bank would have the power to control demand through the interest rate if it chose to exercise it. But it does not need to do this as long as financial markets believe that it could and would do so if required. Thus, the central bank operates through a series of signals to the financial markets. The catch is that these signals only have power as long as the financial markets believe that the policy of the central bank is 'credible', by which is implied that the central bank follows the path that the markets think it should do in order to achieve the target which the markets accept as desirable.

Worse than this, if the central bank's policy is not held to be credible, and it does wish to achieve a low rate of inflation, it will need to push interest rates up much faster and much further than would otherwise be necessary in order to overcome the scepticism of the markets. This, almost inevitably, will produce a much deeper recession than would otherwise have been needed.

Under these circumstances, does it actually matter who makes the interest rate decisions ? If politicians make them, the markets will not believe in the authorities' determination to control inflation, the policy will not be credible and the economy will not respond to small interest rate changes. But what would happen if an 'independent' central bank chose, against market expectations, to follow an expansionary path? Surely, the outcome would be exactly the same as if the decisions had been undertaken by the politicians. Thus, it is significant that even an 'independent' central bank either has to have an anti-inflation reputation built up over many years, as with the Bundesbank or the Swiss National Bank, or it must have its hands tied in a very specific way, as in the case of New Zealand where

achievement of a narrow target rate of inflation is linked to the possibility of reappointment for the central bank governor. It is not irrelevant either that the evidence seems to suggest, even to strong supporters of the case for independence, that central bank independence 'appears to be efficient mostly as a safeguard against the onset of high inflation rather than as a remedial device' (Cukierman, 1994, p.1441). In the language of the debate, authorities who do not have a strong anti-inflation reputation must pre-commit monetary policy to a pre-announced (low inflation) course.

Further, consider a government which decided to make the country's central bank independent of it and drew up a constitution for the bank but included in this an objective function for the bank which stressed the importance of the rate of growth and the level of employment ahead of any concern with the rate of inflation. Is there any reason to believe that the financial markets would regard the policy of such an independent central bank as credible ? Again, in a country where the control of inflation wins votes, politicians are likely to choose policies which will keep inflation in check. Would there be any difference in such a case between the central bank policy followed by a government and that followed by an 'independent' central bank which was required to maintain a low rate of inflation as a priority ?

It has been argued that gains arise from political independent central banks because they can build a reputation for precommitment (to a low inflation policy) which is not, by definition, available to politicians. The central bank can then exploit this reputation to allow it to use monetary policy for short-run purposes (expanding the money supply, for instance, to counter deflationary shocks) without raising long-run inflationary expectations. Thus, a politically independent central bank could, so long as it allowed itself or was allowed then freedom to move away in the short run from its inflation target, achieve a combination of low inflation in the long-run and stable short-run output.

But isn't there something missing here ? If the argument against politicians is that they adopt short-run policies in order to win elections, why does that generate long-run inflationary expectations ? The answer obviously must be that politicians do not have a reputation for achieving low inflation in the long-run. But there is no theoretical support of political behavior to justify this. Indeed, the standard theory of the political cycle does not necessarily suggest that there is any long-term bias towards over-expansionary policy since, between elections, governments may be forced (often by the balance of payments constraint) to operate restrictive policies. In any case, if people understand that the economy is best-served in the long-run by low inflation, they surely will not vote for politicians who have a long-run bias towards inflation. Hence, it is not the distinction between politicians and a politically independent central bank which is important but the nature of the target and whether or not that target is accepted by financial markets.

As such an 'independent' central bank is in fact not independent of the preferences and expectations of financial markets. Interestingly enough, the third independence requirement for the Federal Reserve System created by an act of

Congress in 1913 was that it should be independent of 'private financial business interests' and this may be interpreted as relating to individual business interests rather than to the financial or business sectors as a whole. Thus, the intention may have been to ensure that the central bank did not pursue policies which favored one set of business interests at the expense of others. In any case this makes it imperative to consider the undergoing questions.

Is it necessarily the case that the preferences of the financial sector reflect the preferences of the market economy in general? The answer might only be yes, if there were conclusive evidence that low rates of inflation led to higher and more stable rates of economic growth (although changes in income distribution may mean that higher rates of growth are not Pareto-improving[4]). However, as is indicated above, such an evidence does not exist. Studies such as that by Alesina and Summers (1993) suggest that although central bank independence, however measured, is accompanied by lower inflation, it is not associated with lower unemployment, a more stable economy, higher economic growth, or less volatile rates of economic growth[5]. If this is so, it must be true that monetary policy which only becomes effective when it is credible to financial markets must from time to time be against the interests of other business interests.

And again, even if the interests of different elements of the business sector were always in accord, does the view that, with regard to monetary policy, the preferences of that sector should dominate those generated by the political system? It has been illustrated above that the argument against the political system is that politicians are governed by short-term concerns while in this area of policy there is a conflict between the short-term interests of the voters and the long-term interests of the economy. The implication appears to be that voters do not know the long-term interests of the economy and are thus duped by politicians. The problem here is that, as agents in the market economy, people are assumed to have rational expectations and to be able to understand both how governments are likely to respond to economic circumstances and what the impact of government policy will be. It is indeed known that the Kydland and Prescott/Barro and Gordon time

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[4] There is also the seigniorage argument which suggests that differential rates of inflation may be justified among countries and that higher rates of inflation may be desirable in countries with inefficient public finance structures.

[5] Cukierman (1994) suggests that central bank independence may be related to higher rates of economic growth in developing countries – but, in countries in which the average term of office of the central bank governor was about one year, as compared with a legal term of office of four years (as was the case in Argentina between 1950 and 1989) is clearly subject to so much political turbulence that simple correlations between central bank independence and rates of growth seem hardly likely to provide an adequate representation of the motive forces of the economies. With industrial countries, the evidence appears to be neutral – that is, that average real growth is unrelated to central bank independence. Thus, one has the argument that there is a costless gain available through the reduction of inflation at no cost. However, this assumes that reduced inflation has no other cost for an economy and that the direction of causation is from central bank independence to the real economy, neither of which seem justifiable.

inconsistency construct assumes that people know very well exactly what politicians are up to. Yet, as actors in the political system, people are assumed to be short-sighted and easily fooled. It is difficult to justify this inconsistency. If the political system generates a long-run inflationary bias which voters do not want, politicians will surely appear to win votes by promising what voters want. And to be re-elected, governments will ensure that low inflation is delivered. If, on the other hand, voters have a long-run inflationary bias, in what sense is lower inflation best for the economy ?

This is, naturally, all part of a deeper problem which derives from the assumption that there is such a thing as the long-term interests of the 'economy' as distinct from the separate and conflicting long-term interests of different groups within the economy. If this latter view is considered, an alternative interpretation of the independent central bank agenda can easily be provided—that it is a justification for the deliberate substitution of the preferences of the market system (in which voting power is replaced by market power) for those generated by the democratic system in circumstances in which it is not possible to see one set of preferences as being objectively 'superior' to the other. After all, if voters are short-sighted but market agents are 'forward-looking', it must surely be the case either that:

(a) market agents are only a subset of voters – that is, that substituting the judgement of the market for the judgement of the political system is allowing some minority to dominate;
(b) voters consist of a mixture of short-sighted and long-sighted people but there is a strong correlation between long-sightedness and wealth/market power, causing the long-sighted to dominate in the market—the outcome is the same as in (a); or
(c) that the same group of people make one set of judgements in one context and a different set in another.

If (c) is chosen, some clear justifications are warranted. It can be hardly assumed that they are irrational in one context and rational in another since this would be extremely dangerous for the majority of the economies these days. If it is assumed that both sets of decisions are rational, then is there a ground to believe that the decisions generated by the market should dominate, other than to approve of what is implied by (a) or (b) ?

An extreme version of this argument is that of Greider (1987) who says that the US Federal Reserve as a non-elected body with an anti-inflationary bias restrains economic growth in order to preserve the value of financial assets, most of which are owned by wealthy people. That is, the short-term versus long-term distinction is merely a cover for a conflict of interests. Historically, it may be said that people with market and/or military power resisted the growth of political democracy. When that battle is lost, the aim becomes to remove as much decision-making power as possible from the political system. Independent central banks determining monetary policy may be seen as one very small part of this big agenda.

IV. THE QUESTION OF CONTROL OVER THE FINANCIAL SYSTEM

Turning to the question of supervision of the financial system, the 'soundness' of money is dependent not only on the maintenance of the purchasing power of money but also on confidence in individual banks and in the banking and financial sector as a whole, and hence on the adequacy of supervision of that sector. It is this idea which leads to the proposition that the central bank should also have a supervisory role. It is possible to argue that there is no short-term gain available to politicians from the supervisory function in the same way that there is from generating inflation through a relaxed monetary policy. Thus, the supervisory role may be placed in the hands of a non-independent government agency while the independent central bank is left to deal only with monetary policy. It has been argued, indeed, that the separation of the monetary policy and supervisory roles has positive advantages for the control of inflation since where central banks are not involved in bank supervision, financial sector representatives will be less inclined to lobby central banks for easier monetary policy to reduce the regulatory burden on banks and financial companies. Whether this is true or not, under present circumstances, the separation of the two roles does not matter; however, if an attempt is made to recapture monetary policy for the political system they would need to be brought together. Even if they are kept separate, it should be conceded that the two roles are complementary and that the supervisory role is at least as important.

Whoever carries out the supervisory role, severe problems emerge with respect to the power of the supervisor to control the banking and financial sector. Here, two difficulties stand out immediately. The first one relates to competitive deregulation. No single authority is in a position to exercise firm control over the sector, for fear that the market will simply move to other financial centres. The other difficulty is the lack of information held by supervising authorities. Financial markets continue to evolve so rapidly and capital moves with such ease that there is only a slight possibility that the authorities can know precisely what is happening. The role of the central bank, is therefore, not so much as one of controlling the market as it is one of limiting the damage to the reputation of the market and containing the fallout, when things go wrong.

Putting together what is happening to monetary policy and the way in which financial markets are developing produces a paradox. At a time when more and more attention is being drawn to central banks and the demand for their independence from the government is growing, implying that central banks have considerable power which cannot be trusted to politicians, they are being shown to be virtually impotent. The debate over the form of control of central banks seems then to be barely relevant to the question of control of economic policy and of economies.

The question of why politicians everywhere, and also bureaucrats in our context, seem to be adopting central bank independence with such enthusiasm in most cases can be addressed here. One possible answer is that they are aware that,

in allowing central bank independence, they are merely giving up a nominal power—a power which has, in effect, already been lost to the markets. Thus, they lose nothing but gain by publicly shifting responsibility for the control of inflation on to a non-elected body.

V. CENTRAL BANK INDEPENDENCE AND NEPAL RASTRA BANK ACT, 2002

From what has been argued in the previous sections, it can now be comprehended that increasing the independence of the central bank may help to contain inflation to a certain degree if containing inflation is the main objective, but this is in itself not a full readymade capsule to swallow. It is rather a smaller part of a set of institutions and reforms that can support the objective of price stability.

The Nepal Rastra Bank Act 2002 has levied independence to some extended degree: Section (2) subsection (3) of the Act reads "The Bank shall be an autonomous and corporate body with perpetual succession." Similarly the Act has fully empowered the Nepal Rastra Bank (NRB) to enact independently among others on the formulation as well as execution of the foreign exchange as well as monetary policies.

The appointment of the Governor, the Deputy Governors as well as the Board of Directors are somewhat levied as independence. The appointment of the Governor is made on the basis of a recommendation of the Recommendation Committee formed for the very purpose and the appointment of the Deputy Governor is made on the recommendation of the Governor. However the appointment of the Board of Directors of NRB is made representing different sectors from amongst the persons renowned in economic, monetary, banking, financial, commercial, management and law sectors (Sections 15,16, and 17 of the NRB Act). Further, all the appointments are made by the council of ministers of His Majesty's Government.

Other features that extend towards the independency of the NRB include the following:

- Section 22 of the Act has imposed strong grounds in case the Governor, Deputy Governor or any Director of the Bank is to be removed. However, HMG shall not deprive the concerned person from a reasonable opportunity to defend himself prior to removing him from his office. This in any case has tied up the hands of those trying to act upon any kind of biasness.
- Section 23 has made a provision of an Inquiry Committee in case the Governor is required to be dismissed.

Several studies in the Nepalese context have also revealed that government expenditure has had a significant role in impinging on domestic prices. This, however, implies that expansionary fiscal policy, which the government has been pursuing for several years in the past, does not suit the Nepalese context. As such, the government's efforts to meet the fiscal deficit should be directed towards other sectors like increasing production, as well as widening of the tax base rather than

heavily relying on the Bank's credit and/or overdraft whatsoever the nature of it may hence be. It is here that the arguments regarding the independence of the NRB stands as relevant in order for it be apt to withstand all sorts of unwanted pressures to successfully meet the goal that it has set forth to ultimately obtain a sustainable economic growth.

Moreover, one may see through speculative eyes and be tempted to be content because the NRB Act, 2002 has given ample means thus providing the opportunity to the NRB to act independently: However, independence does not occur merely on papers. It is based on how much of the power that NRB can really bring into existence.

VI. THE CONTROL OF ECONOMIC POLICY – A SUMMARY

As macroeconomic policy has been developing at a fast pace in recent years, governments have increasingly moved in the direction of restricting themselves to the use of one instrument of policy – the rate of interest – and to one policy target – control of the rate of inflation. It has been in this context that the role of the central bank has been given so much attention along with its governance. At the same time, there has been a considerable move to increase the independence and power of central banks. This would appear to be placing macroeconomic policy almost entirely in the hands of the central banks. Yet monetary policy seems only likely to be effective when central banks behave in the way that financial markets expect and wish them to do. Moreover, governments seem to have little control over the operation of financial markets. This appears to remove macroeconomic policy entirely not just from short-sighted politicians but from any institutions which might be expected to have the best interests of the entire economy at heart.

Is there any way out of this trap? One major solution has been proposed—that of James Tobin to place a tax on capital movements in order to make speculative capital movements less profitable and hence to reduce the flow, restoring some degree of control to national governments. But, as Tobin accepts, this would only work if the tax was applied by all the governments. The possibility of reaching this degree of agreement and trust among countries may not seem very great. Yet, an increasing realization of the powerlessness of national economies in a world of mobile capital may concentrate minds wonderfully. In this broader context, the issue of central bank independence seems of minor importance. And still, it is important in the sense that it may be another example of economists attempting, even if with the purest of motives, to conceal a conflict of interests behind an apparently objective argument based upon some simple correlations.

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The Nepalese Stock Market: Efficient and Calendar Anomalies

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After describing the various forms of efficiency and calendar anomalies observed in many developed and emerging markets according to the existing literature, the present study examines this phenomenon empirically in the Nepalese stock market for daily data of Nepal Stock Exchange Index from February 1, 1995 to December 31, 2004 covering approximately ten years.

Using regression model with dummies, we find persistent evidence of day-of-the-week anomaly but disappearing holiday effect, turn-of-the-month effect and time-of-the-month effect. We also document no evidence of month-of-the-year anomaly and half-month effect. Our result for the month-of-the-year anomaly is consistent to the finding observed for the Jordanian stock market and that for the day-of-the-week anomaly to the Greek stock market .In addition, our finding regarding half-month effect is consistent with the US market. For the rest, we find inconsistent results with that in the international markets. Our results indicate that the Nepalese stock market is not efficient in weak form with regard to the day-of-the-week anomaly but weakly efficient with respect to the other anomalies.

I. INTRODUCTION

In the past two decades, much evidence has accumulated on "calendar anomalies" in developed and emerging markets[6] followed by Fama's (1970) influential paper, "Efficient Capital Markets: A Review of Theory and Empirical Work". Calendar anomalies are empirical results that seem to be inconsistent with maintained theories of asset-pricing behavior (Schweret, 2002). The evidence of a growing number of these has led to a doubt on "Efficient Markets Hypothesis" These include the "seasonals" in stock returns. Stock returns, especially returns on small stock, are on average higher in January than in other months (Haugen & Lakonishok, 1988). Monday returns are on average lower than returns on other days (Cross, 1973; French, 1980; Gibbons & Hen, 1981). Returns are on average higher than the day before a holiday and the first-half-of-the-calendar month (Ariel, 1987; Lakonishok & Smidt, 1988). In addition, returns are on average higher than

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[6] According to the International Finance Corporation, a unit of the World Bank, an emerging equity market is an equity market from a developing country. A developing country is one that has a low income (US$ 783 or less per capita in 1997) or middle income (US$ 783 to 9656 per capita in 1997).

turn-of-the-calendar month (Ariel, 1987; Lakonishok & Smidt, 1988) and the first-third of the calendar month (Kohers & Patel, 1999)[7].

However, there is no study published in an international journal[8] exploring the stock price anomalies in the context of the Nepalese stock market. Therefore, the main objective of this study is to identify the stock price anomalies in the context of one of the emerging stock markets. More specifically, the study examines the existence of all types of seasonalities, namely, the month-of-the-year effect, day-of-the-week effect, holiday effect, half-month effect, turn-of-the-month effect, and time-of-the-month effect in stock returns. In addition we also examine whether our results are analogous to those found in other markets. From another perspective, this study also tests the weak-form of market efficiency.[9]

The study is organized into five sections. The first section commences with the introduction. The second section reviews the literature on market efficiency and calendar anomalies. Section three describes data sources and methodology used for the study. Section four consists of the empirical analysis and findings of the study. The final section presents summary and conclusions.

II. LITERATURE REVIEW

This section consists of two parts. The first part deals with the concept and forms of market efficiency and the second part describes calendar anomalies and its types along with the global findings on these.

Market Efficiency

The concept of efficiency is central to finance. To an economist, efficiency of market has the simple meaning: the allocation of resources generated by the market is said to be efficient (Pareto optimal) if there does not exist an alternative feasible resource allocation which can make some individual better off without making someone worse off (Stiglitz, 1981). In the financial literature, however, the term efficient market takes a slightly different meaning .The two mostly widely applied definitions, both referring to informational efficiency, are the following.

"A capital market is efficient if all the information set ϕ is fully reflected in securities price" (Fama, 1970).

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[7] See Fama (1991) and Joshi (2004).

[8]The study by K.C. and Joshi (2004) on "Seasonal Anomalies in Nepalese Stock Market" is the first published literature in national journal. The authors, however did not deal with all types of anomalies.

[9] This is one form of "Efficient Market Hypothesis". Other includes semi-strong form and strong form of market efficiency. For the present case, we define a market as weak-form efficient if it is impossible to achieve abnormal profits by using past prices to formulate buying and selling decisions. These will be discussed under "Literature Review".

"A market is efficient with respect to information set ϕ_t if it is impossible to make economic profit by trading on the basis of information set ϕ_t. By economic profit, we mean the risk adjusted returns net of all costs" (Jensen, 1978).
According to Stiglitz (1981), market efficiency (informational efficiency) used by financial economists is only the part of overall market efficiency.[10]
This requires that

- The market must provide the correct incentives for gathering the right amount and kind of information,
- The market prices must reflect the information available to the various traders, and
- The firms must be able to convey the information efficiently about their prospects to potential investors (Stiglitz, 1981).

Literature on finance presents three different forms of informational efficiency in stock market: *weak-form, semi-strong form,* and *strong form* based on set of information ϕ_t reflected in security prices (Fama, 1970; Jensen, 1978). In the weak form, the information set ϕ_t is taken to be solely the information contained in the past price history of the market as of time t whereas in the semi-strong form ϕ_t is taken to be all information that is publicly available at time t such as published financial data about companies, government data about economy earning estimates disseminated by companies and security analysis and so on (This includes the past history of prices so that the weak form is just a restricted version of this).Finally, in a *strong form* ϕ_t is taken to be all information known to anyone at time t including even insider information such as imminent corporate takeover plans and extraordinary positive and negative future earning announcements.

The growth in the amount of data and computing power available to researchers, along with the growth in the number of active empirical researchers in finance since Fama's (1970) paper has created an explosion of findings that raise questions about the efficient capital markets (Schweret, 2002). These findings are referred to as anomalies. The next part deals with this aspect.

Calendar Anomalies

Calendar anomalies include the calendar or seasonal regularities such as the month-of-the year effect, day-of-the-week effect, holiday effect, half-month effect, turn-of-the-month effect and time-of-the-month effect[11]. Interestingly, these are not only observed in stock returns, but also in various financial markets such as money, derivative and commodities markets. The existence of these seems to be inconsistent with maintained theories of asset-pricing behavior. They indicate

[10] Others include exchange efficiency and production efficiency.
[11] It is customary in finance to use the terms calendar effects and seasonalities interchangeably but in econometrics, calendar effects are distinguished as one of the possible causes of seasonal fluctuations, which in a wider sense then refer to systematic, but not necessarily regular or unchanging, intra-year movements in economic data (See Sar, 2003).

either market inefficiency (profit opportunities) or inadequacies in the underlying asset-pricing model. However, after they are documented and analyzed in the academic literature, they often seem to disappear, reverse, or attenuate. Thus, there are growing skepticisms on the study providing the evidence of anomalies[12].

First, calendar effects could be a result of data mining. Even if there are no calendar specific anomalies, an extensive search (mining)[13] over a large number of possible calendar effects is likely to yield something that appears to be an "anomaly" by pure chance. Moreover, Merton (1987) points out that "economists place a premium on the discovery of puzzles, which in the context at hand amounts to finding apparent rejections of a widely accepted theory of stock market behavior" (cited by Sullivan, Timmerman & White,1998). Another observation that points to data mining as a plausible explanation is that theoretical explanations have only been suggested after the empirical "discovery" of the anomalies.

The second is the data-snooping phenomenon[14], an attempt to detect regularities by many academicians and investors focusing on common stock price indexes (more severe for US markets). Data snooping imparts a "bias" in the sense that it affects inferences in an undesirable way (Lo & MacKinlay, 1990).

Thus, the findings of systematic seasonal patterns in stock returns leave us with a conundrum: do the apparent regularities in stock returns really imply a rejection of simple notions of market efficiency, or are they just a result of a large, collective data-snooping exercise? Many researchers express awareness of this problem. Lakonishok and Smidt (1988), for example, comment on the seasonal regularities in this way: "However, it is at least possible that these new facts are really chimeras, the product of sampling error and data mining". Grouped by calendar frequency, the researchers have reported the following anomalies.

Month-of-the-Year Effect

This effect states that return on common stock is not the same for all the months of the year. Empirical studies conducted in the stock market of US have found that the statistically significant positive returns to common stocks occur in January while significant negative returns to common stocks occur in December. Thus, the January effect is of phenomenon in these countries.

Wachtel provides the earliest evidence of the abnormal stock returns in January in 1942 for US stock markets. Rozeff and Kinney (1976) make the first formal investigation on the phenomenon, and find that returns on an equally weighted index of NYSE stocks were much higher in January than in other months of the year. Banz (1981) and Reinganum (1981) both provide report of a significant negative relationship between stock returns and the size of the issuing firm as

[12] See Lakonishok and Smidt (1988); Lo and MacKinlay (1990)**;** Fama (1991); Sullivan, Timmerman and White (1998); Schweret (2002); Sar (2003); Hansen and Lunde (2005) for excellent review on anomalies.

[13] A popular phrase is that "the data has been tortured until it is confessed".

[14] We will also discuss this issue later under 'Data and Methodology' section.

measured by the total market value of outstanding equity. Keim (1983) investigates the interaction of the seasonal and size effects and finds that approximately half of the annual difference between the rates of return on small and large firms occurs in the month of January. Blume and Stambaugh (1983) apply a correction for the return measurement bias that results from using reported closing prices and shows virtually that all of the size effect occurs in the month of January. Various hypotheses (Chen & Singal, 2001) have been formulated to explain the anomaly of January effect. We provide a brief description of these and also the empirical study on it.

Tax-Loss Selling hypothesis

This hypothesis was first suggested by Branch (1977). According to it, investors, wanting to realize capital losses in current tax year, create a downward price pressure at the year end (December) on securities that have previously experienced negative return. Subsequently, at the beginning of the new tax year (January), this selling pressure is relieved and the affected securities earn excess return as their prices rebound. Furthermore, because small firms' stock returns are more volatile than large firms' returns, small-firm stocks are more likely to have generated usable tax losses and therefore be candidates for tax loss selling (Brauer & Chang, 1990). Evidence in support of this hypothesis is provided by Jones, Lee and Apenbrink (1991); Poterba and Weisbenner (2001); Chen and Singal (2001); Dai (2003). Contradicting evidences are also abundant. Brown et. al (1983) in Australia and Kato and Schallheim (1985) in Japan report significant January effects, even though January is not the beginning of the tax year.

The Window-dressing Hypothesis

According to the window-dressing hypothesis, developed by Haugen and Lakonishok (1988), institutional managers are evaluated based on their performance and their investment philosophy. To improve their performance, the institutions buy both risky stocks and small stocks but sell them before the end of the year so that they do not show up in their year-end holdings. At the beginning of the following calendar year (in January), investment managers reverse the process by selling winners, large stocks, and low risk stocks while replacing them with small and risky stocks that typically include many past losers.

The window dressing hypothesis represents an alternative but not necessarily mutually explanation for the month-of-the-year effect (January effect). However, the two hypothesis are difficult to differentiate because they both rely on year-end selling pressure in losing stocks, and both predict a January effect concentrated at the turn of the year. One difference is that the tax-loss selling hypothesis implies no return seasonality prior to the introduction of capital gain taxes (Jones, Lee & Apenbrink, 1991).

Differential Information Hypothesis (Information Release Hypothesis)

This hypothesis relies on how variation in the quantity of information available for different firms may result in different returns or levels of risk. According to Rozeff and Kinney (1976), the excess January returns are the effect of significant information releases that occur in the first few days of January. Barry and Brown (1985) report that relatively information-poor securities have more systematic risk than their information-rich counterparts. Suppose, in addition, small-capitalization stocks are information-poor while large capitalization stocks are information-rich. The surfeit of news associated with year-end reporting would increase the information richness of small stocks by relatively much more than it would that of the already informationally affluent large stocks. Consequently, small stocks would react more strongly to the increased news of January by generating larger returns than large stocks. Penman (1987) hypothesizes that firms release good news as soon as possible, towards the beginning of each quarter. But, they delay release of bad news to the second half of the quarter. According to him, if the market reacts mechanically to news, then stocks should earn abnormal returns in the first few days of each quarter. He finds support for this hypothesis by observing the release of good news at the beginning of quarters 2 to 4. However, he finds a weaker effect for the 1st quarter that includes January. Clarkson and Thompson (1988) report evidence corroborating risk reductions in response to information increases. Arbel and Strebel (1982) indicate that small-capitalization stocks tend not to be heavily researched by security analysts.

Market Microstructure Biases

Market microstructure biases are most likely to plague stocks with low prices and low capitalization, exactly the type that meet the criteria for tax-loss selling. Researchers have shown that market microstructure biases (bid-ask bounce, bid-ask spreads) might explain the January effect and that transaction costs make it non tradable. Ball, Kothari, and Shanken (1995) suggest that low priced stocks trading within a relatively wide bid-ask interval may explain the effect. Cox and Johnston (1998) show that stocks with prices greater than $10 do not exhibit positive returns in January. Bharadwaj and Brooks (1992) also find that it is a low price effect.

Evidence from Foreign Markets

The tax-loss explanation of the January effect has been challenged by studies of foreign stock markets where the January effect is observed though the host countries may not have a December-end tax year (Agrawal and Tandon, 1994). Brown *et al.* (1983) study Australian stocks where the tax year-end is June 30. They find seasonals in December-January and July-August with the largest effects in January and July. Berges, McConnell, and Schlarbaum (1984) study the Canadian stocks where December is the tax year-end. They find a January seasonal

prior to 1972 when Canada had no capital gains tax. One explanation for the existence of a January effect in countries without December-end tax year is that foreign investors induce a January seasonal in those countries. If investors from countries with a December-end tax year have significant equity holdings in foreign countries then the January seasonal would be observed due to trading by those investors.

Few studies also reveal the presence of month-of-the-year effect of stock returns for other countries' markets. Nassir and Mohammad (1987) provide evidence of Malaysia where the average January returns were significantly positive and higher than in other months during the period 1970-1986. Balaban (1995) reports January effect for Turkey although it does not have any capital gain tax. Furthermore, Ho (1999), using daily returns for the period January 1975 to November 1987, find that six out of eight emerging Asian Pacific stock markets exhibit significantly higher daily returns in January than in other months. Fountas and Segerdakis (1999) test for seasonal effects in stock returns (the January effect anomaly) using monthly stock returns in eighteen emerging stock markets for the period 1987-1995. They find very little evidence in favor of this effect in the emerging markets. Pandey (2002) also reports the existence of January effect for India although January is not the first-month of tax year. Maghayereh (2003) find no evidence of monthly seasonality as well as January effect in the Amman Stock Exchange (Jordan). However, K.C. and Joshi (2004) find October effect for Nepalese stock market, against the tax loss selling hypothesis.

Day-of–the-Week Effect

The day-of-the-week effect (also called as weekend effect or Monday effect) indicates that the average daily return of the market is not the same for all the days of the week, as we would expect on the basis of the efficient market theory. Empirical studies conducted in the stock market of US, England and Canada have found that the statistically significant positive returns to common stocks occurs on Fridays while significant negative returns to common stocks on Mondays but for Japan, France, Australia and Singapore, the significant negative returns appear on Tuesdays. Other studies also show the day of week effect for the emerging markets. Two hypotheses have been formulated by many researchers in trying to explain the day of the week anomaly:

(a) *The Calendar Time Hypothesis*: According to this hypothesis, the return generating process is continuous. This means that Monday's average return will be different than the other days' average returns. The reason for this is that Monday's average return is estimated from the closing price on Friday until the closing price on Monday. Hence, Monday's average return will be three times higher than the average returns of the other working days (French, 1980; Lakonishok & Levi, 1982).

(b) *The Trading Time Hypothesis:* According to this hypothesis, the returns of common shares are generated during a transaction. This means that the average

return of shares will be the same for all the weekdays (Monday through Friday), because each day's return represents one day's investment (French, 1980; Lakonishok & Levi, 1982).

The existence of weekend effect is considered to be inconsistent with the calendar time hypothesis and the trading time hypothesis (Sar, 2003).

Cross (1973) and French (1980) provide the earliest evidence of the weekend effect in US stock markets. Spawned by the work of them, numerous studies searched for satisfactory explanations to rationalize such puzzling discovery of the persistent negative Monday (or weekend) returns.

Lakonishok and Levi (1982) attribute the effect to the delay between trading and settlement in stocks and in clearing check which states that effect of delay in payments on expected measured rates of return of stock due to holidays and normal weekends causes lower return on Monday. Keim and Stambaugh (1984) introduce the bid-ask-spread bias as a possible explanation for the effect. Gibbons and Hess (1981) and Rogalski (1984) on the other hand introduce measurement error as an explanation. Liano and Gup (1989) report that Monday return patterns tend to be dissimilar in different stages of the business cycle. They find stronger negative Monday returns during economic contractions than during economic expansions. Barone (1989) finds that the largest drop in stock prices occur on the first two days of the week and are more pronounced on Tuesday in Italy. Damodaran (1989) concludes that earnings and dividend announcements on Fridays are much more likely to contain reports of declines and to be associated with negative abnormal returns than those on other weekdays. While Friday reports elicit negative average returns for firms in all size classes, announcements by smaller firms have more negative returns associated with them on the following trading day, suggesting that they are more likely to release reports after close of trading or that prices adjust more slowly to the information in these reports. In addition, he finds that a comparison of the average returns by weekday, with and without the Friday announcements explains a surprisingly small proportion (3.4 percent) of the weekend effect.

Lakonishok and Maberly (1990), Sias and Starks (1995) and Kamara (1995) document that trading behavior, especially selling activity, tends to increase trading activity on Mondays. Sias and Starks (1995) report that the weekend effect returns and volume patterns are more pronounced in securities in which institutional investors play a great role. Kamara (1995) assumes that increased institutional trading activity is responsible for the Monday seasonal returns. Wang, Li and Erickson (1997) report that the day-of-the-week effect occurs primarily in the last two weeks (fourth and fifth weeks) of the month. They provide two possible explanations for this. The first explanation is based on the correlation between the Friday return and the Monday return. The second explanation relates negative Monday return to the expiry date of stock options. Draper and Paudyal (2002) report for UK that Monday effect is caused by a combination of various factors, especially the fortnight of the month, account settlement day, ex dividend day, arrival of (bad) news on Fridays, trading activity and bid-ask spread. Further when

these factors are controlled, the average Monday return becomes insignificantly different from the average return of other days of the week thus providing support for the trading time hypothesis. Katerina, Demeteres, George (2002) find negative returns for Greek on Thursdays instead of Mondays or Tuesdays as it has been observed in most of the other markets. Brus, Liu and Schulman (2003) report that the Monday returns patterns are different between the pre-and post-1988 sub-periods. In other words, 'traditional' weekend effect documented in the previous studies has been reversed. They find that Monday returns tend to be positive and greater than the returns on other days of the week in the post-1988 period. However, they show similar Monday returns pattern between broad indices and industry indices (i.e., the 'traditional' and the 'reverse' weekend effects were observed for broad stock indices as well as in most industry indices). Further they observe that the similarity in Monday returns between broad stock indices and industry indices still persists after classifying the data by month of the year and by week of the month. From these results they suggest that the sources behind the weekend effect (traditional and reverse) are economic events that affect all sectors of the economy rather than industry-specific factors that impact on only a few industries. Chen and Singal (2003) show that unhedged speculative short sellers (as distinct from hedged short sellers) are partly responsible for the weekend effect. Empirical study for other markets show that day-of-the-week-effect also exists for Istanbul Stock Exchange (Balaban, 1995), Shanghai Composite Index (Zhou, 2003) and Amsterdam Stock Exchange (Sar, 2003). Agrawal and Tandon (1994) report evidence of a weekend effect in stock returns in nine countries. Choudhary (2000) reports the day-of-the-week effect for seven emerging Asian stock markets (India, Indonesia, Malaysia, Philippines, South Korea, Taiwan and Thailand). Tong (2000) examined twenty-three equity market indices and find that the negative Friday is, in general, important to the Monday effect (cited in Joshi,2004).

Holiday Effect

The consistency of the pattern around the weekend closing suggests that it may apply to any gap in trading. Empirical studies in US and other countries have reported high rates of return before holidays. For example, Roll (1983) observe high rates of return on the last trading day of December and Lakonishok and Smidt (1988) report high rates of return around Christmas. Ariel (1985) finds pre-holiday daily rates of return of 0.53 percent and 0.36 percent for the Center for Research in Security Prices (CRSP) equal-weighted index and value-weighted index, respectively, for the period 1963 to 1982. He reports that for the value-weighted index, the eight holidays per year account for 38 percent of the total annual rate of return (cited by Lakonishok & Smidt, 1988). Lakonishok & Smidt define a holiday as a day when trading would normally have occurred but did not. Further, the days are classified as pre-holiday, post-holiday, or regular (neither) without regard to the day of the week. Pre-holidays are those days which have at least one preceding day as trading day, but at least one succeeding day as holiday. Post-holidays include

those days which have at least one preceding day as holiday, but at least one succeeding day as trading day. Using Dow Jones Industrial Average (DJIA) of ninety years data they find that the pre-holiday rate of return is 23 times larger than the regular daily rate of return, and holidays account for about 50 percent of the price increase in the DJIA.

Researchers have provided three main explanations for the existence of holiday effect (Meneu & Pardo, 2003).The first one is the existence of a relationship between this effect and other calendar anomalies. Lakonishok and Smidt (1988), Ariel (1990) and Liano *et al.* (1992) are among the first researchers to attempt to explain the holiday effect by appealing to other calendar anomalies such as the day-of-the–week effect, the monthly effect and the turn-of-the-year effect. Their results indicate that the high returns observed on pre-holidays are not a manifestation of other calendar anomalies (cited in Joshi, 2004).

Another explanation is based on the existence of a link between the pre-holiday effect and the small firm effect. Pettengill (1989) reports that small firms outperform large ones on both January and non-January pre-holidays but Ariel (1990) and Kim and Park (1994), on the contrary, find that, after controlling for the day-of-the-week effect and the pre-New-Year's-Day effect, the size effect is not present in mean returns on pre-holidays(cited in Meneu and Pardo,2003).

The last explanation of the pre-holiday effect is based on a set of different and systematic trading patterns. Keim (1983 suggests that the pre-holiday return may be, in part, due to movements from the bid to the ask price. Ariel points out that pre-holiday strength can be attributed to short-sellers who desire to close short but not long positions in advance of holidays or, simply, to some clientele which preferentially buys (or avoids selling) on pre-holidays. Meneu and Pardo (2003) observe that the pre-holiday effect for Spanish Stock Exchange could be due to the reluctance of small investors to buy on pre-holidays, which produces an increase in the average size of bid orders.

Other studies that provide the evidence of holiday effects include Barone (1989) for Italian Stock market; Cadsby and Ratner (1992) for Canada, Japan, Australia and Hong Kong but not for the European markets; and Jaleel (2003) for Sri Lanka (cited in Joshi, 2004).

Half-Month (HM) Effect

The tendency of common stock returns for the second half-month to be significantly below the first half of calendar month is labeled as the half-month effect (also called as semi- month effect). With regard to the first-half-month and second-half-month, there are two lines of accepted definition. Ariel's (1987) definition of the first part of the month includes the last trading day of the previous month to the first eight trading days of the month, a total of nine trading days, while the last half of the trading month consists of nine trading days before the last trading day of the month. Using the CRSP value-weighted stock indices over the period 1963-1981, he reports an average rate of return of 0.826 percent for the

value-weighted CRSP Index during the first part of the month and a negative average rate of return, -0.182 percent, during the second part of the month, i.e., positive rates of return occur in the stock market only during the first half of each month (cited in Lakonishok & Smidt, 1988). Lakonishok and Smidt (1988) define the first-half-of-the-month as the first through the fifteenth calendar day of the month, if it is a trading day, or if not, through the next trading day. The last-half-of-the-month consists of the remaining days. They provide only mild support for the idea that rates of return are larger in the first-half –of-the-month than in the last-half. Further they report that Ariel's evidence of a higher average rate of return during the first-half-of-the-month appears to be partly the result of idiosyncratic characteristics of the period he studied and partly the result of including the last trading day of the previous month as part of the first-half –of-the-month.

Jaffe and Westerfield (1989) find half-month effect for Australia and inverted half-month effect for Japan but no existence of effect for Canada and the United Kingdom. Liano, *et al.* (1992) report that economic cycles have impact on the half-month effect in over-the-counter (OTC) stocks during the period 1973-1989, in that the half-month effect only existed in the periods of economic expansion but not during periods of economic contractions. Wong (1995) further extends the study to five developing stock markets of Hong Kong, Taiwan, Thailand, Malaysia and Singapore. There is no such effect in Singapore, Malaysia, Hong Kong and Taiwan. Thailand exhibited a reverse half-month effect in the second period but no half-month effect in the first and third periods. Boudreaux (1995) investigate the half-month effect in the stock markets of seven countries, namely, Denmark, France, Germany, Norway, Singapore/Malaysia, Spain and Switzerland .The half-month effect is found in three countries, Denmark, Germany and Norway while a significantly inverted half-month effect is found in Singapore/Malaysia. Balaban and Bulu (1996) do not find the half-month effect for Turkey whereas Mills, *et al.* (2000) find a half-month effect in Greece. Various explanatory factors, including pre-test bias, biased data, mismatch between calendar and trading time, dividend effect, manifestation of the January effect and small firms effect have been attributed to this.

Turn-of-the-Month (TOM) Effect

This indicates that average daily rate of returns on common stock around the turn-of-the-month is different to that of average rate of return of remaining days of the calendar month. There are two accepted lines of definition regarding the turn-of-the-month days. These include that of Ariel (1987) and Lakonishok and Smidt (1988). Ariel defines turn-of-the-month days to include the last trading day of the previous month and the first four trading days of the month. He analyzes the value weighted CRSP index for 19 years period (1963-1981) and provides some evidence that days around the turn-of-the-month (-1 to +4) exhibit a high rate of return. Lakonishok and Smidt (1988) include the last trading days of the previous month and only the first three trading days of the month. They find the TOM (-1 to +3)

effect for Dow Jones Industrial Average (DJIA). Cadsby (1989) finds similar results for Canada. Jaffe and Westerfield (1989) report the reverse TOM effect in Japanese Stock Market In a study of stock indices of 10 countries over different time periods until the late 1980s, Cadsby and Ratner (1992) report the TOM effect in U.S., Canada, Switzerland, West Germany ,United Kingdom and Australia but no such effect in Japan ,Hong Kong, Italy, and France. Agrawal and Tandon (1994), in their study of stock markets of eighteen countries also find evidence of the TOM effect internationally in the 1970s but fading effect in the decade of the 1980s (cited in Joshi, 2004).

Others have also uncovered variations of the TOM period. Hensel and Ziemba (1996) utilize five days period inclusive of the last two trading days of the previous month, i.e., –2 and +3 in a study of turn-of-the-month pattern in U.S. stock market and Ziemba (1991) uses seven-day period inclusive of the last five trading days of the previous month in a study of turn-of-the-month pattern in Japan, i.e.,–5 to +2 (cited by Compton, 2002). One of the hypotheses put forward to explain the TOM effect is liquidity trading—that is the demand of individual investors rises towards the end of the month in connection with the payment of salaries. Another hypothesis is portfolio rebalancing which says that institutional investors bunch their purchases at the end of the month because of the improvement this produces in the performances published in the specialized press as these are normally calculated on the basis of end-of-the-month price (Barone, 1989).

Time-of-the-Month Effect (Third Month Effect)

This monthly anomaly was first identified by Kohers and Patel (1999). They split a calendar month into three segments. The first segment extends from the 28th day of the previous month to the 7th day of the month, the second segment extends from the 8th day to the 17th day of the month and the last segment consists of the other days, that is, the 18th day to the 27th day of the month. Using the Standard & Poor's Index during the period January 1960 - June 1995 and the NASDAQ Index during the period January 1972 - June 1995, they report that the returns are highest during the 'first third', experience a drop during the 'second third', and are lowest, and in most cases negative, during the 'last third' of a month. Further, they indicate that this pattern remained remarkably consistent for the two indices examined. It also held up well over the business cycles and many different sub periods tested. Lian (2002) studies this effect for six countries namely Australia, Malaysia, US, Hong Kong, Japan and Singapore. He reports that effect was a past phenomenon in Australia and Hong Kong but a recent phenomenon in the US.

III. DATA SOURCE AND METHODOLOGY

The first part of this section describes Nepal Stock Exchange Index which is the basis for our study and second part describes the methodology used for the study.

Nepal Stock Exchange (NEPSE) Index

The Nepal Stock Exchange Index is a value weighted index of all shares listed at the Nepal Stock Exchange and calculated once a day at the closing price. It is available on a daily basis from January 23, 1995 only, although Nepal Stock Exchange (NEPSE) opened its trading floor through licensed member on January 13, 1994. Our sample period however, starts from February 1, 1995 and ends in December 31, 2004 covering approximately ten years.

The use of index provides a measure of general market trend (Keimp & Reid, 1971) and is customarily justified by the statement that calendar anomalies are more easily detected in market indices or large stock portfolios than *n* individual share prices (Officer, 1975; Boudreaux, 1995; Pandey, 2002). Further it is more appropriate to use the daily index. Among the indexes, the value weighted index is preferable to the equally weighed index since the later places greater weight on small firms and potentially would magnify anomalies related to small firms (Pandey, 2002).

The NEPSE index is available for everyday when the market has been opened. Beginning on August 29, 1999, Sunday trading sessions were eliminated .The permanent elimination of Sunday trading sessions provides a convenient point for partitioning the data into sub periods. The first sub period starts from February 1, 1995 to August 31, 1999 and the second covers the period from September 1, 1999 to December 31, 2004 (hereafter indicated as pre-1999 & post-1999 respectively).

To facilitate making judgments about the persistence of characteristics of data we report the findings for the entire period (hereafter indicated as 1995-2004), pre-1999 and post-1999 and in some cases for individual years.

With regard to the finding of anomalies, researchers are more concerned about data snooping phenomenon. A term used by Aldous (1989), it is the attempt to both discover and test hypotheses using the same data (cited in Lo et al., 1990). The statistical tests routinely used in financial economics are usually ineterpreted as if they were being applied to new data. But the data available in finance are seldom new. The dangers of data snooping are less in our case since only one study had been conducted utilizing nine years data.

Methodology

Daily logarithmetic returns on NEPSE were calculated from the NEPSE index for the period from February 1, 1995 to December 31, 2004 comprising of 2345 trading days using the following equation.

$$R_t = 100 * \text{Ln} (NEPSE_t / NEPSE_{t-1})$$

where R_t is the continuously compounded rate of change in the stock market index. $NEPSE_t$ is the stock market index at time t and $NEPSE_{t-1}$is the stock market index at time t-1. Ln is the natural logarithm. First suggested by Osbrone (1959) , the

lognormal probability distribution of price change is more popular and used by many other researchers (cited in Kemp & Reid,1971). We compute continuously the compounded returns, rather than arithmetic returns, because continuously compounded returns are additive and their distribution "follows" the normal distribution more closely than arithmetic returns (Lauterbach and Uncar, 1995).

To investigate the seasonal patterns, each return observation is coded according to its month relative to the year, day relative to the week, day relative to a holiday, day relative to the half-month, day relative to the turn-of-the-month, and day relative to the time-of-the-month Then each of recognized seasonal effects is tested individually, using regression equations with dummy variable(s). This type of model can have an admixture of qualitative (dummy) and quantitative variable or only qualitative variable as explanatory variable. We used the latter one.

IV. EMPIRICAL ANALYSIS AND FINDINGS

This section consists of the analysis and findings related to various anomalies for the Nepalese stock market.

Month-of-the-Year Effect

Table 1 provides the mean, standard deviation, *t*-statistic (in parenthesis), percentage positive and number of months when the 119 mean monthly returns are categorized by the calendar months for 1995-2004 and for the four sub periods[15]. One can see that the mean return for February and December is negative regardless of the periods considered. However, December is the only month with mean return significantly different from zero for post 1999 (mean=-0.1347 percent, *t*-statistic= -2.35) and post-tax (mean= -0.1730 percent, *t*-statistic =-2.37).The negative and significant mean return observed for December is consistent to the U.S. markets. In contrast to this, we find that the mean return for June and October to be both positive for the entire period. The result for the sub-periods is consistent with that for the total period. Not surprisingly, the magnitude of the October mean return is greater for the entire period and three of the sub-periods, but only significant for the entire period (mean=0.2070 percent and *t*-statistic = 2.81) and pre-1999 period(mean = 0.1978 percent, *t*-statistic = 2.87) and pre-tax period (mean = 0.2775 percent and *t*-statistic = 2.53) at conventional level of significance. The exception is post-tax period where April has the highest the insignificant 0.1803 percent mean return (*t*- statistic=1.04). The higher and significant positive mean return observed for October is inconsistent to U.S. markets**.**

[15] Sub-periods are based on the elimination of Sunday trading session and on the imposition of capital gain tax. Total sub periods are 2*2=4. The division of sub period on the basis of imposition of capital gain tax provides the explanation for the existence of the January effect in relation to tax-loss selling hypothesis.

With regard to the other months, we find no specialty. Table 1 also reports that there does not exist risk return relationship for any of the calendar months of the year irrespective of the periods considered; for example, standard deviation of mean stock return for February is highest for most of the period under study (except pre-1999) whereas average return for that month is negative for all period.

To make a further test of the effect, the following regression equation with dummies is carried out (Pandey, 2002; Maghayereh, 2003)

$$R_t=\beta_0+ \beta_1 d_{2t}+ \beta_2 d_{3t}+ \beta_3 d_{4t}+ \beta_4 d_{5t}+ \text{--------}+ \beta_{11} d_{12t}+ \varepsilon_t$$

where, R_t is the mean return of the stock index on month t. The variable d_{it} takes a value of one if the return occurs on *i* month and zero if the return occurs on the month other than *i* month (d_{2t} =February, d_{3t} =March, d_{4t} =April, d_{5t} =May, d_{6t} =June, d_{7t} =July, d_{8t} =August, d_{9t} =September, d_{10t} =October, d_{11t} =November, d_{12t} =December). From basic econometrics we know that the coefficient β_0 measures the mean return for January and the coefficients β_1 through β_{11} measure the difference between the mean return for each month of the year and the mean return for January. ε_t is the error term. The regression model is tested for the null hypothesis H_0: $\beta_1= \beta_2= \beta_3= \beta_4= \text{------}\beta_{11}= 0$ against the alternative hypothesis that mean return for each month of the year is not equal. The significance of coefficient of at least one dummy variable confirms that there is no equality of mean returns across the calendar months of the year. This approach is equivalent to regressing the returns on twelve monthly dummies, with no constant term, and testing for the equality of all parameters.

Table 2 reports the regression results for the entire period and sub periods. The results support our null hypothesis that the mean returns for each month of calendar year are equal. The coefficient of dummy variable d_{10t} (β_9) is higher and insignificantly different from zero for all periods at conventional level of significance. The intercept term β_0 indicating the mean return for January reverses in sign for pre and post sub periods. More important, the difference between the returns for December and January represented by β_{11} are negative and insignificant for all of the periods considered. These regression outputs reveal no discernable month-of-the-year anomaly (and January effect hypothesis). This implies that the average return in January does not significantly exceed the average return over the rest of the year. Our results also suggest that there is no difference in returns across months. These results are consistent to that obtained for the emerging market, namely, Jordan (Maghayereh, 2003).

TABLE 1. Summary Statistics for the Month-of-the-Year Effect in the Nepalese Stock Market

Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Whole
Pre-1999													
Mean	0.0478%	-0.0928%	0.0308%	-0.1388%	0.0280%	0.0792%	0.0100%	0.0226%	0.0358%	0.1978%	0.0920%	-0.1333%	0.0108%
t-statistic	(1.19)	(-0.87)	(0.28)	(-1.44)	(0.29)	(0.98)	(0.14)	(0.39)	(0.35)	(2.87*)	(0.60)	(-1.23)	(0.39)
Standard Deviation	0.0805%	0.2377%	0.2453%	0.2149%	0.2188%	0.1815%	0.1581%	0.1297%	0.2041%	0.1376%	0.3051%	0.2162%	0.2042%
Percentage Positive	75.00%	20.00%	60.00%	40.00%	40.00%	60.00%	40.00%	60.00%	50.00%	100.00%	25.00%	25.00%	50.00%
Number of Months	4	5	5	5	5	5	5	5	4	4	4	4	54
Post-1999													
Mean	-0.0168%	-0.2606%	-0.0492%	0.1306%	-0.0338%	-0.0296%	0.0256%	0.1296%	-0.0027%	0.2132%	0.0742%	-0.1347%	0.0059%
t-statistic	(-0.14)	(-0.82)	(-0.32)	(0.95)	(-0.32)	(-0.40)	(0.34)	(0.53)	(-0.03)	(1.78)	(0.92)	(-2.35*)	(0.15)
Standard Deviation	0.2615%	0.7073%	0.3485%	0.3082%	0.2347%	0.1674%	0.1687%	0.5474%	0.1896%	0.2935%	0.1974%	0.1404%	0.3246%
Percentage Positive	80.00%	40.00%	100.00%	60.00%	40.00%	60.00%	60.00%	80.00%	66.67%	100.00%	50.00%	33.33%	64.06%
Number of Months	5	5	5	5	5	5	5	5	6	6	6	6	64
Pre-Tax[a]													
Mean	0.0418%	-0.1621%	0.0853%	-0.0831%	-0.0490%	0.0249%	0.0227%	0.1725%	0.0808%	0.2775%	0.1543%	-0.1082%	0.0331%
t-statistic	(0.65)	(-0.76)	(1.00)	(-0.83)	(-0.55)	(0.37)	(0.36)	(1.10)	(0.98)	(2.53*)	(1.47)	(-1.46)	(1.02)
Standard Deviation	0.1580%	0.5627%	0.2252%	0.2646%	0.2376%	0.1768%	0.1670%	0.3851%	0.2029%	0.2684%	0.2576%	0.1815%	0.2877%
Percentage Positive	33.33%	28.57%	42.86%	42.86%	42.86	14.29%	28.57%	66.67%	50.00%	83.33%	66.67%	16.67%	42.31%
Number of months	6	7	7	7	7	7	7	6	6	6	6	6	78
Post-Tax													
Mean	-0.0480%	-0.2107%	-0.2297%	0.1803%	0.1047%	0.0247%	0.0063%	-0.0685%	-0.0895%	0.1013%	-0.0283%	-0.1730%	-0.0378%
t-statistic	(-0.29)	(-0.82)	(-1.17)	(1.04)	(1.41)	(0.21)	(0.07)	(-0.37)	(-1.71)	(1.52)	(-0.39)	(-2.37*)	(-1.00)
Standard Deviation	0.2840%	0.4433%	0.3389%	0.3002%	0.1285%	0.2073%	0.1526%	0.3714%	0.1046%	0.1331%	0.1448%	0.1461%	0.2420%
Percentage Positive	33.33%	33.33%	33.33%	66.67%	100.00%	33.33%	33.33%	75.00%	25.00%	25.00%	50.00%	0.00%	46.34%
Number of Months	3	3	3	3	3	3	3	4	4	4	4	4	41
1995-2004													
		-	-	-	-							-	
Mean	0.0119%	0.1767 %	0.0092 %	0.0041%	0.0029%	0.0248%	0.0178 %	0.0761 %	0.0127%	0.2070 %	0.0813 %	0.1341%	0.0087%
t-statistic	(0.18)	(-1.11)	(-0.10)	(-0.05)	(-0.04)	(0.45)	(0.36)	(0.63)	(0.22)	(2.81**)	(1.12)	(-2.60**)	(0.35)
Standard Deviation	0.1943%	0.5053%	0.2872%	0.2879%	0.2164%	0.1743%	0.1543%	0.3793%	0.1851%	0.2329%	0.2297%	0.1629%	0.2739%
Percentage Positive	55.56%	30.00%	60.00%	50.00%	50.00%	40.00%	40.00%	70.00%	50.00%	90.00%	50.00%	20.00%	50.42%
Number of Months	9	10	10	10	10	10	10	10	10	10	10	10	119

Notes*: a)* Capital gain tax has been effective from July 17, 2001. But we used August 1, 2001 as a dividing line for sub periods pre-tax (February 2, 1995 to July31, 2001) and post-tax (August 1,2001 to December 31,2004) .The rationale behind this is to avoid the appearance of July as a month in both sub periods. In addition to this we want to have uniform number of observations for each month of calendar year. The division of sub period on the basis of imposition of capital gain tax provides the explanation for the existence of the month-of- the- year effect in relation to tax-loss selling hypothesis.
b) The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995-2004 (*t*-statistics are in parenthesis). From the daily return data we first compute the monthly arithmetic mean returns for each month of the calendar year. The summary statistics are then computed for all sub periods and for entire period.

* Significant at the 0.10 level for two-tailed test. ** Significant at the 0.05 level for a two tailed test.

TABLE 2. Regression Coefficients for the Month-of-the-Year Effect in the Nepalese Stock Market

Period	β_0	β_1	β_2	β_3	β_4	β_5	β_6	β_7	β_8	β_9	β_{10}	β_{11}	Adjusted R^2	F
Pre-1999	0.0477%	-0.1406%	-0.0169%	-0.1866%	-0.0197%	0.0315%	-0.0377%	-0.0251%	-0.0120%	0.1500%	0.0443%	-0.1810%	-0.03%	1.00
	(0.47)	(-1.03)	(-0.12)	(-1.37)	(-0.15)	(0.23)	(-0.28)	(-0.19)	(-0.08)	(1.05)	(0.31)	(-1.26)		
Post-1999	-0.0168%	-0.2438%	-0.0324%	0.1474%	-0.0170%	-0.0128%	0.0424%	0.1464%	0.0141%	0.2300%	0.0910%	-0.1179%	-3.85%	0.79
	(-0.11)	(-1.17)	(-0.15)	(0.70)	(-0.08)	(-0.06)	(0.20)	(0.70)	(0.07)	(1.15)	(0.45)	(-0.59)		
Pre-Tax	0.0418%	-0.2040%	0.0435%	-0.1250%	-0.0908%	-0.0170%	-0.0191%	0.1307%	0.0390%	0.2357%	0.1125%	-0.1500%	3.95%	1.29
	(0.36)	(-1.30)	(0.28)	(-0.80)	(-0.58)	(-0.11)	(-0.12)	(0.80)	(0.24)	(1.45)	(0.69)	(-0.92)		
Post-Tax	-0.0480%	-0.1627%	-0.1817%	0.2283%	0.1527%	0.0727%	0.0543%	-0.0205%	-0.0415%	0.1493%	0.0198%	-0.1250%	-3.39%	0.88
	(-0.34)	(-0.81)	(-0.90)	(1.14)	(0.76)	(0.36)	(0.27)	(-0.11)	(-0.22)	(0.79)	(0.11)	(-0.66)		
1995-2004	0.0119%	-0.1886%	-0.0211%	-0.0160%	-0.0148%	0.0129%	0.0059%	0.0642%	0.0008%	0.1951%	0.0694%	-0.1460%	2.79%	1.31
	(0.13)	(-1.52)	(-0.17)	(-0.13)	(-0.12)	(0.10)	(0.05)	(0.52)	(0.01)	(1.57)	(0.56)	(-1.18)		

Note*:* The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995 to 2004 (*t*-statistics are in parenthesis).

Day- of- the-Week Effect

Table 3 provides the mean, standard deviation, *t*-statistic (in parenthesis), percentage positive and number of months when the 2,344 daily returns are categorized by the day-of – the-week for 1995-2004 , two sub periods and for individual years. The results indicate that for the full sample period the average Sunday return (mean= 0.0802 percent, *t* statistic =1.81) is significant at 10 percent level of significance. The pattern for this day remains similar for sub-period of pre-1999[16]. Probably, this is because of the elimination of Sunday trading sessions. In contrast to this, we find no significant mean return for any days of week for sub period of post-1999. On an individual year basis, we find that all days are significant (level of significance differs) at least once. More important, our results also remain consistent with that of total period results but the average return is significant only for year 1999 (mean=0.2602 percent , *t* statistic =2.18).In addition we also observe that Wednesday and Thursday follow a identical pattern as is Monday and Tuesday for most of the period. The exception is year 1997 and 2004 for the former and 1995, 1998 and 2002 for the latter. Friday , the day for which abnormal returns are observed in international market provides no consistent results in our case[17].One can also see that when Monday is the first trading day of the week it is significantly positive but when it is second day of trading sessions it is significantly negative. Accordingly, when Thursday is the last trading day it is insignificant at conventional level of significance but when it is the second last day of trading session it is significantly different from zero for 2000 (mean=0.4018 percent, *t*-statistic=4.11), 2001 (mean=-0.3140 percent, *t*-statistic=-1.87) and 2002 (mean=-0.4633 percent , *t*-statistic=-3.14). Table 3 also indicates that risk is not sufficient to explain low returns of Thursday.

[16] Sunday is the first trading day for pre-1999 period.

[17] Data record of SEBO/N does not provide NEPSE index for Friday preceding August 31, 1999, although odd lot trading occurs for that date. We therefore treat that day as non-trading day for the corresponding period. Hence the result for this day for full sample period and post 1999 period is identical.

TABLE 3. Summary Statistics for the Day-of-the-Week Effect in the Nepalese Stock Market

Period	Sun	Mon	Tue	Wed	Thu	Fri	All Days
1995							
Mean	-0.1003%	0.0020%	-0.0535%	0.1099%	0.0879%		0.0093%
t-statistic	(-0.93)	(0.02)	(-0.59)	(1.01)	(0.55)		(0.18)
Standard Deviation	0.7091%	0.7590%	0.5949%	0.7315%	0.9777%		0.7554%
Percentage Positive	41.86%	42.86%	51.16%	46.67%	57.89%		47.87%
Number of Observations	43	42	43	45	38		211
1996							
Mean	0.0931%	-0.1680%	-0.0132%	-0.0915%	-0.1095%		-0.0569%
t-statistic	(1.44)	(-2.76**)	(-0.21)	(-1.83*)	(-1.54)		(-2.03**)
Standard Deviation	0.4541%	0.4256%	0.4300%	0.3505%	0.4716%		0.4335%
Percentage Positive	51.02%	32.65%	50.00%	42.86%	38.64%		43.10%
Number of Observations	49	49	48	49	44		239
1997							
Mean	0.0869%	-0.0610%	-0.1110%	0.0918%	-0.0757%		-0.0143%
t-statistic	(1.19)	(-0.77)	(-0.94)	(1.39)	(-0.75)		(-0.35)
Standard Deviation	0.5007%	0.5291%	0.8178%	0.4470%	0.6953%		0.6167%
Percentage Positive	55.32%	35.56%	37.50%	58.70%	51.06%		47.64%
Number of Observations	47	45	48	46	47		233
1998							
Mean	0.1070%	-0.1206%	0.0896%	0.0035%	0.0880%		0.0333%
t-statistic	(0.85)	(-0.82)	(1.45)	(0.02)	(1.21)		(0.59)
Standard Deviation	0.8528%	1.0021%	0.4251%	1.2311%	0.4927%		0.8581%
Percentage Positive	69.57%	56.52%	61.70%	65.31%	60.87%		62.82%
Number of Observations	46	46	47	49	46		234
1999							
Mean	0.2602%	0.1871%	0.1084%	0.2022%	0.0823%	0.3348%	0.1720%
t-statistic	(2.18**)	(2.40**)	(1.24)	(2.07**)	(0.92)	(4.33**)	(4.39**)
Standard Deviation	0.6659%	0.5351%	0.5980%	0.6696%	0.6229%	0.2998%	0.6003%
Percentage Positive	70.97%	70.21%	63.83%	68.09%	66.67%	80.00%	68.51%
Number of Observations	31	47	47	47	48	15	235
2000							
Mean		0.2948%	0.1878%	0.1180%	0.4108%	0.3003%	0.2627%
t-statistic		(2.17)	(1.10)	(0.70)	(4.11**)	(2.32**)	(4.11**)
Standard Deviation		0.9711%	1.1612%	1.1469%	0.6703%	0.8949%	0.9823%
Percentage Positive		56.86%	63.04%	54.35%	77.78%	64.58%	58.90%
Number of Observations		51	46	46	45	48	236
2001							
Mean		-0.1676%	-0.2609%	-0.4998%	-0.3140%	-0.0086%	-0.2512%
t-statistic		(-1.02)	(-1.84*)	(-2.53**)	(-1.87*)	(-0.06)	(-3.38**)
Standard Deviation		0.3128%	0.0715%	0.0148%	0.0682%	0.9554%	1.1405%
Percentage Positive		43.48%	40.00%	41.67%	35.56%	51.06%	42.37%
Number of Observations		46	50	48	45	47	236

TABLE 3 (continued)

Period	Sun	Mon	Tue	Wed	Thu	Fri	All Days
2002							
Mean		-0.0904%	0.2387%	-0.1093%	-0.4633%	-0.1463%	-0.1163%
t-statistic		(-0.78)	(1.46)	(-0.69)	(-3.14**)	-0.91	(-1.72*)
Standard Deviation		0.8153%	1.1057%	1.1117%	1.0232%	1.0677%	1.0431%
Percentage Positive		34.00%	50.00%	53.06%	31.25%	38.64%	41.35%
Number of Observations		50	46	49	48	44	237
2003							
Mean		0.0821%	0.0696%	-0.0646%	-0.1113%	-0.0048%	-0.0065%
t-statistic		(0.69)	(0.57)	(-1.14)	(-1.40)	(-0.05)	(-0.15)
Standard deviation		0.8120%	0.8678%	0.4023%	0.5557%	0.6395%	0.6744%
Percentage Positive		46.81%	36.00%	38.00%	46.94%	42.86%	40.00%
Number of Observations		47	50	50	49	49	245
2004							
Mean		0.1560%	0.0430%	0.0467%	-0.0020%	0.1153%	0.0703%
t-statistic		(2.06**)	(0.63)	(0.50)	(-0.02)	(1.79*)	(1.80)
Standard deviation		0.0453%	0.5322%	0.6197%	0.9866%	0.0797%	0.6021%
Percentage Positive		63.04%	68.75%	57.14%	61.22%	58.70%	41.18%
Number of Observations		46	48	49	49	46	238
Pre-1999							
Mean	0.0802%	-0.0374%	-0.0105%	0.0489%	0.0091%		0.0183%
t-statistic	(1.81*)	(-0.79)	(-0.26)	(0.94)	(0.19)		(0.88)
Standard deviation	0.6507%	0.6933%	0.6012%	0.7727%	0.6775%		0.6817%
Percentage Positive	56.94%	46.73%	51.83%	55.45%	54.59%		53.12%
Number of Observations	216	214	218	220	207		1075
Post-1999							
Mean		0.0557%	0.0606%	-0.0824%	-0.0887%	0.0709%	0.0029%
t-statistic		(1.03)	(1.03)	(-1.34)	(-1.59)	(1.34)	(0.11)
Standard deviation		0.8619%	0.9354%	0.9875%	0.8877%	0.8352%	0.9052%
Percentage Positive		49.41%	51.37%	50.78%	50.79%	53.41%	51.14%
Number of Observations		255	255	258	252	249	1269
1995-2004							
Mean	0.0802%	0.0132%	0.0278%	-0.0220%	-0.0446%	0.0709%	0.0100%
t-statistic	(1.81*)	(0.36)	(0.76)	(-0.54)	(-1.19)	(1.34)	(0.60)
Standard deviation	0.6507%	0.7900%	0.7989%	0.8965%	0.8004%	0.8352%	0.8103%
Percentage Positive	56.94%	48.19%	51.59%	52.93%	52.51%	53.41%	52.05%
Number of Observations	216	469	473	478	459	249	2344

Notes: (a) The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995-2004 (*t*-statistics are in parenthesis).

(b) Data record of SEBO/N does not provide NEPSE index for Friday preceding August 31, 1999, although odd lot trading occurs for that date. We therefore treat that day as non-trading day for corresponding period.

* Significant at the 0.10 level for two-tailed test.

** Significant at the 0.05 level for a two tailed test.

To make a test of the effect, the following regression equation with dummies is carried out (French[18], 1980; Brus, Liu & Schulman, 2003; Galai & Levy, 2002).

[18] We add extra dummy variable d_{6t} to regression equation of that used in this study to take into account all trading days before and after elimination of Sunday trading sessions.

$$R_t=\beta_0+ \beta_1 d_{2t}+ \beta_2 d_{3t}+ \beta_3 d_{4t}+ \beta_4 d_{5t} + \beta_5 d_{6t}+ \varepsilon_t$$

where, R_t is the mean return of the stock index on day t.

The variable d_{it} takes a value of one if the return occurs on the *i* day and 0 if the return occurs on day other than *i* day (d_{2t} =Monday, d_{3t} =Tuesday, d_{4t} =Wednesday, d_{5t} =Thursday; for post 1999, d_{2t} =Tuesday, d_{3t} =Wednesday, d_{4t} =Thursday, d_{5t} =Friday; for the entire period and year 1999, d_{2t} =Monday, d_{3t} =Tuesday, d_{4t}= Wednesday, d_{5t} =Thursday, d_{6t} =Friday). The coefficient β_0 measures the mean return for Sunday (for post-1999, mean return for Monday) and the coefficients β_1 through β_4 measure the difference between the mean return for each of the other days of the week and the mean return for Sunday (for post-1999, mean return for Monday). For entire period and year 1999, the coefficient β_0 measures the mean return for Sunday and the coefficients β_1 through β_5 measure the difference between the mean return for each of the other days of the week and the mean return for Sunday. ε_t is the error term.

TABLE 4. Regression Coefficients for Day-of-the-Week Effect in the Nepalese Stock Market

Period	β_0	β_1	β_2	β_3	β_4	β_5	Adj. R^2	F
1995	-0.1003%	0.1023%	0.0469%	0.2102%	0.1882%			
	(-0.87)	(0.62)	(0.29)	(1.30)	(1.11)		-0.77%	0.60
1996	0.0931%	-0.2611%	-0.1063%	-0.1846%	-0.2026%			
	(1.52)	(-3.02**)	(-1.23)	(-2.14**)	(-2.28**)		2.79%	2.71**
1997	0.0869%	-0.1479%	-0.1979%	0.0049%	-0.1626%			
	(0.97)	(-1.15)	(-1.57)	(0.04)	(-1.28)		0.23%	1.14
1998	0.1070%	-0.2276%	-0.0173%	-0.1034%	-0.0190%			
	(0.84)	(-1.27)	(-0.10)	(-0.58)	(-0.11)		-0.76%	0.56
1999	0.2667%	-0.0851%	-0.1610%	-0.0645%	-0.2026%	0.0681%		
	(2.70**)	(-0.64)	(-1.21)	(-0.49)	(-1.51)	(0.37)	-0.38%	0.82
2000		0.2948%	-0.1070%	-0.1768%	0.1160%	0.0055%		
		(2.14**)	(-0.53)	(-0.88)	(0.58)	(0.03)	-0.69%	0.60
2001		-0.1676%	-0.0934%	-0.3322%	-0.1465%	0.1729%		
		(-1.00)	(-0.40)	(-1.41)	(-0.61)	(0.73)	0.42%	1.25
2002		-0.0904%	0.3291%	-0.0189%	-0.3729%	-0.0559%		
		(-0.62)	(1.57)	(-0.09)	(-1.80*)	(-0.26)	2.89%	2.76**
2003		0.0821%	-0.0125%	-0.1467%	-0.1934%	-0.0869%		
		(0.83)	(-0.09)	(-1.07)	(-1.40)	(-0.63)	-0.42%	0.75
2004		0.1560%	-0.1130%	-0.1093%	-0.1580%	-0.0407%	-0.83%	0.51
		(1.75*)	(-0.91)	(-0.88)	(-1.27)	(-0.32)		
Pre-1999	0.0802%	-0.1176%	-0.0907%	-0.0313%	-0.0711%		0.01%	1.02
	(1.73*)	(-1.79*)	(-1.39)	(-0.48)	(-1.07)			
Post-1999		0.0557%	0.0049%	-0.1381%	-0.1444%	0.0152%	0.33%	2.05*
		(0.98)	(0.06)	(-1.73)	(-1.80*)	(0.19)		
1995-2004	0.0802%	-0.0670%	-0.0524%	-0.1022%	-0.1248%	-0.0092%	0.05%	1.22
	(1.45)	(-1.01)	(-0.79)	(-1.54)	(-1.87*)	(-0.12)		

Notes: The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995-2004 (*t*- statistics are in parenthesis).

* Significant at the 0.10 level for two-tailed test

** Significant at the 0.05 level for a two tailed test.

The regression model is tested for the null hypothesis H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$ against the alternative hypothesis that all returns for the weekdays are not equal. The significance of coefficient of at least one dummy variable confirms that there is existence of the day- of-the-week effect. This approach is equivalent to regressing the returns on six daily dummies, with no constant term, and testing for the equality of all parameters.

Table 4 reports the regression results for the day-of-the-week effect .The results do not support the null hypothesis. The coefficient of dummy variable d_{5t} (β_4) representing the difference between Thursday and Sunday returns, are significantly negative for the entire period at 10 percent level of significance. Interestingly, the magnitude of this coefficient is also highest .This pattern also remain consistent for the post 1999 period (but the coefficient now represents the difference between Thursday and Monday mean return). However for pre-1999, it is the coefficient of dummy variable d_{3t} (β_0) that possess this attribute. If individual years are considered we find no consistent pattern. In addition we find disappearing pattern of significant coefficients representing the differences between each day of the week and the benchmark day.

To summarize, our results indicate the day-of- the-week effect for full sample period, sub- periods and for some individual years. However, the pattern is different from the one observed in most other developed markets. Instead of negative returns on Mondays or even Tuesdays, we have negative returns on Thursdays[19] (significant), for full sample period and post-1999 sub period while for pre-1999 we observe negative return for Monday, as similar to international market (when Sunday is the first trading day) but again the significant positive return observed for Sunday is inconsistent to that observed for other markets.

Holiday Effect

Table 5 provides the descriptive statistics for stock returns on pre-holidays, post-holidays and regular days as defined by Lakonishok and Smidt (1988).The average return for pre-holiday and regular day are insignificantly positive for the entire period (mean=0.0202 percent ,t statistics =0.29 and mean=0.0080 percent, t statistics =0.45 respectively).In contrast to this ,average post-holidays return is insignificant -0.0400 percent (t statistics=-0.51).Not surprisingly, the pre-holiday rate of return is greater than both regular day rate of return and post-holiday rate of return. This is consistent to that of Lakonishok and Smidt obtained for U.S. markets. But the magnitude is much lower than that observed for the U.S. market .For instance Lakonishok and Smidt (1988) observed that the pre- holiday rate of return is 23 times greater than the regular daily rate of return for the total sample

[19] Katerina, Demetres, Komisopoulos (2002) also observe negative returns on Thursdays, last trading day of the week (but insignificant) for the Athens Stock market.

period of ninety years. However we observe the magnitude to be three times[20] for total sample period of ten years. The results for the sub periods are in general consistent with that for total period results. In addition holiday accounts for 53 percent rate of the increase in NEPSE index[21].Table 5 also reports that for year 2000 only rates of return around holidays (i.e., pre-holidays, post-holidays and regular days) are significant at conventional level of significance. This result does not remain stationary across other years. One can also find from Table 5 that a pre-holiday return is not a reward for bearing extra risk consistent to that obtained by Ariel (1990) .For example for full sample period standard deviation is greater for post holiday rate of return than that for pre-holiday rate of return.

TABLE 5. Summary Statistics for the Holiday Effect in the Nepalese Stock Market

Period	Pre-holiday	Post-holiday	Regular day
1995			
Mean	-0.0182%	0.1242%	-0.0260%
t-statistic	(-0.10)	(0.92)	(-0.41)
Standard Deviation	0.8205%	0.6016%	0. 8215%
Percentage Positive	45.00%	65.00%	46.20%
Number of Observations	20	20	171
1996			
Mean	-0.1498%	-0.0184%	-0.0536%
t-statistic	(-2.01*)	(-0.15)	(-1.76*)
Standard Deviation	0.2889%	0.4614%	0.4407%
Percentage Positive	26.67%	60.00%	42.58%
Number of Observations	15	15	209
1997			
Mean	-0.1072%	0.0827%	-0.0213%
t-statistic	(-0.81)	(0.40)	(-0.51)
Standard Deviation	0.5614%	0.9073%	0.5891%
Percentage Positive	55.56%	63.16%	44.90%
Number of Observations[a]	18	19	196
1998			
Mean	0.1703%	-0.4062%	0.0321%
t-statistic	(1.41)	(-0.83)	(0.64)
Standard Deviation	0.4821%	2.0118%	0.7075%
Percentage Positive	62.50%	58.82%	62.19%
Number of Observations	16	17	201
1999			
Mean	0.3164%	0.1383%	0.1613%
t-statistic	(3.96**)	(1.60)	(3.59**)
Standard Deviation	0.3388%	0.3675%	0.6344%
Percentage Positive	83.33%	66.67%	66.83%
Number of Observations	18	18	199

[20] Lauterbach and Uncar (1995) also obtain the similar results for the Israeli stock market.
[21] Lakonishok and Smidt (1988) find that holiday accounts for about 50 percent of the price increase in Dow Jones Industrial Average.

TABLE 5 (continued)

Period	Pre-holiday	Post-holiday	Regular day
2000			
Mean	0.8398%	0.7968%	0.2026%
t-statistic	(1.98*)	(2.45**)	(3.18**)
Standard Deviation	1.4720%	1.0795%	0.9300%
Percentage Positive	66.67%	81.82%	61.97%
Number of Observations	12	11	213
2001			
Mean	-0.0911%	-0.4236%	-0.2463%
t-statistic	(-0.26)	(-1.71)	(-3.12**)
Standard Deviation	1.3140%	0.9599%	1.1373%
Percentage Positive	71.43%	33.33%	41.06%
Number of Observations	14	15	207
2002			
Mean	-0.7824%	-0.4716%	-0.0330%
t-statistic	(-2.71**)	(-2.00*)	(-0.46)
Standard Deviation	1.1920%	0.9452%	1.0163%
Percentage Positive	29.41%	18.75%	44.12%
Number of Observations	17	16	204
2003			
Mean	0.2376%	0.1031%	-0.0262%
t-statistic	(2.38**)	(0.61)	(-0.56)
Standard Deviation	0.3464%	0.6076%	0.6900%
Percentage Positive	75.00%	46.15%	39.55%
Number of Observations	12	13	220
2004			
Mean	0.0621%	-0.1231%	0.0859%
t-statistic	(0.77)	(-0.82)	(2.00**)
Standard deviation	0.3133%	0.6013%	0.6171%
Percentage Positive	40%	37.5%	65.22%
Number of Observations	15	16	207
Pre-1999			
Mean	0.0192%	-0.0177%	0.0093%
t-statistic	(0.03)	(-0.36)	(0.53)
Standard Deviation	0.5704%	1.0706%	0.6576%
Percentage Positive	52.44%	60.71%	51.93%
Number of Observations	82	84	909
Post-1999			
Mean	0.0212%	-0.0647%	0.0069%
t-statistic	(0.16)	(-0.62)	(0.26)
Standard deviation	1.1185%	0.9039%	0.8883%
Percentage Positive	57.33%	44.74%	51.07%
Number of Observations	75	76	1118

TABLE 5 (continued)

Period	Pre-holiday	Post-holiday	Regular day
1995-2004			
Mean	0.0202%	-0.0400%	0.0080%
t-statistic	(0.2893)	(-0.5101)	(0.4533)
Standard deviation	0.8732%	0.9921%	0.7930%
Percentage Positive	54.78%	53.13%	51.46%
Number of Observations	157	160	2027

Note: The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995-2004 (*t*-statistics are in parenthesis).A holiday is a day when trading would normally have occurred but did not. For the pre-1999 period, these exclude Friday and Saturday and for post 1999 these exclude Saturday and Sunday. The days on which stock market strikes occur are also counted as holidays. Further, days are classified as pre-holidays, post-holidays and regular days (neither) without regard to the day of the week Pre-holidays are those days which have at least one preceding day as trading day, but at least one succeeding day as holiday. Post-holidays are for those days which have at least one preceding day as holiday, but at least one succeeding day as trading day as defined by Lakonishok & Smidt (1988).

a The number of observations for the pre-holidays and number of post-holidays must equal the number of holidays. In our case, the number of pre-holidays are not equal to the number of the post-holidays (except for 1995 and 1996).This is because, for some observations, the same day appears as pre-holidays as well as post-holidays.

* Significant at the 0.10 level for two-tailed test.

** Significant at the 0.05 level for a two tailed test.

To make a further test of holiday effect the following regression equation with dummies is carried out (Lakonishok & Smidt, 1988, Joshi, 2004, Meneu & Pardo, 2003.).

$$R_t=\beta_0+ \beta_1 d_{2t}+ \beta_2 d_{3t}+ \varepsilon_t$$

where R_t is the mean return of the stock index on day t and the dummy variable d_{it} indicates the day on which the return is observed (d_{2t} = post-holidays and d_{3t} = regular days), and d_{2t} attains a value of 1 if the return is observed on post-holidays, 0 otherwise. Similar remarks apply to d_{3t}. From basic econometrics we know that the coefficient β_0 measures the mean return for pre-holiday and the coefficients β_1 and β_2 measure the difference between the mean returns for post-holiday and pre-holiday and regular day and pre-holiday. ε_t is the error term. The regression model is tested for the null hypothesis H_0: $\beta_1= \beta_2= 0$ against the alternative hypothesis that average returns around holidays are not equal. The significant positive coefficient of at least one dummy variable confirms that there is existence of the holiday effect. This approach is equivalent to regressing the returns on three daily dummies, with no constant term, and testing for the equality of all parameter.

TABLE 6. Regression Coefficients for the Holiday Effect in the Nepalese Stock Market

Period	β_0	β_1	β_2	Adjusted R^2	F statistic
1995	-0.0182% (-0.10)	0.1424% (0.56)	-0.0078% (-0.04)	-0.66%	0.31
1996	-0.1498% (-1.34)	0.1314% (0.83)	0.0962% (0.83)	-0.50%	0.41
1997	-0.1072% (-0.74)	0.1899% (0.93)	0.0859% (0.56)	-0.48%	0.44
1998	0.1702% (0.80)	-0.5765% (-1.94**)	-0.1381% (-0.62)	1.16%	2.37
1999	0.3164% (2.23)	-0.1781% (-0.89)	-0.1551% (-1.05)	-0.36%	0.58
2000	0.8398% (3.00**)	-0.0429% (-0.11)	-0.6372% (-2.22**)	2.66%	4.21**
2001	-0.0911% (-0.30)	-0.3325% -(0.79)	-0.1552% (-0.49)	-0.59%	0.31
2002	-0.7824% (-3.15**)	0.3108% (0.87)	0.7494% (2.90**)	3.46%	5.23**
2003	0.2376% (1.22)	-0.1345% (-0.50)	-0.2638% (-1.32)	0.04%	1.05
2004	0.0621% (0.40)	-0.1853% (-0.86)	0.0237% (0.15)	-0.09%	0.90
Pre-1999	0.0192% (0.25)	-0.0369% (-0.34)	-0.0099% (-0.12)	-0.17%	0.07
Post-1999	0.0212% (0.20)	-0.0859% (-0.58)	-0.0143% (-0.13)	-0.12%	0.24
1995-2004	0.0205% (0.38)	-0.0684% (-0.90)	-0.0125% (-0.22)	-0.04%	0.54

Note: The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995-2004 (*t*-statistics are in parenthesis)

* Significant at the 0.10 level for two-tailed test

** Significant at the 0.05 level for a two tailed test.

Table 6 reports the regression results for the holiday effect. The results support our null hypothesis for equality between the pre-holiday mean return, post-holiday mean return and the regular day mean return. The coefficients of dummy variables d_{2t} and d_{3t} are not significant at usual level of significance for the entire period. These results also holds for both of the sub periods and the majority of the individual years .The exception to this is 1998 where the coefficient of d_{2t} representing the difference between post-holiday and pre-holiday rate of return is significantly negative at 5 percent level of significance and 2000 and 2002 for which the coefficient is significantly (negative for 2000 and positive for 2002)

different from zero. In other words, we observe holiday effect for 1998 and 2000 but inverted holiday effect for 2002.

To summarize, our results indicate that pre-holiday rate of return is in general greater than post-holiday and regular day return (represented by coefficients β_1 and β_2) but statistically insignificant and inconsistent with that obtained for other developed markets for most of the period. More specifically, we observe fading holiday effect, since it is not observed after 2002.

Half-Month Effect

Table 7 reports the descriptive statistics for the stock returns during the first-half-of-the-month and second-half-of-the-month period as defined by Lakonishok and Smidt (1988). The results indicate that the average first-half-of-the-month (FHM) return is insignificant 0.0208 percent (*t* statistics =0.90) whereas average second-half-of-the-month (SHM) return is insignificant at -0.0101 percent (*t* statistic= -0.41). Interestingly, the average daily return for the FHM is three times greater than the average daily return for the SHM. These results remain consistent regardless of the sub periods considered. When the entire period is spilt into years, we observe the mean FHM and SHM return to be positive and undistinguishable from zero in year 2000 and 2001. However for 1996 and 2002 (mean= -0.0728 percent, *t*-statistics = -2.10 and mean= -0.3653 percent, *t*-statistics = -3.35, respectively) we find only the average SHM return to be significantly different from zero. In addition Table 7 reports significant FHM return only for 2003 (mean= -0.1719 percent, *t*-statistics = -1.80). One can also see that higher return for FHM is not a reward for assuming risk.

TABLE 7. Summary Statistics for the Half-Month Effect in the Nepalese Stock Market

Period	First-Half-of-the-Month	Last-Half-of-the-Month
1995		
Mean	0.0412%	-0.0615%
t-statistic	(0.450)	(-1.04)
Standard Deviation	0.9565%	0.5952%
Percentage Positive	50.46%	45.10%
Number of Observations	109	102
1996		
Mean	(-0.0422)	(-0.0728)
t-statistic	(-0.97)	(-2.10**)
Standard Deviation	0.4852%	0.3711%
Percentage Positive	40.32%	46.09%
Number of Observations	124	115

TABLE 7 (continued)

Period	First-Half-of-the-Month	Last-Half-of-the-Month
1997		
Mean	-0.0130%	-0.0262%
t-statistic	(-0.20)	(-0.55)
Standard Deviation	0.7073%	0.5100
Percentage Positive	50.00%	44.35%
Number of Observations	118	115
1998		
Mean	0.0710%	-0.0507%
t-statistic	(1.35)	(-0.51)
Standard Deviation	0.5736%	1.0765%
Percentage Positive	(63.03)	(61.74)
Number of Observations	119	115
1999		
Mean	0.1212	0.2239
t-statistic	(2.60**)	(3.53**)
Standard Deviation	(0.5108)	(0.6799)
Percentage Positive	65%	71.30%
Number of Observations	120	115
2000		
Mean	0.2746%	0.2512%
t-statistic	(3.68**)	(2.43**)
Standard Deviation	0.8026%	1.1326%
Percentage Positive	63.79	62.50%
Number of Observations	116	120
2001		
Mean	-0.1390%	-0.3653%
t-statistic	(-1.38)	(-3.35**)
Standard Deviation	1.0959%	1.1779%
Percentage Positive	42.86%	41.88%
Number of Observations	119	117
2002		
Mean	-0.1719%	-0.0564%
t-statistic	(-1.80*)	(-0.59)
Standard Deviation	1.0613%	1.0244%
Percentage Positive	33.33%	50.00%
Number of Observations	123	114
2003		
Mean	0.0134%	-0.0262%
t-statistic	(0.17)	(-0.68)
Standard Deviation	0.8544%	0.4299%
Percentage Positive	40.98%	43.09%
Number of Observations	122	123

TABLE 7 (continued)

Period	First-Half-of-the-Month	Last-Half-of-the-Month
2004		
Mean	0.0677%	0.0731%
t-statistic	(1.32)	(1.23)
Standard Deviation	0.5689%	0.6381%
Percentage Positive	58.54%	65.22%
Number of Observations	123	115
Pre-1999		
Mean	0.0332%	-0.0165%
t-statistic	(1.16)	(-0.53)
Standard Deviation	0.6722%	0.7123%
Percentage Positive	54.18%	51.43%
Number of Observations	550	525
Post-1999		
Mean	0.0103%	-0.0047%
t-statistic	(0.29)	(-0.13)
Standard deviation	0.8882%	0.9230%
Percentage Positive	48.37%	53.99%
Number of Observations	643	626
1995-2004		
Mean	0.0208%	-0.0101%
t-statistic	(0.90)	(-0.41)
Standard Deviation	0.7957%	0.8332%
Percentage Positive	51.05%	52.82%
Number of Observations	1193	1151

Note: The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995-2004 (*t*-statistics are in parenthesis).The first-half-of-the-month is the first through the fifteenth calendar day of the month, if it is a trading day, or if not, through the next trading day. The last-half-of-the- month consists of the remaining days as defined by Lakonishok and Smidt (1988).

* Significant at the 0.10 level for two-tailed test.

** Significant at the 0.05 level for a two tailed test.

To make a further test of the half month effect, the following regression equation is run (Balaban & Bulu, 1996).

$$R_t=\beta_0+ \beta_1 d_{2t}+ \varepsilon_t$$

where the dependent variable (R_t) is the daily return on NEPSE index. The independent variable (d_{2t}) is dichotomous variable. The variable d_{2t} takes a value of one if the return occurs on the second-half-of-the-month days and 0 if the return occurs on first-half of the month as defined by Lakonishok and Smidt. The intercept β_0 measures the mean return of the FHM period and the coefficients β_1 measures the difference between the mean SHM return and the mean FHM return.

ε_t is the error term. The regression model is tested for the null hypothesis H_0: $\beta_1 = 0$ against the alternative hypothesis that there is no equality of mean FHM return and mean SHM return .The significant negative coefficient β_1 confirms that there is existence of the half month effect. This approach is equivalent to regressing the returns on two daily dummies, with no constant term, and testing for the equality of all parameters.

TABLE 8. Regression Coefficients for the Half-Month Effect in the Nepalese Stock Market

Period	β_0	β_1	Adjusted R^2	F statistic
1995	0.0412%	-0.1026%		
	(0.54)	(-0.93)	-0.07%	0.86
1996	-0.0422%	-0.0306%		
	(-1.08)	(-0.55)	-0.30%	0.30
1997	-0.0130%	-0.0132%		
	(-0.23)	(-0.16)	-0.42%	0.03
1998	0.0710%	-0.1217%		
	(0.90)	(-1.08)	0.08%	1.18
1999	0.1212%	0.1026%		
	(2.21**)	(1.31)	0.31%	1.72
2000	0.2746%	-0.0233%		
	(3.00**)	(-0.18)	-0.41%	0.03
2001	-0.1390%	-0.2263%		
	(-1.33)	(-1.53)	0.56%	2.34
2002	-0.1719%	0.1155%		
	(-1.83*)	(0.85)	-0.12%	0.72
2003	0.0134%	-0.0396%		
	(0.22)	(-0.46)	-0.32%	0.21
2004	0.0677%	0.0054%		
	(1.24)	(0.07)	-0.42%	0.00
Pre-1999	0.0332%	-0.0497%		
	(1.12)	(-1.18)	0.04%	1.39
Post-1999	0.0103%	-0.0149%		
	(0.29)	(-0.29)	-0.07%	0.09
1995-2004	0.0208%	-0.0309%		
	(0.88)	(-0.92)	-0.01%	0.84

Note: The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995-2004 (*t*-statistics are in parenthesis).

* Significant at the 0.10 level for two-tailed test.

** Significant at the 0.05 level for a two tailed test.

The regression results for each year as well as the sub period and whole period are given in Table 8. For the period 1995 to 2004, the null of equality of mean daily returns across halves of calendar months are rejected at the usual level of significance. The coefficient β_1 representing the difference between the mean return of the first and second half of calendar months are negative and insignificant at usual level of significance. Lakonishok and Smidt obtain average difference

between FHM and SHM return to be 0.237 percent.[22] However our findings show only small magnitude of 0.0309 percent for this. This result for total sample also holds for sub-periods and most of the individual years. The exception is year 1999 and 2002 where the coefficient β_1 is insignificantly positive. Interestingly, β_0 representing mean daily return for the FHM is undistinguishable from zero for these years only (exception is 2000).

To summarize, our results show no half-month effect irrespective of the period considered. In other words, there is no statistical difference between stock returns of the FHM and SHM. The result is consistent to that observed in the international markets: Lakonishok and Smidt (1988) for US market; Wong (1995) for stock markets of Singapore, Malaysia, Hong Kong, Taiwan and Thailand; Balaban & Bulu (1996) for Istanbul Securities Exchange and Lauterbach and Uncar (1995) for Israeli Stock Market.

Turn-of-the-Month (TOM) Effect

Table 9 reports the descriptive statistics for the four day turn–of–the–month (TOM) period (as defined by Lakonishok and Smidt (1988) and rest-of- the-month period (ROM).The results indicate that the average TOM and ROM returns are insignificant -0.0054 percent (*t*-statistics = -0.14) and 0.0085 percent (*t* statistic= 0.45).This results hold for only the pre-99 sub period . For the post-99 sub period, the direction of mean TOM and ROM return changes, but remains insignificant at the conventional level of significance. In addition, Table 9 shows that for year 1999 (mean=0.2083 percent, *t*-statistic=5.09), 2000 (mean=0.2935 percent, *t*-statistic=3.83) and 2004 (mean=0.0747 percent, *t*-statistic=1.75) the average ROM period return is positive and significantly different from zero. However, the average return is negative and significant for 2001 (mean=-0.2085 percent, *t*-statistic=-0.2805) and 2003 (mean=-0.0629 percent, *t*-statistic= -0.0629) at usual level of significance.

If the whole period is spilt into years, then we find no significant mean TOM return .The exception is the year 1995, for which the return is significant -0.1620 percent .(t-statistic=-1.65).

[22] Based on a *t* –test (5 percent significance level), they could not reject the null hypothesis that the two halves of the month have the same rate of return for any of the 10 periods.

TABLE 9. Summary Statistics for the Turn-of-the-Month Effect in the Nepalese Stock Market

Period	Turn-of-the-Month	Rest-of-the-Month
1995		
Mean	-0.1620%	0.0245%
t-statistic	(-1.89)	(0.37)
Standard Deviation	0.5552%	0.8495%
Percentage Positive	38.10%	50.00%
Number of Observations	42	168
1996		
Mean	-0.0940%	-0.0442%
t-statistic	(-1.31)	(-1.45)
Standard Deviation	0.4977%	0.4219%
Percentage Positive	31.25%	46.07%
Number of Observations	48	191
1997		
Mean	-0.0029%	-0.0232%
t-statistic	(-0.02)	(-0.59)
Standard Deviation	0.8702%	0.5349%
Percentage Positive	45.83%	47.57%
Number of Observations	48	185
1998		
Mean	0.0425%	0.0023%
t-statistic	(0.67)	(0.03)
Standard Deviation	0.4363%	0.9379%
Percentage Positive	56.25%	63.98%
Number of Observations	48	186
1999		
Mean	0.0280%	0.2083%
t-statistic	(0.27)	(5.09**)
Standard Deviation	0.7284%	0.5593%
Percentage Positive	62.50%	69.52%
Number of Observations	48	187
2000		
Mean	0.1519%	0.2935%
t-statistic	(1.63)	(3.83**)
Standard Deviation	0.6457%	1.0500%
Percentage Positive	60.42%	64.36%
Number of Observations	48	188
2001		
Mean	-0.1276%	-0.2805%
t-statistic	(-0.67)	(-3.52**)
Standard Deviation	1.3168%	1.0924%
Percentage Positive	54.17%%	39.36%
Number of Observations	48	188

TABLE 9 (continued)

Period	Turn-of-the-Month	Rest-of-the-Month
2002		
Mean	-0.1905%	-0.1014%
t-statistic	(-1.33)	(-1.32)
Standard Deviation	0.9923%	1.0579%
Percentage Positive	33.33%	42.86%
Number of Observations	48	189
2003		
Mean	0.2240%	-0.0629%
t-statistic	(1.35)	(-1.82*)
Standard Deviation	1.1471%	0.4841%
Percentage Positive	47.92%	40.61%
Number of Observations	48	197
2004		
Mean	0.0568%	0.0747%
t-statistic	(0.60)	(1.75*)
Standard Deviation	0.6566%	0.5893%
Percentage Positive	58.33%	63.16%
Number of Observations	48	190
Pre-1999		
Mean	-0.0485%	0.0234%
t-statistic	(-1.11)	(0.97)
Standard Deviation	0.6465%	0.7033%
Percentage Positive	45.41%	54.67%
Number of Observations	218	856
Post-1999		
Mean	0.0313%	-0.0041%
t-statistic	(0.52)	(-0.15)
Standard Deviation	0.9694%	0.8887%
Percentage Positive	51.95%	51.04%
Number of Observations	256	1013
1995-2004		
Mean	-0.0054%	0.0085%
t-statistic	(-0.14)	(0.45)
Standard Deviation	0.8366%	0.8090%
Percentage Positive	48.95%	52.70%
Number of Observations	474	1869

Note: The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995-2004 (*t*-statistics are in parenthesis). Turn-of-the-month days include the last trading day of the previous month and the first three trading days of the month and rest-of-the-month days consists of the remaining days of the month as defined by Lakonishok and Smidt (1988).

* Significant at the 0.10 level for two-tailed test.

** Significant at the 0.05 level for a two tailed test.

To make a further test of the TOM effect, the following regression equation is run in line with Lakonishok and Smidt (1988) and (Compton, 2002).

$$R_t = \beta_0 + \beta_1 d_{2t} + \varepsilon_t$$

where the dependent variable (R_t) is the daily return on NEPSE index. The independent variable (d_{2t}) is a dichotomous variable. The variable d_{2t} takes a value of one if the return occurs on the TOM days and 0 if the return occurs on ROM days as defined by Lakonishok and Smidt (1988). The intercept β_0 measures the mean return of the ROM period and the coefficients β_1 measures the difference between the mean TOM return and the mean ROM return. ε_t is the error term. The regression model is tested for the null hypothesis H_0: $\beta_1 = 0$ against the alternative hypothesis that there is no equality of mean TOM return and mean RHM return. The significant positive coefficient β_1 confirms that there is an existence of the TOM effect. This approach is equivalent to regressing the returns on two daily dummies, with no constant term, and testing for the equality of all parameters.

TABLE 10. Regression Coefficients for the Turn-of-the Month Effect in the Nepalese Stock Market

Period	β_0	β_1	Adjusted R^2	F statistic
1995	0.0245% (0.40)	-0.1865% (-1.35)	0.39%	1.83
1996	-0.0442% (-1.39)	-0.0499% (-0.71)	-0.21%	0.50
1997	-0.0232% (-0.51)	0.0203% (0.20)	-0.41%	0.04
1998	0.0023% (0.04)	0.0402% (0.29)	-0.39%	0.08
1999	0.2083% (4.77**)	-0.1803% (-1.87*)	1.05%	3.48*
2000	0.2935% (4.10**)	-0.1416% (-0.89)	-0.09%	0.79
2001	-0.2805% (-3.37**)	0.1529% (0.83)	-0.13%	0.69
2002	-0.1014% (-1.33)	-0.0891% (-0.53)	-0.31%	0.28
2003	-0.0629% (-1.33)	0.2869% (2.68*)	2.46%	7.16**
2004	0.0747% (1.71**)	-0.0179% (-0.18)	-0.41%	0.03
Pre-1999	0.0234% (0.99)	-0.0719% (-1.37)	0.08%	1.87
Post-1999	-0.0041% (-0.15)	0.0354% (0.56)	-0.05%	0.31
1995-2004	0.0085% (0.45)	-0.0139% (-0.33)	-0.038%	0.11

Note: The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995-2004 (*t*-statistics are in parenthesis).

* Significant at the 0.10 level for two-tailed test.

** Significant at the 0.05 level for a two tailed test.

Table 10 reports the regression results for the full ten-year period, two sub-periods and individual years. The results show that, for total sample period the parametric test does not allow us to reject the null hypothesis of equality of mean return between the TOM period and ROM period. We also find that both the sub periods and most of the years exhibit consistent pattern. The exception is the year 1999 and 2003, for which we observe the significant coefficient, $\beta_{1,}$ (negative for 1999 and positive for 2000) at 5 percent level of significance, representing the statistical difference between the stock returns of the TOM period and ROM period.

To summarize, our results indicate that there is no TOM effect for the period 1995-2004 and for the sub periods pre-1999 and post-1999. If individual years are investigated separately, the paper reports a significant TOM effect for 2003 but inverted TOM effect for 1999.The result is inconsistent to that of other international markets.

Time-of-the-Month Effect

Table 11 reports the summary statistics for the stock returns during the first-third-of-the-month, second -third-of-the-month and last -third-of-the-month. For the entire period, the mean rate of return around the first-third-of-the-month is insignificant at -0.0125 percent (*t*-statistic = 0.32). In contrast to this, the average return during second-third-of-the-month and last-third-of-the-month are positive and insignificant (mean=0.0092 percent, *t*- statistic=0.32 and mean=0.0214 percent, *t*-statistic=0.77 respectively) at conventional level of significance. Interestingly, the expected last -third-of-the-month return is more than two times larger than both the expected return for the second -third-of-the-month and first-third-of-the-month. The result, however, changes both in magnitude and direction for the two sub periods. If individual years are examined separately, we find significant positive return for second-third and last-third-of-the-month for 1999 (mean = 0.2114 percent, *t*-statistic = 4.03 and mean = 0.3163 percent and *t*-statistic = 4.85 respectively) and 2000 (mean = 0.3591 percent, *t*-statistic = 3.44 and mean = 0.3610 percent and *t*-statistic = 2.96 respectively) at five percent level of significance. However for year 2001, we observe negative and significant average return for second-third (mean = -0.3725 percent, *t*-statistic= -2.80) and last-third (mean= -0.3913 percent, *t*-statistic = -3.34) of-the-month. In addition we also find that there does not exist a risk return relationship around the first-third, second-third and last-third of the calendar month.

TABLE 11. Summary Statistics for the Time-of-the-Month Effect in the Nepalese Stock Market

Period	First-Third-of-the- Month	Second-Third-of-the- Month	Last-Third-of-the- Month
1995			
Mean	-0.0876%	0.1231%	-0.0741%
t-statistic	(-0.84)	(1.17)	(-0.98)
Standard Deviation	0.8649%	0.8792%	0.6342%
Percentage Positive	43.48%	54.29%	45.07%
Number of Observations	69	70	71
1996			
Mean	-0.0723%	-0.0422%	-0.0412%
t-statistic	(-1.52)	(-0.80)	(-0.88)
Standard Deviation	0.4318%	0.4757%	0.4042%
Percentage Positive	37.80%	48.15%	44.00%
Number of Observations	82	81	75
1997			
Mean	-0.0299%	0.0026%	-0.0344%
t-statistic	(-0.38)	(0.04)	(-0.59)
Standard Deviation	0.7138%	0.6173%	0.5125%
Percentage Positive	41.98%	56.16%	43.59%
Number of Observations	81	73	78
1998			
Mean	0.0723%	-0.0296%	0.0940%
t-statistic	(1.47)	(-0.28)	(1.50)
Standard Deviation	0.4341%	0.9398%	0.5499%
Percentage Positive	58.97%	63.29	66.23
Number of Observations	78	79	77
1999			
Mean	-0.0909%	0.2114%	0.3163%
t-statistic	(-0.75)	(4.03**)	(4.85**)
Standard Deviation	1.1195%	0.4569%	0.5608%
Percentage Positive	61.18%	67.11%	74.32%
Number of Observations	85	76	74
2000			
Mean	0.0923%	0.3591	0.3610
t-statistic	(0.93)	(3.44**)	(2.96**)
Standard Deviation	0.9103%	0.8786%	1.1053%
Percentage Positive	61.18%	66.20%	64.63%
Number of Observations	85	71	82
2001			
Mean	0.0176%	-0.3725%	-0.3913%
t-statistic	(0.13)	(-2.80**)	(-3.34**)
Standard Deviation	1.1855%	1.1578%	1.0484%
Percentage Positive	58.23%	26.32%	42.50%
Number of Observations	79	76	80
2002			
Mean	-0.1557%	-0.1872%	-0.0269%
t-statistic	(-1.30)	(-1.63)	(-0.23)
Standard Deviation	1.0550%	1.0165%	1.0590%
Percentage Positive	33.33%	39.74%	48.78%
Number of Observations	78	78	82

TABLE 11 (continued)

Period	First-Third-of-the- Month	Second-Third-of-the- Month	Last-Third-of-the- Month
2003			
Mean	0.0346%	-0.0314%	-0.0217%
t-statistic	(0.31)	(-0.60)	(-0.49)
Standard Deviation	0.9994%	0.4627%	0.3978%
Percentage Positive	37.80%	44.30%	43.90%
Number of Observations	82	79	82
2004			
Mean	0.0812%	0.0964%	0.0361%
t-statistic	(1.32)	(1.52)	(0.45)
Standard Deviation	0.5557%	0.5693%	0.6898%
Percentage Positive	59.26%	61.73%	65.33%
Number of Observations	81	81	75
Pre-1999			
Mean	-0.0520%	0.0417%	0.0386%
t-statistic	(-1.28)	(1.09)	(1.30)
Standard Deviation	0.7778%	0.7171%	0.5597%
Percentage Positive	47.96%	57.39%	53.11%
Number of Observations	367	352	354
1995-2004			
Mean	-0.0125%	0.0092%	0.0214%
t-statistic	(-0.41)	(0.32)	(0.77)
Standard Deviation	0.8683%	0.7998%	0.7725%
Percentage Positive	49.50%	52.62%	53.74%
Number of Observations	800	764	776

Note: The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995-2004 (*t*-statistics are in parenthesis).The first third of month is from the 28th day of the previous month to the 7th day of the month, the second third of month is from the 8th day to the 17th day of the month and the last third of the month is from the 18th day to the 27th day of the month as defined by Kohers and Patel (1999).

* Significant at the 0.10 level for two-tailed test.

** Significant at the 0.05 level for a two tailed test.

To make a further test of time-of-the-month effect the following regression equation with dummies is carried out in line with Kohers and Patel (1999), Lian (2002).

$$R_t = \beta_0 + \beta_1 d_{2t} + \beta_2 d_{3t} + \varepsilon_t$$

where R_t is the mean return of the stock index on day t and the dummy variable d_{it} indicates the day on which the return is observed (d_{2t} = first-third-month days and d_{3t}=second third month days). d_{2t} attains a value of 1 if the return is observed on the first-third-of-the-month days,0 otherwise. Similar remarks apply to d_{3t}. From basic econometrics we know that the coefficient β_0 measures the mean return for last third of the month and the coefficients β_1 and β_2 measure the difference between the mean returns for first -third-of-the-month and last -third-of-the-month and second-third-of-the-month and last -third-of-the-month .ε_t is the error term. The

regression model is tested for the null hypothesis H_0: $\beta_1 = \beta_2 = 0$ against the alternative hypothesis that average returns around time-of-the-month are not equal. The significant (positive) coefficient of at least one dummy variable confirms that there is existence of the time-of-the-month effect. This approach is equivalent to regressing the returns on three daily dummies, with no constant term, and testing for the equality of all parameters.

TABLE 12. Regression Coefficients for the Time-of-the-Month Effect in the Nepalese Stock Market

Period	β_0	β_1	β_2	Adjusted R^2	F statistic
1995	-0.0741%	-0.0135%	0.1972%	0.50%	1.52
	(-0.78)	(-0.10)	(1.46)		
1996	-0.0412%	-0.0312%	-0.0011%	-0.74%	0.13
	(-0.81)	(-0.44)	(-0.02)		
1997	-0.0344%	0.0045%	0.0370%	-0.80%	0.08
	(-0.49)	(0.05)	(0.37)		
1998	0.0940%	-0.0217%	-0.1236%	-0.22%	0.74
	(1.22)	(-0.20)	(-1.14)		
1999	0.3163%	-0.4072%	-0.1049%	3.95%	5.81**
	(3.45**)	(-3.25**)	(-0.82)		
2000	0.3610%	-0.2687%	-0.0019%	0.89%	2.07
	(3.36**)	(-1.78)	(-0.01)		
2001	-0.3913%	0.4089%	0.0188%	1.91%	3.28**
	(-3.09**)	(2.28)	(0.10)		
2002	-0.0269%	-0.1289%	-0.1603%	-0.40%	0.53
	(-0.23)	(-0.78)	(-0.97)		
2003	-0.0217%	0.0564%	-0.0097%	-0.64%	0.22
	(-0.29)	(0.53)	(-0.09)		
2004	0.0361%	0.0452%	0.0603%	-0.68%	0.21
	(0.52)	(0.47)	(0.62)		
Pre-1999	0.0386%	-0.0906%	0.0031%	0.21%	2.14
	(1.05)	(-1.76*)	(0.06)		
Post-1999	0.0070%	0.0140%	-0.0256%	-0.13%	0.21
	(0.16)	(0.23)	(-0.41)		
1995-2004	0.0214%	-0.0339%	-0.0122%	-0.06%	0.35
	(0.73)	(-0.83)	(-0.29)		

Note: The data for this table are from the Trading Report of Securities Board, Nepal (SEBO/N) for the period 1995 to 2004 (*t*-statistics are in parenthesis).

** 5% significance level.

* 10% significance level

The regression results of the third-month effect are presented in Table 12. The results support our null hypothesis. The coefficients β_0 representing the mean last - third-of-the-month returns are insignificantly different from zero for the entire

period and sub periods for which they are considered. The results are similar for coefficients β_1 and β_2 representing the difference between the first -third-of-the-month and last-third-of-the-month and second -third-of-the-month and last-third-of-the-month third, except for pre-1999 for which β_1 is significantly negative at five percent level of significance. Further, the overall regression is significant at the five percent level of significance (F statistic=5.81).

In addition, we also observe the significantly negative β_1 for 1999 and 2000 whereas significantly positive β_1 for 2001 at usual level of significance, when we spilt the total sample period into years. To summarize, our results indicate no time-of-the-month effect for the entire period and sub-period, post-1999. However, for pre-1999, we obtain reverse time-of-the-month effect[23] that is inconsistent to US market. The result of the sub-period also holds for 1999 and 2000. However, for 2001 we observe time-of-the-month effect consistent to the U.S. market (Kohers and Patel, 1999).

V. SUMMARY AND CONCLUSIONS

The study had used the Nepal Stock Exchange's return data to detect the presence of calendar anomalies for the period February 1, 1995 to December 31, 2004 using regression equation with seasonal dummies.

Our results show no evidence of month-of-the-year anomaly in stock returns. However, we find higher and positive (not significant) returns for October in contrast to that observed for January (significant) in international markets. We offer two possible explanations for this. The first explanation is based on the presence of *Dashain* and *Tihar* (Great festivals of Hindu) mostly occurring during October. Similar results were also obtained for Sri Lanka[24]. The second explanation is based on the information hypothesis, i.e., release of more information as a result of compulsion of disclosure norms[25].

In regard to the day-of-the-week anomaly we observe different pattern than the one observed in the other developed capital markets. However our result regarding negative returns on Thursday is consistent to that obtained for the Greek stock market. No specific explanation can be attributed for this.

In case of the holiday effect, it does not exist for entire sample period as well as for sub periods but is perceptible for some years when the entire period is spilt into years. Unfortunately, the results of study do not remain stationary. Even though, the results of this analysis are not entirely consistent with the evidence of other international markets the result obtained for the year 1998 and 2000 is consistent with those findings, suggesting that the holiday effect is a common phenomenon.

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[23] Lian (2002) obtain similar results that the mean daily return was not the highest in the first-third-of-the -month but rather, for Malaysia, US, Japan and Singapore, in the last- third- of-the- month.

[24] Empirical study on Sri Lanka observed insignificant positive return for April, the month during which *Sinhala* and *Tamil* new-year falls. See Joshi (2004).

[25] Shrestha (2004) finds positive correlation between the NEPSE index and corporate disclosure. Also, see K.C. & Joshi (2004).

However the result for 2002 shows inverted holiday effect, i.e., average post holiday return is greater than pre-holiday rate of return.

The results of the half-month effect analysis show the mean returns on the first-half of the month are higher than on the second half for most of the period considered. However, the difference is not statistically significant irrespective of the periods considered. In other words, the evidence shows no half-month anomaly that is consistent with the study on US market and emerging market.

In case of the TOM effect, the results show that the difference between the mean returns on TOM days and non-turn-of-the-month days is statistically insignificant for most of the periods. The exception is 1999 and 2003 for which we find inverted (negative) TOM effect and positive (traditional) TOM effect at the five percent level. The results are inconsistent with international evidence.

One should not be surprised with this result where various kinds of payments to investors are concentrated at the end of month in accordance to *Bikram Sambat*[26] rather than the Gregorian calendar in other countries.

With respect to the time-of-the-month effect, we obtain this effect for sub period pre- 1999 and for 1999 and 2000 that is inconsistent with the results in international market. However, for year 2001 we obtain results similar to U.S. market. To be specific, we observe a disappearing time-of-the-month effect.

The study thus concludes that NEPSE is not efficient in weak form if day-of-the-week anomaly is examined but weakly efficient in respect of other anomalies. In other words, investors can take advantage of information about the day-of–the-week when investing in the NEPSE[27]. However, this may be due to market imperfections and thus is not necessarily embarrassing for market efficiency. Therefore, further research should be undertaken not only to conform the results of the present study but also to examine the microstructure and operational procedure of the Nepalese Stock Exchange. In addition, it is necessary to investigate whether the reported anomalies are valid for individual shares or not[28].

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[26] The first day of calendar month according to this corresponds to 15th day of Gregorian month.

[27] Foreign investors can also benefit through international portfolio diversification in case of existence of calendar anomalies.

[28] The lack of these studies, *inter alia,* can be attributed to the unwillingness on the part of the Nepal Stock Exchange to disclose /supply its annual report.

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Nepal's Trade Sector: Review, Repercussions and Recommendations

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That the trade sector plays a highly instrumental role in attaining high and sustainable economic growth is indisputable. However, Nepal's policy regime has not been very effective in improving trade competitiveness. Although policy measures have been announced both to identify new exportable products and encourage diversification of export markets, these have hardly been executed. Weak infrastructure, poor human resources, absence of quality standardization of exports, dearth of a strong legal framework and frequent policy reversals, among others, have restricted the country in improving its international competitiveness. Still, owing to the emerging trend of a competitive and market-oriented global economy, these issues need to be properly addressed. With reference to regional and multilateral agreement, the country should undertake a two-pronged strategy according priority to multilateral trade negotiations under the World Trade Organization as well as to strive for effective and meaningful regional trading arrangements such as the South Asian Free Trade Area (SAFTA) and the Bay of Bengal Initiative for Multi-sectoral Technical and Economic Cooperation Free Trade Area (BIMST-EC FTA) which it is currently pursuing. Other measures suggested by this paper for boosting trade competitiveness include, among others, technological upgrading, investment in infrastructure, appropriate legal framework compatible with regional and multilateral agreements, new trade policy, setting up of export processing zones and credible policy.

I. INTRODUCTION

Trade is crucial to developing and least-developed countries (LDCs) for a variety of reasons. Firstly, it is often the principal mechanism for achieving the benefits of globalization. Countries win when they gain market access for their exports and new technology through international transfers, and when heightened competitive pressure improves the allocation of resources.

Secondly, the continuing reallocation of manufacturing activities from industrial to developing and LDCs provides many opportunities for expanding trade both in goods and in services. And finally, the growth of trade is firmly buttressed by international institutions. The World Trade Organization (WTO),

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established in 1995, is the primary institution in generating a commercial environment suitable to the multilateral exchange of goods and services.

The dynamism of international trade during the past two decades in particular, and its growing influence on international economic relations, has increased attention, especially in LDCs, on its contribution to economic growth. The link between trade, development and growth is a symbiotic one. Trade allows specialization based on comparative advantage, and assists countries to upgrade production processes and increase value-added through a more efficient use of resources. Increased competition that accompanies specialization and productivity growth has been instrumental in cementing the linkages between trade and growth. Also notable has been the process of market liberalization that has opened up trading avenues for new countries and products.

With the undertaking of market-oriented economic reforms in the early 1990s, Nepal increased its integration into the world economy. The principal components of the reform programs included liberalization of trade and industrial policies and rationalization of the foreign exchange regime. The core elements included reduction and restructuring of import duties, dismantling of most quantitative restrictions and import licensing requirements, and introduction of full convertibility for current account transactions.

Although Nepal is one of South Asia's most open and trade dependent economies, the country has not been able to fully exploit the potential for export growth since its exports are focused in a few products and markets. Against this foreground, this paper is organized as follows. The next part assesses the role of the trade sector and its contribution to the Nepalese economy during the last decade. The major policies linked to this sector and other pertinent issues are evaluated in the second part. In Part III, an attempt is made to determine the causal relationship between growth in GDP and growth in exports as well as between growth in manufacturing exports and income growth. For this purpose, the Granger causality test is employed. The overriding problems of the external sector together with guidelines for its revival are highlighted in Part IV. The final part concludes this paper.

II. TRADE SECTOR REVIEW

Trade Liberalization

Acknowledging the significance of trade in the economic development process, Nepal has been shifting towards liberal and market-oriented trade policy since the mid-1980s that was accompanied by various reform programs in 1992. The policymakers in Nepal have based their trade liberalization policies on a set of two hypotheses: a) liberalization of industrial and trade policies will boost industrial efficiency by providing greater access to imported intermediate inputs, capital goods, and technology, exposing local producers to both internal and international competition, thereby forcing them to lower costs, and removing curbs on the

growth and size of firms so as to exploit the scale economies; and b) improvement in efficiency and the subsequent reduction in costs will stimulate domestic demand and enable Nepal's industrial goods to compete abroad, thereby relaxing demand-side constraints on industrial growth.

It was after the balance of payments crisis in mid-1980s, that Nepal initiated the trade liberalization program under the Economic Stabilization Program supported by the 18–month stand–by arrangement reached with the IMF in 1985.[29] The system of import quotas from third countries was dismantled and the import license auction system was introduced in July 1986. Then, with the completion of Economic Stabilization Program, the country undertook the three-year Structural Adjustment Program supported by the IMF and the World Bank in 1987.

Trade reforms were expedited in the early 1990s with the introduction of the partial convertibility in the current account on March 1992. This replaced the system of administrative control over import by the market mechanism. The partial convertibility system attempted to provide a built-in device to bring about a favorable impact on the current account and the BOP position. It also assisted in loosening the grip of bureaucracy on economic activities and promoting open competition in the market.

In order to achieve the full benefits of integrating the Nepalese economy with the world economic system, the government announced the full convertibility of current account transaction on February 1993. This automatically implied that the entire volume of trade would be conducted on the basis of the market exchange rate. The number of items put under the import auction was cut down to six. Later in July 1993, the new budget abolished the import auction license system altogether. Keeping only a few items under licensing, the government put all the items under the OGL. With this, the government completely did away with quantitative restrictions on import.

In the past, long and open border with India restricted the country's flexibility in framing and implementing independent economic policies. Consequently, Nepal had been subjected to negative spillover effects of inward looking and inefficient industrial system in India. But this gradually changed in the early 1990s when India embarked upon bold trade liberalization programs, including the drastic lowering of barriers to imports of capital goods and other inputs into production. Subsequently, Nepal also started to capitalize on the opportunity to open up as carried out by India.

One point is clear. The speed of Nepalese liberalization is guided by the pace of liberalization in India and the geo–political realities of the country. Hence, full liberalization of the Nepalese trade regime in a short period may neither be

[29] Even before the liberalization era, measures such as bonus system, dual exchange rate system and export subsidy were introduced to boost exports. However, as they failed to generate intended impact on exports, they were removed. In 1987, export duty drawback system was introduced under which exporters could get a refund on duties, which included both import taxes and sales tax paid on imported inputs. The bonded warehouse scheme introduced in October 1988 was an alternative scheme to the duty drawback system and assisted the carpet industry to get a refund on taxes paid on its imported raw materials.

attainable nor be desirable. Nonetheless, policy commitments need to be realized, and for this substantial improvements may be warranted in the bureaucratic and administrative sectors, including removal of impediments and barriers such as procedural delays.

Plan Objectives and Trade Patterns

Although the Ninth Plan (1997-2002) had laid down certain objectives such as a) maximum utilization of commerce sector for the overall economic development of the country and expanding the benefits of foreign trade to the rural areas, and b) diversification of trade and strengthening of backward linkages to make the export trade stable, these objectives were hardly met.

According to the Tenth Plan (2002-2007), the two-fold objectives with regard to foreign trade are to a) make the commerce sector liberal, competitive and market-oriented for the overall growth of the country by extending returns accomplished from external and domestic trade up to the people's level through excessive participation of the private sector and to b) increase contribution of commerce sector to the GDP progressively through import substitution and export promotion. The main strategies for attaining these dual objectives are through making the export trade competitive and market-oriented, the diversification of both country-wise and commodity-wise trade and the strengthening of the interlinkages between industry, commerce, agriculture and other economic sectors. The core policies are to generate competitiveness in the commerce sector in line with global and regional trade agreements, to ensure easy market access for Nepalese manufactured products, to expand transit facilities, to set up export processing zone (EPZ) and to accord priority to exports of hydropower, software, labor and other services.

The Tenth Plan has identified the following problems with regard to Nepal's trade sector: a) dependence on a few commodities and markets; b) reliance on import of raw and semi-finished materials; c) weak backward and forward linkages of the production of exportable products; and d) rising trend in the volume of trade deficit. To tackle these problems, the Plan has laid down the following policy measures:

- Exports will be augmented through commodity-wise and country-wise diversification through the identification of exportable commodities of comparative advantages.
- For generating employment opportunities and raising income of the rural people, stress will be accorded on increasing the production and export of agro-based industrial products and enhancing their qualities.
- There will be special arrangements for market, information dissemination, technology, financial support and transport facility. Standardization of the exportable commodities will be made at the international level and their competitiveness in the world market will be enhanced.

- HMG will provide ample support to the private sector by disseminating information concerning present and prospective export markets, flowing of trade information and intensifying the monitoring and evaluation process.
- The arrangement of tax-free EPZs together with the provision of necessary acts and laws will be made for promoting the export sector.
- To make the country's external trade more simplified, economical, reliable, and business-oriented, the existing acts, laws, institutional processes and coordinating system will be assessed and reformed.
- Export of hydropower, computer software and labor and other services will be given due thrust in addition to commodities listed as exportable.
- In order to acquire advantages from the membership of the WTO, the trade sector will be made competitive in such a way so as to be consistent with various trade agreements.
- Nepal's trade will be integrated with the global trade regime by developing a multi-modal transport system.

During the ten-year period FY 1994/95 to FY 2003/04, total trade increased from Rs. 81.3 billion to Rs. 190.2 billion. During this period India's share in total trade of Nepal increased from 28.0 percent to 57.6 percent, while the share of overseas countries plummeted from 72.0 percent to 42.4 percent. If just the last two years are compared, that is, FY 2002/03 and FY 2003/04, there was a growth of 8.0 percent in total foreign trade. Moreover, total trade with India soared by 12.5 percent while trade with other countries rose by just 4.9 percent in FY 2003/04 compared to FY 2002/03. These are all depicted in Appendix 1.

Total exports increased from Rs. 17.6 billion in FY 1994/95 to Rs. 53.9 billion in FY 2003/04. Between FY 2002/03 and FY 2003/04, exports rose by 8.0 percent. Exports to India went up by 16.4 percent while exports to other countries fell by 1.6 percent. Still, the share of India in total exports remained at 57.1 percent in FY 2003/04 compared to 52.9 percent in FY 2002/03, while the share of other countries in total exports was placed at 42.9 percent in FY 2003/04 compared to 47.1 percent in FY 2002/03. In FY 1994/95, the contribution of India and other countries to total exports was 17.7 percent and 82.3 percent, respectively.

Total imports, on the other hand, went up to Rs. 136.3 billion in FY 2003/04 from Rs. 63.7 billion in FY 1994/95. While total imports catapulted by 9.6 percent in FY 2003/04 in comparison to FY 2002/03, imports from India and third countries soared by 11.0 percent and 7.7 percent respectively. Similarly, as illustrated by Appendix 1, the share of India in total imports stood at 57.8 percent while that of other countries remained at 42.2 percent in FY 2003/04, compared to their shares of 30.8 percent and 69.2 percent, respectively, in FY 1994/95.

Between 1994/95 and 2003/04, trade deficit soared by 79 percent. However, when comparing FY 2002/03 and FY 2003/04, trade deficit has gone up by 10.7 percent and reached Rs. 86.4 billion. This was ascribed to the 7.8 percent rise in trade deficit with India and 15.0 percent rise in trade deficit with other countries.

An assessment of commodities according to SITC grouping does not display any noteworthy changes in the composition of goods exported between FY

1994/95 and FY 2003/04 as illustrated in Appendix 2. Accordingly, as in FY1994/95 manufactured goods classified chiefly by materials, miscellaneous manufactured articles and food and live animals are the major exportable items in descending order even in FY 2003/04. The shares of these items in total exports stood at 43.8 percent, 28.5 percent, and 11.6 percent, respectively in FY 2003/04 compared to 52.5 percent, 32.7 percent and 8.9 percent, respectively, in FY 1994/95. Similarly, manufactured goods classified chiefly by materials, machinery & transport equipment, and mineral fuels & lubricants accounted for 26.8 percent, 18.9 percent, and 16.1 percent of total imports, respectively, in FY 2003/04. Their respective shares in FY 1994/95 were 39.7 percent, 20.5 percent and 7.4 percent.

In terms of product diversification, while comparing FY 2003/04 to FY 2002/03, the principal commodities that contributed to the increase in exports to India included soap, toothpaste, thread, M.S. pipe and plastic utensils. However, exports of vegetable ghee, pulses, cardamom, copper wire rod, pashmina and ayurvedic medicine to India fell. On the other hand, the major commodities that contributed to the decline in the exports to other countries were readymade garments and pashmina. There was an increase in the exports of woolen carpets handicrafts, tanned skin, pulses and silverware and jewelleries to other countries. It should be noted that between FY 1994/95 and FY 2003/04 that some uniformity has been maintained in the export intensity with regard to goods exported to India although some fluctuations in the annual export of various commodities existed.

With regard to exports to other countries, Nepal's export to other countries till recently was dependent on primarily on exports of carpets and readymade garments. While carpets and readymade garments formed 88.6 percent of total exports to other countries in FY 1994/95, these two items accounted for 65.8 percent in FY 2003/04.[30] In between FY 1994/95 and FY 2003/04, there has not been much significant change in the commodity composition of exports to overseas countries. One major exportable commodity that emerged during this period was pashmina whose export value amounted to Rs. 1.1 billion in FY 2003/04.

The annual import requirements of Nepal are quite volatile in nature, and primarily consist of development goods, machinery and equipment, consumer items, petroleum products and industrial raw materials. The import of gold has

[30] With regard to carpets, weak demand and problems relating to quality as well concerns over child labor in importing countries had an adverse impact on export of carpets leading to a deceleration in the second half of the 1990s. Though some many problems have been taken care of, the growth of carpet exports has not picked up as in the late 1990s. With respect to readymade garments, export growth initially can be attributed to the spillover of Indian exports, owing to quota limitations on India. However, exports of readymade garments that benefited from preferential treatment under the Multifibre Arrangement (MFA), encountered problems as international trade regulations underwent modifications. The decline in garment exports could be ascribed to the supply bottlenecks and the industry's inability to compete with other South Asian countries. Beginning January 1, 2005, trade in textile and clothing products is no longer subject to quotas but is governed by the general rules and disciplines laid down in the multilateral trading system. This will lead to a further decline in garment exports as the country has now to compete with China, India and Southeast Asian countries, among others. A clearer explanation is provided in Ministry of Industry, Commerce and Supplies (2004).

been declining since FY 1997/98 and considerably after FY 2000/01 following the liberalization of gold imports in India.[31] Compared to exports, imports are diversified and several commodities possess similar shares of total imports in the top rung, especially with regard to imports from overseas.

While comparing FY 2003/04 and FY 2002/03, the major imports from India that witnessed an increase included chemicals, chemical fertilizer, medicine, other machinery & parts, vehicles & spare parts, electrical equipments, petroleum products, M.S. wire rod, M.S. billet, and cold rolled sheet in coil. On the other hand, imports of textiles, cement, rice, agricultural equipment and parts, hot rolled sheet in coil and thread from India dropped. With regard to imports from third countries, the principal items that exhibited an augmentation included betel nut, crude palm oil, crude soybean oil, chemical fertilizer, writing and printing paper, copper wire rod & scrapes, steel rod & sheet, telecommunication equipment & parts, raw wool, zinc ingot, aircraft & spare-parts, other machinery and parts and thread. Likewise, the following items disclosed a fall in imports from other countries: raw silk, textiles, readymade garments, transport equipment and parts, video television & parts, computer parts, medical equipment & tools, and medicine.

There exists a geographical concentration in Nepal's exports, the top four major trading partners in FY 2003/04 being India, USA, Germany and United Kingdom. Analogously, the country's imports have been primarily from India, Singapore, China and Thailand.

In aggregate, the following conclusions may be derived relating to the foreign trade position of the country:

- No significant change has been recorded with regard to the composition of exports, especially with regard to overseas countries.
- No noticeable change has been observed with respect to the diversification of export markets.
- The export/import ratios, which indicate the degree of trade-off between exports and imports, have been slightly going down after FY 2000/01 as shown in Appendix 3.
- Appendix 3 indicates that there have been some fluctuations in the contribution of exports to the GDP. While exports/GDP stood at 8.0 percent in FY 1994/95, it rose to 13.6 percent in FY 1999/2000 before going down to 10.9 percent in FY 2003/04. Similarly, while the contribution of imports in GDP was 29.1 percent in FY 1994/95, it rose to 33.4 percent in FY 1996/97 before dropping to 27.5 percent in FY 2003/04.

[31] In terms of imports from India, a provision was introduced in FY 1992/93 whereby certain items could be imported from India through the payment of convertible currency. This list has included 39 items as of mid-July 2004 and more are likely to be added to the list based on the basis of the structure of foreign currency reserves of the country, the effect on value addition and competitiveness of the industries and the prospect of export promotion. Details are given in NRB (2004).

- The share of manufactured good exports in total exports has gone down from 87.1 percent in FY 1994/95 to 80.6 percent in FY 2003/04. Conversely, the share of primary good exports has climbed up from 12.9 percent in FY 1994/95 to 19.4 percent in FY 2003/04.

Trade Policy of 1992

The Trade Policy of 1992 focused on promoting sustainable trade to enhance the national economy by undertaking open and liberal policies, and by allowing wider participation of the private sector. It also accorded priority to new product development, trade diversification, reduction in imbalances and coordination with other sectors of the economy. These objectives highlighted outward orientation with particular stress on export development. The role and significance of the private sector were also clearly recognized. The salient features of the policy were: a) minimal role of public sector; b) undertaking of liberal and dynamic trade policy and procedures; c) stress on production and export of quality goods and services, d) simplification of tax procedures, and d) strengthening of institutional development.

The export policy acknowledged the need for an effective formulation and implementation of macro–economic policies. The strategies included, among others, the following: a) making the Nepalese currency partially convertible ultimately leading to its full convertibility; b) delicensing of exports except those banned or under quantitative restriction (QR); c) implementation of duty drawback system by devising suitable mechanisms; d) setting up of the EPZ; e) exemption from all charges and income tax on exports; f) simplification of procedures; and f) strengthening of export capability through proper development of infrastructure, backward and forward linkages, and institutional and manpower development, and improvement in product marketing and promotion activities.

In the import sector the major strategies consisted of the following: a) linking imports with exports; b) delicensing of imports, except for those on the quantitatively restricted list or in the auction system; c) reducing transit coasts; and e) simplification of procedures.

However, the majority of the measures announced in the Trade Policy of 1992 have not been implemented to the desired extent. For instance, neither the EPZ nor the Nepal Trade Promotion Organization has been set up.

Nepal-India Trade and Transit Treaty and Trade Integration in South Asia

Trade between Nepal and India is guided by the Nepal-India Trade Treaty first signed in 1991 and later modified in 1996. The treaty was further renewed on March 3, 2002. Unlike the Treaty signed in 1996, several new restrictions were introduced such as stricter Rules of Origin (RoO) and incorporation of safeguard clauses. The new Rules of Origin (RoO) encompass: (a) value addition (domestic content) requirements of 30 percent of ex-factory prices (from March 2003), and

changes in tariff heading (CTH) at the four-digit level of the harmonized system code. For manufactured exports of Nepal, that cannot satisfy the CTH criteria, the new Rules of Origin demand that these products have undergone a sufficient manufacturing process within Nepal, determined on a case-by-case basis. Moreover, four Nepalese items would now be permitted to enter free of basic customs duty into the Indian market on a fixed quota basis.[32]

The ten-year trade figures in Appendix 1 depicts that India's share in Nepal's trade has been gradually rising, especially during the last four years, but overseas trade still accounts for more than 40 percent of both imports and exports. Herein lies the significance of transit facilities for Nepal. With regard to the Nepal-India Transit Treaty signed between the two countries on January 5, 1999, there is the provision of the automatic renewal of the transit treaty every seven years. Under this Treaty, India provides port facilities at Calcutta and Haldia for the country's trade with overseas countries. Fifteen transit routes to Calcutta/Haldia are specified. Nepal can also utilize the facilities at Mumbai Port (including the Jawaharlal Nehru Port Trust) and Kandla Port for third-country trade. Moreover, import insurance is needed only for the sensitive goods. The godown facility at Calcutta airport and the provisions permitting Nepali importers to hand over the original copy of Custom Transit Declaration at the Indian customs should ease the import and export of goods.

While the South Asian Association for Regional Cooperation (SAARC) was set up when its Charter was formally adopted on December 8, 1985 by the Heads of State or Government of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka, the agreement on South Asian Preferential Trading Arrangement (SAPTA) took off only in December 1995. The SAPTA accord attempted to reduce tariffs and non-tariff barriers among the SAARC member countries. SAPTA was envisaged primarily as the first step towards the transition to the South Asia Free Trade Area (SAFTA), leading subsequently, towards a Customs Union, Common Market and Economic Union. The four rounds of SAPTA had led to the coverage of more than 5,000 tariff line items. However, studies have demonstrated that the SAPTA process did very little in stimulating regional trade.[33] The process was very lengthy and slow. Again, at least in the first two rounds of the SAPTA, non-tariff barriers (NTBs) were not considered for removal with the granting of tariff preferences. The other problems were that a) the tariff cuts were not deep enough, b) a wide range of goods was not subject to preferential tariffs and (3) some actively traded goods were left out from preferential tariffs.

The SAFTA agreement was signed at the 12th SAARC Summit in January 2004.[34] It is to come into force on January 1, 2006. The SAFTA aims at a)

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[32] While 100,000 tons of vegetable ghee would be permitted to enter India each year free of basic customs duty, 10,000 tons of acrylic yarn, 7,500 tons of copper products, and 2,500 tons of zinc oxide would also be allowed.

[33] This is illustrated in Mukherji (2002) and Kemal (2004).

[34] The SAFTA was initially mooted at the 8th SAARC Summit in New Delhi in 1995 when it was proposed that it should be effective by 2005. The effective date of SAFTA was changed to 2001

enhancing mutual trade and economic cooperation; b) eliminating trade barriers; c) promoting conditions of fair competition; d) building effective mechanism for implementation and resolution of disputes; and e) furthering regional cooperation. Under the treaty, the non-LDCs are required to bring down their tariffs to 0-5 percent by 2013, except Sri Lanka which is required to do so by 2014. However, non-LDCs need to bring their tariff to 0-5 percent for the products of LDCs by 2009 with regard to products of export interest to the latter. The LDCs, on the other hand, need to bring down their tariffs to 0-5 percent by 2016.

The SAFTA treaty affirms the existing rights and obligations under the Marrakesh Agreement establishing the WTO and other treaties and agreements to which SAARC members are signatories. It calls for free movement of goods in the region via elimination of tariffs, para-tariffs that include border charges and fees and non-tariff restrictions on movement of goods and any other equivalent measures. The SAFTA framework has also incorporated simplification and harmonization of standards, customs clearance, import licensing, import financing by banks, transit facilities particularly for landlocked countries, and enhancing intra-SAARC investment, among others.

During the fifth meeting of the Committee of Experts (CoE) in October, 2004, it was agreed in principle to evolve common RoO for the SAFTA. The SAFTA RoO would be based on value addition approach. This is a major change from what the SAARC countries agreed to earlier on—to evolve RoO on product-to-product basis adopting all applicable approaches. Agreement was also made for lowering the sensitive lists, which incorporate commodities that will not be subjected to trade liberalization program, considerably from the proposed level of 20 percent of the total tradable items. The CoE needs to conclude its SAFTA negotiations by June 2005 and proceed on to make preparations for its enforcement from January 1, 2006.

All in all, the SAFTA is expected to enter into force on the due date upon completion of four procedural formalities: formation of sensitive lists; rules of origin, revenue loss compensation mechanism and ratification by the all member states.

The SAFTA agreement in its present form also needs to be scrutinized from different perspectives. In the first place, it includes only trade in goods and excludes the crucial services sector. It has overlooked the existing and potential national competitive advantage that the SAARC member states have in sectors like tourism and hospitality (Nepal, Maldives, Sri Lanka), retailing of electricity (with Pakistan's surplus power, Nepal and Bhutan's hydel-power capacities), transmission/distribution of gas (Bangladesh), and health services (India), and a host of other services.

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together with the formation of a Group of Eminent Persons (GEP) to draw up a roadmap for SAFTA at the 9th SAARC Summit in Male in 1997. At the 10th SAARC Summit in Colombo in 1998, the GEP report was submitted which suggested that a more practical timetable for SAFTA was 2008. It was decided to have a 'Framework Treaty' by 2001. Due to regional politics, the preparation works for SAFTA got delayed. Finally, in January 2004 the SAFTA accord was signed.

Two, the agreement is silent on how SAFTA is going to integrate the existing bilateral free trade agreements (BFTAs) between some SAARC countries (such as the Nepal-India BFTA and the Indo-Lanka BFTA) into the SAFTA agreement. Moreover, rules and regulations for the effective implementation of the Trade Liberalization Program and granting of special and differential treatment to the LDCs (Bangladesh, Bhutan, Maldives and Nepal) have not been clearly addressed.

Nepal's Entry into the WTO and the BIMST-EC

Nepal officially became the 147th member of the World Trade Organization (WTO) on April 23, 2004. By joining the WTO, Nepal can fully enjoy the rights that all members have under the WTO agreements, such as non-discrimination by other WTO members and the ability to use the WTO's dispute settlement procedure. Broad commitments were made in 11 services sectors and 70 sub-sectors out of a total of 170 classified by the WTO. Nepal accepted an average tariff binding of 42 per cent in agricultural products and around 24 per cent in industrial goods.

Among the commitments on legislation with respect to the trade regime, Nepal agreed to amend or enact 38 various acts and regulations to become compatible with WTO provisions. For instance, the country is required to implement fully the provisions of the Agreement on Sanitary and Phytosanitary Measures and Agreement of Technical Barriers to Trade (TBT) by January 1, 2007. With respect to the Agreement on Trade-Related Intellectual Property Rights (TRIPs), as an LDC, Nepal needs to develop a new Industrial Property Act, which will include all the substantive provisions of the TRIPs agreement. It would encompass all categories of industrial property and would incorporate the basis for an adequate enforcement and be promulgated no later than January 1, 2006. The country has to introduce legislation on anti-dumping, countervailing duties and safeguard measures within one year from the date of accession, in order to safeguard its local industries against unfair trading practices by the exporting countries.

Thus, there are various challenges that Nepal will face. The country needs to seek alternative revenue avenues to finance developments gradually, changing laws and regulations to make laws compatible with WTO commitments and obligations, developing transparent mechanisms and creating institutions and financing the cost of negotiations coupled with recourse to legal measures and implementation.

Nepal became a member to the Bay of Bengal Initiative for Multi-sectoral Technical and Economic Cooperation (BIMST-EC) in February 2004. The other members of this regional trading group are Bangladesh, Bhutan, India, Myanmar, Sri Lanka and Thailand. BIMST-EC's six core areas of cooperation, *inter alia*, are agriculture, energy, fisheries, tourism, trade and transportation.

The Framework Agreement on BIMST-EC FTA was signed on February 8, 2004 at Bangkok during the 5th BIMST-EC Economic Ministers' Meeting. The FTA agreement would first start on trade in goods from 2006, while the FTA on trade in services and investment would begin from 2007. In line with the

agreement in trade in goods, the products excluding those included in the negative list would be subject to tariff cut or elimination on two tracks: fast track and normal track. With respect to negotiations for trade in services, emphasis would be given to the progressive elimination of substantially all discrimination between or among the member countries and/or prohibition of new or more discriminatory measures, except for measures allowed under specific Article of the WTO General Agreement on Trade in Services.

The draft agreement consists of 27 articles and encompasses areas such as rules of origin for BIMST-EC FTA, trade liberalization program, customs and trading procedures, sensitive list, global safeguard and BIMST-EC's transitional safeguard, among others. The members are to develop a modality for dispute settlement arrangement, anti-dumping measures, subsidy and countervailing measures and non-tariff measures to foster free trade in the region.

During March 8-10, 2005, a meeting of the third round of Trade Negotiation Committee (TNC) of BIMST-EC took place in Kathmandu where the preliminary framework of rules of origin and dispute settlement mechanism, the two crucial provisions of the BIMST-EC FTA accord, was adopted. The detailed rules and regulations relating to this framework would be finalized through negotiations at the future meetings.

BIMST-EC FTA is a step to free trade among countries in two of the fastest growing sub-regions of Asia, South-east Asia and South Asia. This FTA could act as a link between the AFTA (ASEAN Free Trade Area) and the SAFTA.

III. CAUSAL RELATIONSHIP BETWEEN GDP AND EXPORTS

This section attempts to determine the status of the causal relationship between growth in GDP and growth in exports as well as between growth in manufacturing exports and growth in GDP. The Granger causality test is applied to affirm such relationship between the foregoing variables.[35]

The tests are based on the following equations:

$$Y_t = \beta_0 + \Sigma \beta_{1k} Y_{t-k} + \Sigma \beta_{2l} X_{t-l} + u_t \quad (1)$$

$$X_t = \gamma_0 + \Sigma \gamma_{1k} X_{t-k} + \Sigma \gamma_{2l} Y_{t-l} + v_t \quad (2)$$

where Y and X are the variables to be examined, u and v are mutually uncorrelated white noise errors, t denotes the time period and k and l are the number of lags. For this study *purpose, the equations are presented as:*

$$Y_t = \beta_0 + \Sigma \beta_{1k} Y_{t-k} + \Sigma \beta_{2l} X_{t-l} + u_t \quad (3)$$

$$X_t = \gamma_0 + \Sigma \gamma_{1k} X_{t-k} + \Sigma \gamma_{2l} Y_{t-l} + v_t \quad (4)$$

$$Y_t = \delta_0 + \Sigma \delta_{1k} Y_{t-k} + \Sigma \delta_{2l} MX_{t-l} + u_t \quad (5)$$

[35] For an extensive elaboration of the Granger causality test, please refer to Han (2003) and Siddique and Selvanathan (1999).

$$MX_t = \alpha_0 + \Sigma \alpha_{1k} MX_{t-k} + \Sigma \alpha_{2l} Y_{t-l} + v_t \quad (6)$$

where Y_t , X_t and MX_t represent GDP, exports and manufactured exports, respectively.[36]

The Granger procedure is applied in order to ascertain the direction of causality between the variables under study. The Granger causality test demands for stationary time series data. Generally, economic variables have unit roots and they are non-stationary in nature. So, it is customary for the researchers to depend heavily on co-integration technique to demonstrate the long-run relationship between the variables under study. In the bivariate case where the variables are co-integrated, the probability of the existence of error correction model is high. In other words, in such cases, there is some adjustment process in the short-run that prevents the errors in the long-run relationship from becoming larger.

The following equations are employed to test for the null hypothesis of non-stationary against the alternative of stationary as mentioned below:

$$dx_t = a + bt + cx_{t-1} + u_t \quad (7)$$
$$dx_t = a + bt + cx_{t-1} + \Sigma \delta_l dx_{t-1} + u_t \quad (8)$$

where dx represents the difference of the variable x under study, t denotes time and u is an error term.

The data under study covers the period from FY 1977/78 to FY 2003/04. However, the number of observations has been reduced by one or two depending upon the degrees of integration. For regression purposes, real GDP is taken as a determinant for income. Absence of data on export prices prohibited the preparation of real exports. However, GDP deflators were used as a proxy and accordingly, based on these deflators, real export figures were computed. The same GDP deflators were applied for computing real manufacturing exports. Both tests for non-stationary and co-integration were conducted and the variables in the difference forms exhibited better results. Accordingly, the Granger causality tests were conducted on the basis of the improved series.

The Engle-Granger Error Correction procedures were applied and the following results were arrived at:

$$\Delta Y_t = 0.05394 + 0.278\, \Delta Y_{t-1} + 0.01071 \Delta X_{t-1} + 0.06214\, ecm_{t-1} \quad (9)$$
$$(4.796) \quad (0.956) \quad (0.286) \quad (0.510)$$
$R^2 = 0.063$ Adjusted $R^2 = -0.078$

$$\Delta Y_t = 0.05377 + 0.268\, \Delta Y_{t-1} + 0.002612 \Delta MX_{t-1} - 0.154\, ecm_{t-1} \quad (10)$$
$$(5.060) \quad (1.260) \quad (0.100) \quad (-1.487)$$
$R^2 = 0.178$ Adjusted $R^2 = 0.054$

[36] While data for exports and manufactured exports (SITC 5-9) are taken from NRB (2004a), data of GDP are taken from different publications of the Central Bureau of Statistics.

$$\Delta X_t = 0.238 + 0.680\ \Delta X_{t-1} + 4.544\Delta Y_{t-1} - 0.647\ ecm_{t-1} \quad (11)$$
$$(3.387) \quad (2.816) \quad (2.454) \quad (-3.283)$$
$R^2 = 0.401$ Adjusted $R^2 = 0.316$

$$\Delta MY_t = 0.217 + 0.409\ \Delta MX_{t-1} + 2.422\Delta Y_{t-1} - 0.191\ ecm_{t-1} \quad (12)$$
$$(2.310) \quad (1.796) \quad (1.283) \quad (-1.146)$$
$R^2 = 0.167$ Adjusted $R^2 = 0.048$

All coefficients in Equation (11) have correct signs. The statistically highly significant error term implies that GDP growth causes export growth. Additionally, the magnitude of the coefficient suggests that 65 per cent of the disequilibrium in the previous period is made up for in the current period. Similarly, all coefficients in Equation (12) present correct signs and the error term infers that growth in income may cause growth in manufacturing exports. Likewise, equation (10) indicates that growth in manufacturing exports may lead to the growth of GDP; however, the period of disequilibrium is very high. Equation (9) does not support the fact that exports growth causes income growth.

The aforesaid findings are tested by F-statistic.

TABLE 1. Granger Causality Test

Causality	F-statistic
GDP → Exports	6.748**
Exports → GDP	0.849
GDP → Manufactured Exports	2.188
Manufactured Exports →GDP	2.366

→ indicates that the left hand side variable causes the right hand side variable.

** the F-statistic is significant at 5% level of significance.

The statistically significant F-statistic confirms the fact that GDP growth is one of the prominent factors leading to the growth of exports in the country. This strongly supports the previous finding. The insignificant F-statistic suggests that growth in income does not lead to growth of manufacturing exports. Similarly, the growth in manufacturing exports does not lead to income growth. However, these two results are not consistent with the above findings. The statistically very insignificant F-statistic is unable to show that export growth gives rise to GDP growth.

To conclude this section, extensive testing on pattern of causality between exports and economic growth demonstrates that exports do not seem to cause the growth of GDP in the Granger sense. However, causality in the opposite direction, namely, from economic growth to exports, is statistically supported.

IV. TRADE-RELATED BOTTLENECKS AND REMEDIES

This section of the paper delineates the major problems, both structural and policy-related, of the trade sector and provides guidelines to resolve them.

Technological Mastery

Technological mastery is an essential condition for industrial upgrading, sustaining competitiveness and entering markets for high-valued goods. Technological weaknesses in Nepal include the low level of technology deployed in productive activities, almost total absence of local technological capability, including the inability to adapt and utilize new technologies, and a lack of resources to procure new technologies.

Due to weak technical and management capabilities, the Nepalese exporters are not able to adhere to the complex and detailed specifications, required by importers from other countries in terms of quality, size, delivery time and packaging, among others. In view of the competitiveness in the international markets, the exporters need a better understanding of elements of their production cost to be able to conduct realistic and crucial price negotiations with buyers. Their almost total lack of such capacities is aggravated by differences in 'business culture'. The business culture in the international market involves quick and timely deliveries, with minimal space for flexibility in fulfilling contracts.

It is crucial for the country to initiate measures to improve productive capacities and make significant gains in productivity and competitiveness through technological upgrading, especially as many of its productive activities utilize sub-optimal technologies at present. The implementation of a successful technology policy, however, depends on a skilled and educated labor force to tackle the many issues relevant to acquisition, utilization, absorption and generation of technology. It also depends on the country's capacity to invest in research and development (R&D) especially to promote locally developed technologies that have an effect on productivity growth, and to establish a link between R&D and production units.

Quality Standardization and Investment in Infrastructure

Quality control is integral to competitiveness. Problems of quality in Nepal include precision, grading, and standardization. The current low number of industrial firms having ISO-9000 Certification is a glaring demonstration of these problems, which in turn are restricting the ability of local firms to penetrate in principal export markets such as the EU, USA, and Japan.

In the backdrop of the rising competitiveness in the international market for quality standard and the likely negative impact of low quality Nepalese export products on their reliability and the consequent deterioration in the competitiveness, there is a need to undertake quality standardization and improvement programs to maintain the quality of export products. It is also

important to define minimum export quality and a system of compulsory quality inspection and standardization through which each export product has to pass.

Nepal is landlocked and geographically situated away from the major world economic centres; hence, emphasis must be accorded to improve infrastructure and thereby lower business transaction costs. It is, therefore, crucial that the country makes every attempt to attract investment in sound infrastructure development to enhance export competitiveness. More efforts are required for building and maintaining world-class telecommunications, roads and airports. Electricity and energy supply should be consistent and affordable.

Competitive Ability and Development of Human Resources

In this age of global competition, it is not just enough for the Nepalese firms to be competitive at the domestic level. They need to be competitive in the global context for which they should hold some competitive advantage such as economies of scale, cutting-edge technology, marketing strengths, efficient production and distribution systems, and/or cheap labor.[37] The country does not possess comparative advantage in any one of the areas excluding the availability of cheap labor.

Building up skilled human resources is the key for grabbing opportunities for market opening. The priority accorded by the East Asian countries on this area of social development provides a good example of success story, which seems worth replicating by Nepal. In the recent past, human resource has become the key to success in international trade. Three areas could be identified in the context of Nepal. One, there is a need to develop capacities in product innovation. Two, promotion of marketing skills should be accorded top priority. The third area is the personnel in the public sector, particularly institutions relating with trade and commerce. Limitations in trade-related expertise, analytical skills and negotiating skills are the result of the small staff, lack of resources for hiring and training and insufficient experience.

Coordination of Trade with Development Strategies and Safeguard Arrangements

Despite the fact that Nepal has done utmost to open up its economy, the expected beneficial results could not be generated owing to lack of coherence between trade policies and other development policies. Thus, there is a need to coordinate trade and development strategies and process.

Although openness in general is preferable to protectionism, free trade without any safeguards could lead to disaster, as has been demonstrated by the East Asian and the Latin American crisis. It is thus crucial to create space for policy

[37] Details are provided in Adhikari, Ratnakar and Hiramani Ghimire (2001).

maneuvers, particularly in the economically sensitive sectors. It is in this context that safeguard arrangements are suggested.

Commodity and Market Diversification

Too much reliance on a few low-value export items such as readymade garments and carpets has acted as obstacles in enhancing trading opportunities. The export concentration ratio (denoted as the share of the principal export products [carpets and garments] in the total export value) is quite high.[38] On top of that, while exports of readymade garments and carpets form a large share of the country's export basket, they are insignificant in terms of the international supply, so that the country has no influence whatsoever on the world prices that is advantageous to it. Moreover, hardly any efforts have been made either to reduce their export concentration ratio or to develop into new areas of products or services that could be exported into the international market.[39]

Another problem is the absence of market diversification for the development of the trade sector. For instance in FY 2003/04, about 70 percent of total foreign exchange earnings have been contributed from exports to the United States, Germany and Switzerland.

Thus, Nepal has not seriously taken efforts to develop products, identify product market and establish a link between the two, although the objective of product and market diversification has been adumbrated in all the Plan documents as well as the various policies announced by the Government from time to time. Hence, this is an area where immediate steps should be taken particularly as Nepal has become a member for the WTO and will be bound to face global competition.

Remedies for the Post-MFA Phase-out

Starting January 1, 2005, trade in textile and clothing products is no longer subject to quotas under a special regime outside normal WTO/GATT rules but is based on the general rules and disciplines specified in the multilateral trading system. It has been contended that under either free trade or a global quota system, the new and smaller suppliers would be squeezed out of international markets because of the size and greater productivity of established exporters. Thus, to the extent it is true that, with the elimination of the MFA, trade in textiles and clothing products would tend to be drawn back to the larger exporters like India and China, a small least-developed country (LDC) like Nepal might encounter major problems unless proper steps are undertaken.

To become competitive in the global market, focus should be given to areas such as upgradation of technology as well as establishment of a training institute to

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[38] This is elaborated in Ministry of Industry, Commerce and Supplies, *op.cit*.

[39] The growth of exports of readymade garments, for instance, was due to the quota system under the MFA and have already started to go down in the post-MFA era.

improve skill, product specialization for updated fashion and quality among others. The government could play a pivotal role in the development of technical services by permitting the provision of consultancy services through foreign investment.

There is also a need for more investment in productivity enhancement by applying modern technology. Labor laws also need to be made compatible with the garment industry. While formulating the labor policy, issues such as job security, labor strikes and export delivery should also be considered.

Nepal enjoys the GSP facility in EU under the Everything but Arms (EBA) initiative introduced in 2001, which has abolished quotas and tariffs on all imports, including textiles and apparels. The EBA initiative has a significant value to Nepal as it can gain zero duty access to the EU market only under this scheme. Moreover with the extension of the derogation facility to the country by the EU for another two years, garment exports from Nepal to the EU would continue to enjoy exemption from its stricter rules of origin requirement and yet obtain the duty and quota free market access.[40] Hence, the EU market could be more valuable for sustainability in the post-MFA era at least in the short run.[41]

As IMF's Trade Integration Mechanism has assured that assistance from the international community will be provided to LDCs with adjustment difficulties owing to the expiry of the ATC and the restoration of more liberal trade in textiles and clothing, Nepal should take advantage of this facility.

The proposal relating to the creation of a garment processing zone (GPZ) in Nepal appears quite pragmatic.[42] The objective of the GPZ would be to facilitate government strategies for effective implementation of incentives and institution of trade support services within the zone. This would also lower the different types of procedural hassles. A recent study has also suggested the concept of industrial cluster under the GPZ.[43] Under this, a large-scale production with greater control over the management of sourcing and supply chain to lower production cost would take place. For facilitating the mass production with economies of scale, ancillary industries of basic materials for manufacturing of garments need to be developed within the industrial cluster. All the facilities would be located in proximity to the manufacturing zone and to the transit point to reduce delivery time.

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[40] The derogation facility had expired on December 31, 2004.

[41] The Government of Canada also agreed to grant duty free access to Nepalese readymade garments from January 1, 2003, allowing duty-free export of Nepalese textiles and apparels into Canada. As the garment industry is passing through a difficult phase, attempts could also be made to penetrate into the Canadian market which could provide some kind of a breathing space for the time being.

[42] The framework of a GPZ is provided in Shakya (2001).

[43] This concept of industrial cluster is elaborated in Shakya (2004).

Tariff Determination and Valuation

The tariff rates on some imported commodities can be different based on how the good is categorized under the different headings of the harmonized codes. These lead to opportunities for arbitrary decisions, delays and corruption. For instance, when a company imports equipment the duty varies depending on whether it is a 'main manufacturing machinery' or not. The same equipment can imply 'main manufacturing machinery' for one company while not for a firm in another company leading to an opportunity for making arbitrary decisions.

The valuation of imported products at customs for determining the import duties is another hurdle for many firms. Customs officials are concerned that firms underinvoice their imports to lower their duties. Hence, these officials make use of 'reference value' which refer to the values that commodities are believed to have, instead of the actual invoice value of the goods. These reference values are normally based on the highest import price historically declared on an invoice, and may overvalue goods significantly when the price of the goods has fallen over time. This is particularly problematic as the reference values are not revised often. To mitigate this problem, proper training should be provided to the custom officials in line with the WTO system of inspection.

Strong Legal Framework and New Trade Policy

The country does not possess a strong, flexible and legal framework for regulating trade. The Export-Import Control Act, 1957 was undertaken primarily with the objective of controlling or prohibiting the export or import of restricted items and those announced by the government from time to time through publication. Moreover, this Act, in the present context, seems to have lost its significance as hardly anything has been mentioned about the process of registration of export-import agencies or houses, export promotion, sharing of information, finance, export incentives, institutional arrangements, and dispute settlement, among others. Hence, this Act should be amended, taking into consideration its compatibility with the WTO provisions. Or else, a separate foreign trade act should be formulated and enacted, for making foreign trade systematic by assessing and consolidating existing acts and regulations.

Moreover, the Trade Policy of 1992 has been outdated. In the present context of globalization and liberalization and as Nepal has joined the WTO, the SAFTA and the BIMST-EC FTA, and is in the process of becoming a member to the Bangkok Agreement, it is exigent that a New Trade Policy be formulated.[44]

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[44] In this context, India announced a detailed Foreign Trade Policy (2004-09), covering a period of five years in September 2004. The twin objectives include: a) to double India's percentage share of global merchandize trade by 2009; and b) to act as an effective tool of economic growth by according priority to employment generation, particularly in semi-urban and rural areas. Nepal could also follow this path by announcing a New Trade Policy valid for a specific number of years.

Effective Trade Institution

The Ministry of Commerce, Industries and Supplies (MOICS) and the Department of Commerce are the major bodies responsible for governing trade in Nepal. There is also the Export Promotion Committee, whose primary objective is the formulation of national policies for export development, monitoring of the export trends and operating the Export Development Fund for export promotion programs. Then, there is the Trade Promotion Centre, which focuses primarily on enhancing and strengthening of foreign trade through export promotional program.

However, it has been quite some time since these institutions have been effective in promoting exports and meeting their objectives. Again, the institutional capabilities to monitor activities and assist in trade information and other services are quite limited. Hence, with the increasing role of the private sector and the rapid development and application of information technology, it appears that the TPC should be reconstituted as adumbrated by the Trade Policy of 1992, and a new Nepal Trade Promotion Organization should be established. One of the tasks of this Organization should be to launch an effective communication campaign to convince importing countries that the goods generated in the country reflect competitiveness and that the competitiveness is based on genuine comparative advantage.

Development of Export Processing Zones

It was in December 1990 that the government constituted a high-level working committee under the chairmanship of the Industry Minister to set up an EPZ in Kathmandu to promote export-oriented industries. An EPZ is an industrial area especially designed for export-oriented industries and it provides the facility of tax exemption on imports of raw materials needed by the manufacturers inside the region. However, the manufactured goods are not allowed to be sold in the country. Even in 1990, five products were identified which could be produced by the industries inside the EPZ: carpets, garments, leather-based products, electric and electronic goods, products based on herbs and jewellery. However, almost fifteen years have passed, and there is no sign of the creation of an EPZ yet. It is crucial that the government takes necessary steps immediately to formulate relevant laws for establishment of EPZs, and measures should be initiated to set up EPZs at appropriate locations.[45]

[45] In this context it is relevant to mention here that in order to address the poor infrastructural services and administrative inefficiencies emanating from lengthy bureaucratic procedures, Bangladesh developed specially designed EPZs and has been giving support services to industries. The EPZs could be emulated by Nepal since improving the infrastructure in the specified areas can be much faster and cheaper than doing it on a larger geographical area.

Reliable Trade Data and Periodic Reviews

There is scarcity of data on market information, pricing, quality, and level of competition, among others. Similarly, reliable data on trade are lacking as the figures published from one institution is different from the other institution. The proposed Nepal Trade Promotion Organization could be entrusted with this task of creating commodity-wise database relating to investment, production, imports and exports, among others.

Periodic reviews of performance of the country in both regional and international markets need to be undertaken in order to maintain the country's export thrust. Periodic policy analysis should be conducted by all relevant stakeholders in order to minimize the inherent gap between policy formulation and implementation with agreed time frames. This will enable the adoption of the corrective measures to be timely executed. Reviews thus call for capacity in the various institutions to deal with issues such as a) target-setting, b) collection of timely and relevant data, c) analytical skills, and d) information dissemination.

Lessons from SAARC Countries

A comparison of Nepal's export policy with the export policy of both India and Bangladesh reveals that both India and Bangladesh have accorded priority to the growth of specific product-wise exports and exports to new markets by giving special incentives, which is missing in Nepal and which is very crucial in this competitive era for sustainability.[46] India has also given special considerations for the development of backward regions. Both India and Bangladesh have given special protection to the products of small scale and cottage industries to enhance such industries towards exports by rendering double weightage to incentives. So far, Nepal has done little to uplift the backward regions towards the export business; it has provided little protection-cum-incentives to the small scale and cottage industries. Again, there exist no policies in allowing foreign trading houses in export business as well as encouragement to these exporters who improve the quality of product for exports. Hence, reviews of export policies of India and Bangladesh shows that in Nepal there is a need for substantial improvement over the existing export policy.

Policy Credibility

Clear goals in trade must be systemically implemented in order to revive and build business confidence and remove inbuilt skepticism. In order to remove uncertainty and aid exporters in planning, the policies of the government must be perceived to be real, predictable and likely to be sustained within a given

[46] The export policies of India and Bangladesh are highlighted in Research & Study Centre Pte. Ltd. (RESTUC) (2000).

timeframe. Trade policy measures targeted to promote exporters must thus be compatible with other measures on the fiscal side, balance of payments, etc. For enhancing Nepal's export drive, a demand for political champions who are willing to keep all the parties on track in policy formulation and implementation phases exists. The drive to export must not encounter frequent policy reversals and must not be compromised by other policies that have an adverse impact on the capacity of exporters to deliver.

V. CONCLUSIONS

Although trade is considered as an engine of growth in economic development of a country, in Nepal there prevails a big gap between the objectives and vision and the current state of affairs in the trade sector. Though Nepal is already a member of the WTO, the institutional and legal structures to implement the WTO agreement have not been properly developed. Market and product concentrations of exports have led to volatile export proceeds. Structural difficulties of trade related services and infrastructures have obstructed to materialize potential comparative advantages.

The country still relies on a relatively small basket of export and a few destination markets. A large proportion of its exports encounter dwindling world demand, demanding an urgent restructuring of its export basket. Similar to other LDCs of South Asia, Nepal has difficulties relating to lack of competitive ability, supply side limitations, high export concentration, and implementation problems that inhibit its ability to seek gains from international trade.

Integration of Nepal into the global economy is an insufficient but necessary precondition for long-term sustainability of poverty eradication. This can only be attained through an integrated approach, including trade and macroeconomic policy, private sector development and participation, finance, infrastructure, education and other supply-side measures. Regional integration, compatible with multilateral trade rules, can be a paramount stepping stone for Nepal to integrate itself into the world economy and can aid in making liberalization work by enhancing the credibility and transparency of policy reforms.

APPENDIX 1. Direction of Trade (Rs. in Million)

	Total Trade					Export					Import				
	India		Overseas			India		Overseas			India		Overseas		
Fiscal Year	Amount	% Share	Amount	% Share	Grand Total	Amount	% Share	Amount	% Share	Total Exports	Amount	% Share	Amount	% Share	Total Imports
1994/95	22740.2	28.0	58578.5	72.0	81318.7	3124.3	17.7	14514.9	82.3	17639.2	19615.9	30.8	44063.6	69.2	63679.5
1995/96	28081.2	28.8	69254.4	71.2	97335.6	3682.6	16.1	19198.5	83.9	22881.1	24398.6	32.8	50055.9	67.2	74454.5
1996/97	30079.5	25.9	86110.4	74.1	116189.9	5226.2	23.1	17410.3	76.9	22636.5	24853.3	26.6	68700.1	73.4	93553.4
1997/98	36125.4	31.0	80390.1	69.0	116515.5	8794.4	32.0	18719.1	68.0	27513.5	27331.0	30.7	61671.0	69.3	89002.0
1998/99	44650.4	36.2	78551.2	63.8	123201.6	12530.7	35.1	23145.6	64.9	35676.3	32119.7	36.7	55405.6	63.3	87525.3
1999/00	63546.8	39.4	97849.1	60.6	161395.9	22618.7	43.8	29004.3	56.2	51623.0	40928.1	37.3	68844.8	62.7	109772.9
2000/01	81055.6	47.3	90285.7	52.7	171341.3	26030.2	46.8	29623.9	53.2	55654.1	55025.4	47.6	60661.8	52.4	115687.2
2001/02	84578.3	54.8	69755.5	45.2	154333.8	27956.2	59.6	18988.6	40.4	46944.8	56622.1	52.7	50766.9	47.3	107389.0
2002/03	97354.2	55.9	76928.5	44.1	174282.7	26430	52.9	23500.6	47.1	49930.6	70924.2	57.0	53427.9	43.0	124352.1
2003/04	109516.6	57.6	80671.2	42.4	190187.8	30777.1	57.1	23133.6	42.9	53910.7	78739.5	57.8	57537.6	42.2	136277.1

Source: NRB (2004a).

APPENDIX 2. Trade by SITC Grouping (Rs. in Million)

SITC Group	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Food & live animals	1562.7	1946.6	2661.7	3123.2	3724.5	4240.5	4776.6	5094.2	6100.9	6276.9
Tobacco & beverage	11.3	9.7	14.9	22.8	50.0	117.2	75.6	145.7	138.7	55.2
Crude materials, inedibles except fuel	485.5	768.7	663.5	487.1	469.9	561.3	751.1	624.5	800.1	714.3
Mineral fuels & lubricants	0.0	1.3	1.4	20.9	0.5	2.2	1.3	1.6	5.5	14.5
Animals & vegetable oil & fats	214.1	251.3	312.6	2136.3	3597.2	3229.7	4104.0	7421.4	4278.7	3375.7
Chemicals & drugs	302.3	640.4	1353.4	1968.5	2804.0	3933.2	4041.7	3308.3	3279.0	3865.9
Manufactured goods classified chiefly by Materials	9260.3	10455.7	11028.6	11637.1	13539.6	15838.7	18909.3	17394.9	17794.7	23601.7
Machinery & transport equipment	37.1	35.2	59.6	58.0	97.8	390.8	343.6	364.9	208.2	619.5
Miscellaneous manufactured articles	5765.8	5772.2	6540.3	8059.6	11392.8	21509.2	22650.9	12589.3	17281.5	15380.1
Commodity and transactions not classified according to kind	0.1	0.0	0.5	0.0	0.0	0.0	0.0	0.0	43.3	6.9
Total Exports	*17639.2*	*19881.1*	*22636.5*	*27513.5*	*35676.3*	*49822.7*	*55654.1*	*46944.8*	*49930.6*	*53910.7*
Food & live animals	4464.0	4785.8	5400.5	4929.0	7619.5	10839.0	5994.4	6333.2	9370.5	8554.0
Tobacco & beverages	500.9	508.6	590.7	799.5	846.1	906.5	906.1	717.1	792.2	1026.8
Crude materials, inedibles except fuel	3347.9	4865.9	5487.1	6976.2	6246.7	7012.4	7559.6	6712.7	8479.3	10550.6
Mineral fuels & lubricants	4717.1	5549.3	7160.3	9537.3	8737.5	9097.9	11269.2	15222.3	19944.2	21904.1
Animals & vegetable oil & fats	2056.0	2830.9	2327.6	2025.8	3329.0	4446.0	5589.2	7887.5	7750.5	8634.4
Chemicals & drugs	7193.2	8686.8	8504.2	11077.3	12476.4	14474.2	12941.9	12380.9	14319.5	16544.9
Manufactured goods classified chiefly by materials	25300.6	28129.7	44741.9	32601.6	25638.0	34420.0	41188.0	32889.1	34888.2	36510.5
Machinery & transport equipment	13027.6	15301.1	13794.9	16734.7	18063.7	20547.9	23027.8	19513.8	20702.1	25694.2
Miscellaneous manufactured articles	3057.2	3794.6	4016.4	3974.0	4302.4	6682.8	7210.2	5670.3	6582.7	5103.8
Commodity and transactions not classified according to kind	15.0	1.8	1529.8	346.6	266.0	78.2	0.8	62.1	1523.0	1753.8
Total Imports	*63679.5*	*74454.5*	*93553.4*	*89002.0*	*87525.3*	*108504.9*	*115687.2*	*107389.0*	*124352.1*	*136277.1*

Source: NRB (2004a).

APPENDIX 3. Trade Indicators (in percent)

Fiscal Year	Export/ Import	Exports/ GDP	Imports/ GDP	Trade Deficit/ GDP	Manufactured Exports/Total exports	Primary Exports/Total exports
1994/95	27.7	8.0	29.1	-21.0	87.1	12.9
1995/96	26.7	8.0	29.9	-21.9	85.0	15.0
1996/97	24.2	8.1	33.4	-25.3	83.9	16.1
1997/98	30.9	9.1	29.6	-20.4	79.0	21.1
1998/99	40.8	10.4	25.6	-15.2	78.0	22.0
1999/00	47.6	13.6	28.6	-15.0	83.6	16.4
2000/01	48.1	13.5	28.1	-14.6	82.6	14.4
2001/02	43.7	11.1	25.4	-14.3	71.7	28.3
2002/03	40.2	10.9	27.3	-16.3	77.3	22.7
2003/04	39.6	10.9	27.5	-16.6	80.1	19.9

Source: NRB (2004a) and computations.

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The Impact of Fiscal Deficit on Long-term Nominal Interest Rate in Nepal

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Growth of debt stock, changes in the debt composition, ownership structure of government debt and movement of interest rate on debt have been observed since the very beginning in Nepal. Public debt issues have been more and more market oriented and secondary market activities for short-term securities have expanded in recent years. Presently, the amount of debt service payment which exerts pressure on government budget constitutes more than one fourth of the total government expenditure. The theoretical prediction about the relationship between interest rate and government debt is still a matter of controversy. Empirical evidence of other countries on the relationship between interest rate and public debt has become inconclusive. This paper examines the relationship between long-term nominal interest rate and budget deficit variables in Nepal. The study finds the evidence that there exists positive but insignificant relationship between long-term nominal interest rate of government securities and budget deficit variables.

I. INTRODUCTION

Background

As the revenue surplus has not been adequate to meet the development expenditure, the deficit budget has remained the prime feature of Nepalese fiscal policy. As such, since foreign grant only could not cover the deficit, foreign and internal loans have been mobilised. Therefore, the value of total loan has been rising and the burden of debt services has been increasing year by year. This situation leads the government to become more and more indebted both in the foreign and internal side. Budget deficit as a ratio of gross domestic product (GDP) increased from about 1 percent in 1971 to more than 3.5 percent in recent years. Similarly as a percentage of GDP, the outstanding domestic loan has also sharply increased from less than one percent in 1971 to 17.9 percent in 2003. Debt services (including both principal and interest payment) have also been increasing and it forms about 29.4 percent of government regular expenditure.

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The stock of public debt has always shown an upward trend since the very beginning, while a mixed performance has been observed in the movement of the interest rate on government securities. The short-term interest rate on 91-day Treasury Bills (TBs) has been highly fluctuating. It reached as high as 11.6 percent in 1996, but sharply fell to 2.5 percent in the very next year. The interest rate on long-term securities reached as high as 15.5 percent in 1991 and around 7.0 percent in the recent years. The behaviour of interest rate on government securities is yet to be explained. This paper tries to detect whether or not the government fiscal deficit was responsible for the high interest rate during that period.

Prior to 1988, the Nepalese government was able to mobilize internal loan at non-competitive rates largely by non-marketable instruments. TBs are the only marketable government instruments, which is now sold on auction basis whereas long-term securities like Citizen Investment Certificates and National Saving Certificates are still sold on fixed interest rate basis determined by the government. Now, the public debt management has become more and more market-oriented and secondary market activities have expanded in the recent years. Competitiveness in such market has also been improved. Therefore, the empirical issue of budget deficit and interest rate has become crucial for Nepal. Finding the determinants of interest rates on government internal loan helps the central bank to take appropriate policies in maintaining the desired level of interest rate.

Thus, the objective of the paper is to analyse the relationship between fiscal policy and the interest rate on internal debt in general. This paper focuses on budget deficit and internal loan outstanding to their relationships with long term nominal interest rate in particular.

The structure of this paper is as follows. The second section of Part I briefly reviews the economic theory regarding fiscal deficit and interest rate followed by the literature review on its empirical evidence. Part II presents the overview of public debt and interest rate in Nepal. Part III describes the data series and gives the visual impression of the data. The formulation of the model and the empirical results are presented in Part IV followed by the conclusion in Part V.

Economic Theory

The economic impact of fiscal policy has been the subject of much controversy. The first controversial issue regards the relationship between government deficits with saving, interest rate and capital accumulation (see Knot and Haan, 1995). Most of the economists (for instance Modigliani and Jappelli (1988) in Knot and Haan) believe that government deficits lead to a rise in interest rates and rates of capital accumulation. However, a few economists (Barro, 1974) reason that a government deficit will be matched by a parallel shift in private saving, and deny any influence from government deficit on interest rates.

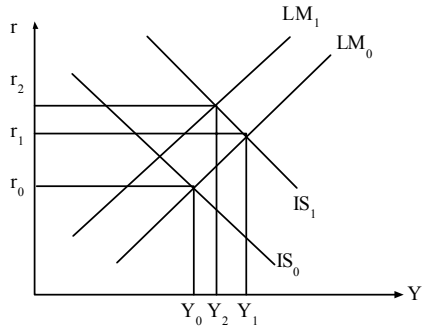
It is obvious that when the government spends more than it collects in the form of taxes, it must finance the deficit either by selling securities or issuing base money. Deficit can affect interest rates and inflation both directly and indirectly.

An increase in government spending or a decrease in taxes both tends to increase demand for consumption and investment directly. This effect is partly offset by the high supply of government securities to finance the deficit. This tends to increase real interest rates and private spending that is sensitive to interest rates may be crowded out.

A budget deficit may increase demand indirectly because it is associated with expansionary monetary policy. If the central bank purchases government securities, it issues base money that increases supply of money, which enables the private sector to increase the demand for goods[47].

The most widely used conventional macroeconomic paradigm is the IS-LM model. Its widespread use reflects not merely that it is analytically tractable but also many economists generally agree with its structural assumptions and implications. Increase in government spending financed by bonds tends to shift the IS curve to the right and this increases the interest rate and income.

For instance as shown in the figure below, an increase in government spending financed by a sale of bonds shifts the IS_0 curve to IS_1. Private spending is crowded out by this transaction effect. The magnitude of this crowding out effect is measured by the distance from Y_0 to Y_1, which depends on the interest rate change from r_0 to r_1. This is called financial crowding out. The increase in the quantity of bonds that financed the deficit spending causes portfolio adjustment in the financial markets. If bonds are considered as net wealth, over the time wealth increases, the demand for money increases and the LM curve shifts to the left. This causes the interest rates to rise to r_2 and depending on the magnitude of this increase, private spending is again crowded out. When these two crowding out effects are taken, they indicate that the effect of deficit spending may be ambiguous on national income, while rate of interest definitely rises (Hoelscher, 1983).



Traditional IS-LM analysis examines the total impact of an increase in government spending by shifting the IS curve to the right. In the basic Hicks-Keynes model, with exogenous taxes and a fixed money supply, the implicit assumption must be that bond sales are used to finance the deficit expenditure. Silber (1970) argues that an increase in bond supply, *ceteris paribus*, would raise

[47] Dewald (1983) described these effects as real balance effect and the money multiplier effect.

interest rates since the public must be induced to increase its holdings of bonds relative to money. If there was equilibrium at the old rate of interest, the increase in bond supply must raise the rate of interest.

But the economic effects of fiscal policy have not been far from controversy. Some economists argue that a government deficit will be matched by a parallel shift in private saving. The Ricardian Equivalence Theorem, as revitalised by Barro (1974, 1990), concludes that fiscal effects involving changes in the relative amounts of tax and debt finance for a given amount of public expenditure would have no effect on aggregate demand, interest rate and capital formation. Barro argues that the method of financing government spending (taxes or borrowing) has no impact on wealth, once discounted future tax liabilities are considered. Hence if wealth effects were the mechanism through which deficit should affect interest rates, then the effect would be negligible.

Nevertheless, a positive relationship between deficit and interest rates seems a trivial application of supply and demand theorem in economics. If the deficit increases, everything else remaining the same, the price of government bonds falls and the interest rate rises.

Empirical Evidence

The Ricardian and the standard views have different predictions about the effects of fiscal policy on a number of economic variables. The Ricardian view predicts no effect of budget deficit on interest rate, whereas the standard view predicts a positive effect at least in the context of a closed economy.

Many writers have examined on empirical grounds whether there is any relationship between budget deficit and interest rates. So far the evidence is far from conclusive. It appears that the relationship between government budget deficit and the interest rate is not very stable over time. Knot and Haan (1995) studied the fiscal policy and interest rate in the European Community over the period from 1960 to 1989. They conclude that in the European Community persistent deficits have exercised an upward pressure on interest rates thereby contradicting the Ricardian proposition of the neutrality of deficit financing. However, their finding indicates that there is also evidence in support of partial tax discounting. Hoelscher (1986), by studying the US annual data from 1953 to 1984, shows strong support of the correlation of large deficit with ten-year treasury bonds rates. However, the relationship between deficit and short-term interest rate may be tenuous. But Hoelsher (1983) using the quarterly US data for the period of third quarter of 1952 to the second quarter of 1976 shown that there is no significant relationship between federal borrowing and short-term interest rates (3-month TBs rate) and concludes that federal borrowing is a relatively unimportant determinant of short term rates. Evans (1985) has demonstrated no association between large deficit and high interest rate by examining over a century of US history of large deficit, during the war time. Evans (1987) also finds similar results for nominal yields with

quarterly data from 1974 to 1985 for Canada, France, Germany, Japan, the United Kingdom, and the United States.

Dewald (1983) examined the US quarterly data from 1953-1981 and argues that deficit in themselves has not been a critical factor in high real interest rates. Also after averaging the data for full peak-to-peak business cycles to eliminate cyclical influences, he found no strong historical association between real interest rate and real deficit.

Ford and Laxton (1995) estimated the effect of fiscal deficit in nine industrialised countries of OECD since 1970 and finds that fiscal development was responsible for the rise in real interest rates in all of these countries.

Mascaro and Meltzer (1983) studied the determinants of three month and ten-year interest rates over the period from the fourth quarter of 1969 to the second quarter of 1981. Their results indicate no significant effects of the deficit on either long term or short-term interest rates. Dewald (1983) analysed the effect of real deficit on short and long term interest rates, using quarterly post-war data. He also finds that the real deficit is only marginally important in explaining real interest rates and concludes that budget deficit account for very little of recent high real interest rates. This has led some authors to argue that the linkage between fiscal policy and assets returns has to be considered from a global instead of a national perspective. Tanzi and Lutz (1991) pose that the government's budget deficit should be analysed from a global perspective in view of the increasing international capital mobility and the growing integration of financial markets.

II. OVERVIEW OF PUBLIC DEBT AND INTEREST RATE IN NEPAL

Government budget was introduced in 1952 for the first time in Nepal and it was a deficit budget. However the system of public debt was introduced in 1961. The main objectives of mobilizing public borrowing were regarded as the people's participation in country's development and persuading the people for savings. So it seems that at that time people and the government were not so much concerned about the determination of interest rate of the government debt.[48] The first internal loan was collected from Nepal Rastra Bank (Central Bank of Nepal) in the form of TBs amounting to Rs 7 million at a very nominal rate of interest of one percent. Since then issuance of long-term bonds also started in the name of Development Bonds, National Saving Certificate, Special Bond, Land Compensation Bonds, Forest Compensation Bond, Non-Interest Bearing Prize Bond and Citizen Investment Bonds. At present, the most common means of government debt are TBs for short-term loan and National Saving Certificate and Citizen Investment Bonds for the long term.

[48] In the preamble of the Public Debt Act, 1960 and the Public Debt Regulation, 1963 the objective was stated as "to encourage the saving by issuing the securities for the economic development and progress of the country."

The demand for funds whether originating in the public or in the private sector can be met by both domestic and foreign sources. Funds may be obtained in the form of grants and loans. Although a significant feature in the fiscal front over the last several years has been the heavy reliance on foreign sources in financing the budget deficit, the relative share of funds from domestic sources for deficit financing increased considerably in relation to foreign sources of funds. Domestic funds are obtained primarily from the market sources, which consists of both private and banking sector including the central bank.

Short-term and Long-term Securities

TBs are one of the popular means of government borrowing for the short term. However it can be sold for the longer maturity. Before 1988 TBs were sold on a fixed interest rate. The administered interest rate was one percent at the beginning (in 1962) and maximum of five percent in 1988. TBs are now sold at a discount rate and the face value is paid to the holder on maturity. The spread between selling price and payment of full face value is known as the yield on the investment. Because of competitiveness and short term maturity this type of securities is usually confined to institutional investors like banks, finance and insurance companies. The operation of TBs is governed by the Public Debt Act 1961 according to which the amount of securities to be issued for any fiscal year is fixed in the Budget Speech. And then, Nepal Rastra Bank, on behalf of the government, issues the bills, all at a time or in instalments, depending upon the directives of the Finance Ministry. The Ministry, observing the budgetary and general economic situation of the country, fixes the amount, interest rates, and maturity of the bills. The interest rate used to be fixed at a lower level—lower than saving deposit rates or three month fixed deposit rates. As a result, the bulk of the TBs used to remain under subscribed in the primary issue and NRB had to own them as a manager of those issues. So from the beginning, the NRB has been holding a substantial part of the government borrowing. The auction system of TBs on the weekly basis was started in November 1988 and since then the interest rate is being determined by the market forces. In order to make the securities market active and attractive, the NRB has started to operate secondary market for TBs since 1995.

Development Bonds, National Saving Certificates and Citizen Investment Certificates are regarded as long-term government bonds to mobilize the domestic resources. These bonds give rather higher yields and are very popular in public. The government has issued these types of securities with a maturity period ranging from 3 years to 15 years. The interest rate of these bonds is still administered which is determined by the government. These securities usually offer high interest rates and focus on absorbing savings of individuals and non-profit making institutions. The instrument aims at reducing the gap between banking and non-banking sectors' investment on government securities.

As per practice, the volume of internal loan for any fiscal year is fixed by a "Bill to collect Internal Loan". However, the Open Market Operation Committee

(OMOC) consisting of members of the NRB and the Ministry of Finance decides on the volume and instrument that is to be sold at any particular time.

Interest Rate

The operations of the Nepalese financial system prior to 1988 reflected the outcome of extensive government (or central bank) interventions. As a part of economic liberalisation policy, in 1989, control over the interest rate policy was removed. Since then, the interest rate on short-term government securities has been determined by market forces; however, the government still administers the interest rate on long-term bond.

Likewise, after the interest rate liberalisation, it has been observed that the commercial banks are cartelling in the determination of interest rate. As a result, deposit rates declined faster than the lending rate resulting in a wider spread between deposits and lending rates of commercial banks. The NRB issued the first ever directives to the commercial banks to increase deposit rates effective from 1966 with a view to attract savings into the banking sector and to make the deposit rate structure competitive with that of India. Accordingly, the minimum interest rate on saving deposit was fixed at 4 percent and on fixed deposit of one year or more at 6 percent per annum. In 1974, the Nepalese price situation along with the exploding world price due to the oil price hike moved upward and inflation was recorded as high as 18 percent. This resulted in a negative real interest rate on savings discouraging deposit mobilisation. Therefore, the rate on saving deposit was raised to 8 percent, rates on three month fixed deposit to 4 percent and one-year deposit was increased to 15 percent. In 1984, the NRB granted partial autonomy to the commercial banks in determining the rates of interest on saving and time deposit i.e. free to deviate to the extent of 1.5 percentage points from the rate given by the NRB. Few changes were made in 1986 and the commercial banks and financial institutions were set free in fixing the interest rates on their deposit rates above the directed minimum interest rate. The minimum interest rates were 8.5 percent on saving deposit and 12.5 percent for one year fixed deposit. In 1989, some major policy changes were made on the interest rate. Interest rate were completely liberalised and banks and financial institutions have been given full autonomy to determine their interest rates on deposit and lending on their discretion. Since then, the administered interest rate regime has ended and interest rates is being determined by the market forces, i.e. supply and demand for the fund.

Ownership Pattern of Government Debt

The overview of ownership structure of government debt is important for the study of the relationship between interest rate and government securities. Private holding of debt would reduce the money supply, but on the other hand, when the central bank purchases government securities it creates the high-powered money which builds up an inflationary pressure by increasing money supply in the

economy. The government is seemed more keen to sell the securities to the central bank to minimise the interest bearing debt. The following table shows the ownership structure of government bonds.

TABLE 1. Ownership Structure of Government Bonds (Amount in Million Rupees)

Year	Total Govt. Bonds (5-year average)	Nepal Rastra Bank (%)	Commercial Banks (%)	Others (%)
1975-79	996	57	27	16
1980-84	2411	56	31	12
1985-89	9349	54	28	18
1990-94	23030	46	33	21
1995-99	38053	48	24	28
2000-03	72769	30	43	27

Source: Ministry of Finance.

As long as the central bank keeps on holding the government bonds, this encourages the government to issue more bonds. This will lead to a rise in the inflation rate in the country. As the central bank dominates in market, the interest rate on the government securities will become less competitive. Table 1 illustrates that the NRB has been the major owner of the government bonds. Currently, it is still holding about 30 percent of the total outstanding government bonds. This means that the government has about 70 percent interest bearing debt. Despite several efforts of the NRB to contain the volume of government debt stock held by it at par with the mandated benchmark, it is unlikely that the NRB would succeed in reducing its holdings to the stipulated limit.

Nepal Rastra Bank Act 2002 limits the holding of government debt stock within the 10 per cent level of previous year's adjusted government revenue. The NRB is trying its best to contain the holdings to the mandated level and reducing its holding in the recent years. It is selling the securities through the secondary markets to reduce the holdings; therefore, the volume of stock is declining.

Against the earlier practice, when the NRB used to buy unsold government securities, it has now decided not to purchase the unsold debt stocks from the primary market. This will help scale down the holdings to the desired level.

III. DATA ANALYSIS AND VISUAL IMPRESSION

Data Sources and Definition

The main sources of the data for this study are the *International Financial Statistics*, International Monetary Fund; *Quarterly Economic Bulletin* of Nepal Rastra Bank; and *Economic Survey* of Ministry of Finance, His Majesty's the Government of Nepal. The sample period is 1971 through 2003 and the frequency

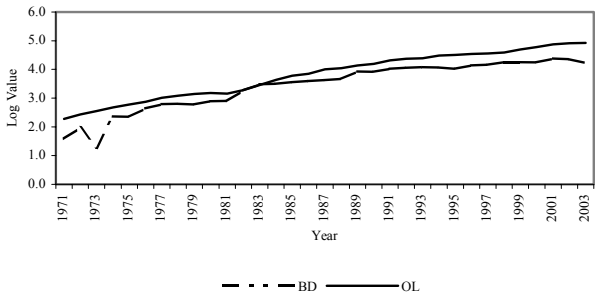
of the data is annual. So, there are 33 observations in the sample. The data set for this study comprises:

RL = Long-term nominal interest rate,
bd = Budget deficit as a ratio of nominal GDP,
ol = Outstanding internal loan as ratio of nominal GDP,
cpi = Log of consumer price index,
Δcpi = Inflation rate,
cb = log of Central Bank holding of Government Bonds and
$rgdp$ = Log of real GDP.

Measuring the Deficit

The major problem in this type of analysis is to measure the government deficit. There are some disagreements about the proper measure of government deficit. Different writers suggest and apply different measures in their studies. Hoelscher (1986) has applied three different measures of fiscal deficit[49]. He found that all these three measures are highly correlated and the results are not significantly different. As the present paper focuses on the internal borrowing side of the fiscal deficit, two measures of fiscal deficit have been presented to measure the deficit. These measures are fiscal deficit and outstanding internal borrowing and these are plotted in Figure 1 for the period 1971 to 2003. Both show an upward trend and depict a sharp growth after 1985. However outstanding internal loan has grown faster than the budget deficit. Outstanding internal loan is becoming higher in recent years. From the figure, it is noticed that these two measures are highly correlated.

FIGURE 1. Relationship between Budget Deficit and Internal Loan Outstanding (Log)



[49] Hoelsher (1986) developed and applied three different measures of fiscal deficit. The first measure of government deficit (USDEF) is expressed in per capita dollars. The second measure of government deficit include borrowing by state and local government as well as federal borrowing on a national income account basis. And the third alternative measure of the deficit subtracts depreciation in the stock of publicly held bonds from explicit federal government borrowing.

Correlation among the variables has been calculated. The result is shown in correlation matrix in Table 2 below.

TABLE 2. Correlation between Budget Deficit and Internal Loan Outstanding (Correlation Matrix)

	Budget Deficit	Internal Loan Outstanding
Budget Deficit	1.00	0.98
Internal Loan Outstanding	0.98	1.00

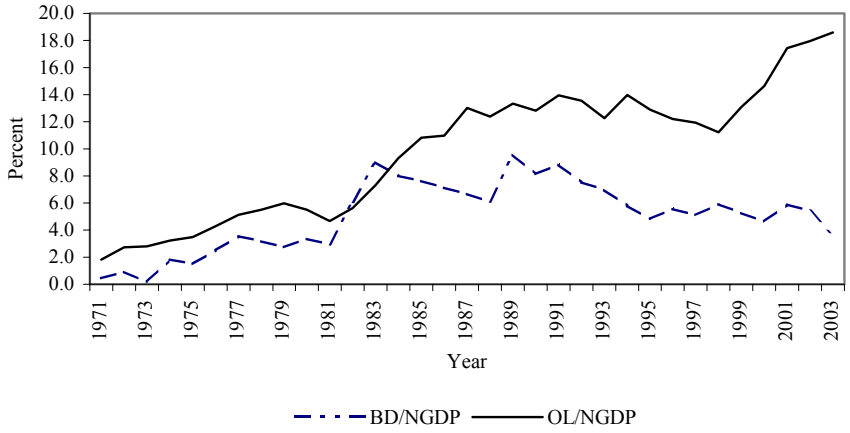
As seen in Table 2, the correlation coefficient between budget deficit and outstanding internal loan is 0.98. This suggests that one can use any of the variables to examine the relationship with interest rate. However, these variables are expressed as percentage of current GDP of corresponding year to see the real magnitude of their growth. So, the budget deficit and internal loan outstanding as a ratio of GDP are used in the regression analysis in Part IV.

Table 3 demonstrates the correlation between these variables after taking their ratios to GDP. The interesting point to note here is that the correlation coefficient has changed from above. The correlation coefficient for budget deficit/GDP and internal loan outstanding/GDP is still high and significant (see also Figure 2). Therefore, it can be argued that the variables used in the regression should not change the regression results significantly.

TABLE 3. Correlation between Budget Deficit and Outstanding Internal Loan (all as a percentage of GDP)

	Budget Deficit/GDP	Internal Loan Outstanding/GDP
Budget Deficit/GDP	1.00	0.83
Internal Loan Outstanding/GDP	0.83	1.00

FIGURE 2. Relationship between Budget Deficit and Internal Loan Outstanding (both as percentage of GDP)

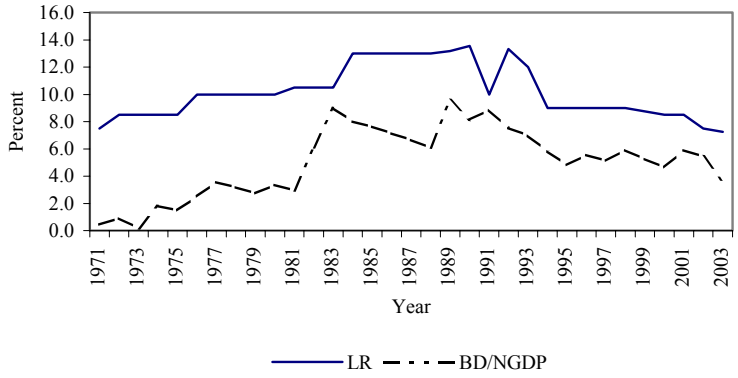


Visual Impression of the Data

The first step in the empirical analysis is to gather a visual impression of the data followed by more formal testing of the order of integration. Three graphs are depicted to see the relationship between deficit variables as well as NRB's holding of bonds, consumer price index and real GDP.

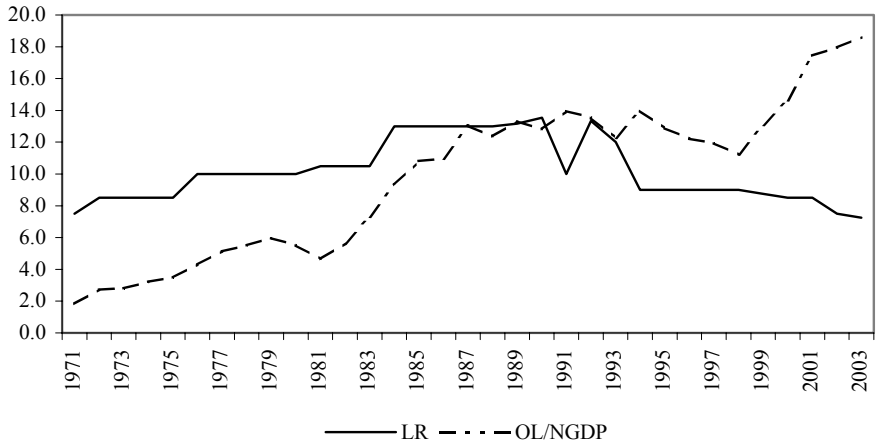
In Figure 3, we demonstrate the movement of long-term nominal interest rate and budget deficit (as percentages of NGDP). As it can be seen, these two variables exhibit similar trend over the period.

FIGURE 3. Long-term Interest Rate and Budget Deficit (as percentage of NGDP)



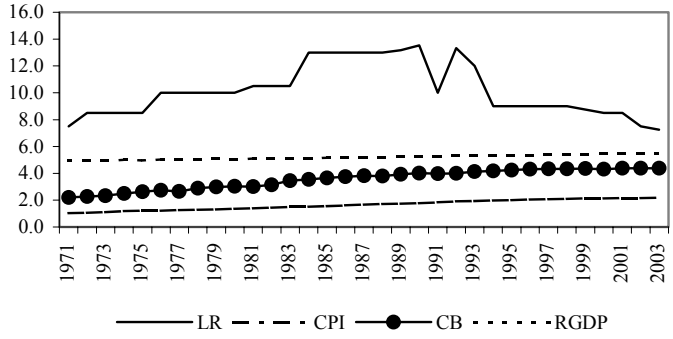
In Figure 4 below, we graph nominal interest rate and internal loan outstanding. It can be observed that there exists somewhat a close relationship between interest rate and internal loan outstanding; nonetheless, the relationship is not as strong as above.

FIGURE 4. Long-term Nominal Interest Rate and Outstanding Internal Loan (as a percentage of NGDP)



Likewise in Figure 5, we depict long-term nominal interest rate with log of NRB's holding of government securities, log of consumer price and log of real GDP. Consumer price index, NRB's holding of government securities and real GDP have shown the stable movement whereas long-run interest rate has shown some fluctuations since 1984/85.

FIGURE 5. Long-term Interest Rate, Log of Consumer Price Index, Log of Central Bank Holding of Government Bonds and Log of RGDP



IV. MODEL SPECIFICATION AND EMPIRICAL RESULTS

Model Specification

In the following section, a loanable funds model of the interest rate is developed. This approach is related to the IS-LM model of the interest rate, but it has a distinct advantage for the purpose of this study. In particular, the loanable funds model highlights the direct connection between government borrowing and interest rates where as the IS-LM model only shows this connection indirectly. The model that is used here is adopted from Hoelscher (1983, 1986)

As it is well known, equilibrium in the IS-LM model implies bond market equilibrium because of Walras law. The bond market equilibrium requires that the private sector's excess demand for bonds is equal to the public sector's excess supply of bonds. Equation (1) is the flow version of this equilibrium condition.

$$BD - BS = D - M \tag{1}$$

where

BD = real private sector bond demand,
BS = real private sector bond supply,
D = real borrowing by the government, and
M = the real purchase of securities by the central bank

The following behavioural relationship is proposed for the study

$$BD = BD(i, p, y) \tag{2}$$
$$BD_1 > 0, BD_2 < 0, BD_3 < 0$$
$$BS = BS(i, p, y) \tag{3}$$
$$BS_1 < 0, BS_2 > 0, BS_3 < 0$$

where i is the nominal interest rate, p is the rate of inflation and y is the income or economic activities.

Equation (2) implies that the private sector's demand for bonds reacts positively to the interest rate, negatively to the inflation rate and negatively to the economic activities.

Equation (3) signifies that the supply of bonds should react negatively to the interest rate and positively to the rate of inflation. In addition, as economic activities decline, the supply of bonds offered by the private sector should also diminish because of the falling credit demand in business sector.

When (2) and (3) are substituted into (1) a reduced form equation with the interest rate as the dependent variable can be derived. The above equation determines the interest rate if p, y, d, m are exogenously determined.

Solving to equation (1) and linearzing yields:

$$i = i(P, Y, D, M) \tag{4}$$

Therefore, the functional form of the estimating equation for this study is written as:

$$i_t = \alpha + \beta_1 p_t + \beta_2 y_t + \beta_3 d_t + \beta_4 m_t \tag{5}$$

Here, p represents inflation rate, y represents income, d represents fiscal policy variables and m represents the central bank holding of government securities. In this study GDP is taken as a proxy for income and budget deficit whereas internal loan and outstanding internal loan are taken separately to test the relationship for the fiscal policy variables.

Examination of equation (4) or (5) reveals that the following partial derivatives or sign of the coefficients should be expected

$$i_1(\beta_1) > 0, i_2(\beta_2) >< 0, i_3(\beta_3) > 0, i_4(\beta_4) < 0 \tag{6}$$

The interest rate should rise with an increase in inflation because the bond demand decreases while bond supply increases. The effect of cyclical economic activities on the interest rate is theoretically ambiguous because both the supply and demand of private bonds should fall as the economic activities increase. However Tanzi (1980) reports that i_2 is negative. He theorises that business borrowing is much more sensitive to a decline in economic conditions than consumer lending.

The effect of government borrowing on interest rates should of course be positive. The purchase of government securities by the central bank offset government borrowing and because of the usual loanable funds liquidity effect, i_4 should be negative.

Equation (4), (5) and (6) comprise the interest rate model which is tested in this study. This loanable funds version of interest rate determination allows the direct effects of government borrowing on interest rates to be modelled. In the section the hypothesis embodied in (4) or (5) and (6) are tested by regression analysis. The main concern is the significance and the size of the government borrowing effect on short-term as well as long term interest rate.

Estimations and Empirical Results of the Study

The first part of this section analyses the test of stationarity of the variables used for this study where as the second part presents the empirical results of the study.

Unit Root Analysis

A meaningful econometric estimation of a model using time series data requires that the data series should be stationary. According to Granger and Newbold (1974), econometric estimation using non-stationary time series data often leads to spurious results. A static regression will generally be subject to considerable serial correlation and will give rise to inconsistent estimates of the standard errors of the parameters. On the other hand, the non-stationary in the data series would lead to produce nuisance parameters. In both the cases, this would lead to wrong conclusions. In either case, the standard errors produced by Ordinary Least Squares (OLS) regression are biased and valid inferences cannot be drawn. In the presence of unit root, we cannot use standard regression model because these data do not satisfy the usual assumption of econometric theory of constant mean and variance. So, to avoid the spurious regression of econometric estimation using non-stationary time series, we take differenced times of the level of the series. Moreover, we have to analyse the order of integration of each variable whether they present a stochastic trend in order to apply the co integration and ECM (error correction mechanism) methodology. Therefore the most commonly used Dicky-Fuller (DF) and Augmented Dicky-Fuller (ADF) univariate test are employed to test the null hypothesis of a unit root against the alternative that the process is stationary. Theoretically, DF and ADF equations are estimated in this form:

$$X_t = \alpha + \beta_0 X_{t-1} + \delta T + \mu_t \text{ (for the DF test)}$$

$$X_t = \alpha + \beta_0 X_{t-1} + \sum_{i=1}^{k} \beta_i X_{t-1} + \delta T + \mu_t \text{ (for ADF test)}$$

Here, the null hypothesis (H_o) is $\hat{\beta}_o = 1$

Based on the above theoretical knowledge, the unit root test has been carried out and the test results are shown in the Table 4(A) and 4(B). Null Hypothesis (H_0) is unit root.

TABLE 4 (A) Testing for Unit Root of the Variables in Level Form

Variable	Mackinnon Critical value		ADF Statistics	Comments
	1%	5%		
cpi	-4.2605	-3.5514	-1.2980	Cannot reject H_o
cb	-4.2605	-3.5514	-0.4636	Cannot reject H_o
bd	-4.2605	-3.5514	-1.1359	Cannot reject H_o
ol	-4.2605	-3.5514	-1.7695	Cannot reject H_o
LR	-4.2605	-3.5514	-1.1610	Cannot reject H_o
rgdp	-4.2605	-3.5514	-3.1571	Cannot reject H_o

From the above results, we cannot reject the null hypothesis of non-stationary in level of consumer price, central bank holding of bonds, budget deficit, internal loan outstanding, long term nominal interest rate and real GDP. Further testing of non-stationary from ADF test is to take the first difference of the variables. The result of this test is summarized in the Table 4(B).

TABLE 4 (B) Testing for Unit Root of the Variables in First Difference

Variable	Mackinnon Critical value		ADF Statistics	Comments
	1%	5%		
Δcpi	-4.2605	-3.5514	-3.9947**	Reject H_o
Δcb	-4.2605	-3.5514	-5.8086*	Reject H_o
Δbd	-4.2605	-3.5514	-4.3588*	Reject H_o
Δol	-4.2605	-3.5514	-3.2295***	Reject H_o
*Δ*LR	-4.2605	-3.5514	-6.3799*	Reject H_o
Δrgdp	-4.2605	-3.5514	-5.8664*	Reject H_o

* denotes rejection of H_o at 1 percent level
** denotes rejection of H_o at 5 percent level
*** denotes rejection of H_o at 10 percent level.

All explanatory variables are stationary at the first difference. Therefore, the regression equations of long term nominal interest rate with the explanatory variables at first difference have been estimated. Since all the variables are in the same order of integration, we could use the cointegration relationship in such a case. A formal test of cointegration has been carried out based on the approach proposed by Engle-Granger (1987) while modelling long-term nominal interest rate.

Cointegration Analysis

In this paper, the Engle-Granger methodology has been used to test the cointegration and to produce a long run equilibrium relationship among the variables. Engle and Granger (1987) propose the following straightforward procedures.

The first step is to pre-test each variable to determine its order of integration. The Dickey-Fuller and/or Phillips-Perron test can be used to infer the number of unit root in each of the variables.

The second step is to estimate the long run equilibrium relationship. If the result of step 1 indicates that all the variables of interest are of the same order of integration, say I(1), then the static regression has to be run to estimate the long run equilibrium relationship in the form

In order to determine if the variables are actually cointegrated, we save the residual of the static equation and test the order of integration of it. If it is found to be I(0), we conclude that the variables are cointegrated and there exist a long run relationship among the variables. Therefore, the residual from the equilibrium regression can be used as an additional repressor to estimate the error correction model.

If the variables are cointegrated, an OLS regression yield a 'super consistent' estimator of the cointegrating parameter of β. Stock (1987) proves that the OLS estimates of β converge faster than in OLS models using stationary variables.

TABLE 5. Testing for Order of Integration of Residuals

Variables	Mackinnon Critical Value		ADF Statistics	Comments
	1%	5%		
Res_bd (ecm(bd))	-3.6576	-2.9591	-4.2707**	Reject H_o
Res_ol (ecm(ol))	-3.6576	-2.9591	-5.0107**	Reject H_o

** denotes rejection of H_o at 1 percent level and
* denotes rejection of H_o at 5 percent level.

In Table 5, Res_bd (ecm(bd)) = residual obtained from regressing long-term nominal interest rate using budget deficit and
Res_ol (ecm(ol)) = residual obtained from regressing long term nominal interest rate using outstanding internal loan.

The residual from static regression is found to be I(0), therefore the residual can be included as a regressor (i.e., as error-correction term) in place of the level terms of cointegrating variables in the estimation of short-run dynamic of interest rate. The error correction mechanism has been used to estimate the dynamic equation of long-term nominal interest rates.

To estimate the dynamic equation of nominal interest rate, the following static regressions have been estimated and each residual has been saved separately.

Using budget deficit

$$LR = 17.12 + 34.65bd + 2.70cb - 5.34cpi - 0.88rgdp \quad \text{.....(ecm(bd))} \qquad (7)$$
$$(0.40) \quad (2.14) \quad (2.79) \quad (1.95) \quad (0.21)$$

$R^2 = 0.74$ Adjusted $R^2 = 0.70$ Se = 1.04 DW = 1.96

Using outstanding internal loan

$$LR = 64.13 + 22.38ol + 3.33cb - 5.21cpi - 5.35rgdp \text{ …….(ecm(ol))} \quad (8)$$
$$(1.42) \quad (11.96) \quad (4.20) \quad (1.85) \quad (1.23)$$

$R^2 = 0.73$ Adjusted $R^2 = 0.70$ Se = 1.06 DW = 2.04

where the numbers in parentheses below the estimated parameters are standard errors.

As far as the economic interpretation of ECM long run equilibrium (solution to the cointegrating equation) implies, in the long run elasticity of budget deficit and outstanding internal loan is quite low. The estimated signs are positive, which is according to the non-Ricardian (standard) version of economic theory. On the other hand, NRB's holding of government bonds has been seen to have a positive impact on long-term nominal interest rate, which, contradicts the economic theory. Moreover, consumer price has shown negative impact on long-term nominal interest rate, which also contradicts the economic theory.

Dynamic Estimates

The above result indicates that the cointegration among the variables of interest exists. Therefore, we can estimate the dynamic behavior of long-term nominal interest rate. Hence, the dynamic model has been estimated using cointegration in the following form:

$$r_t = \alpha_0 + \sum_{i=1}^{1} \alpha_i r_{t-1} + \sum_{i=0}^{1} \beta_i d_{t-i} + \sum_{i=0}^{1} \gamma_i cb_{t-i} + \sum_{i=0}^{1} \delta_i cpi_{t-i} + \sum_{i=0}^{1} \eta_i y_{t-i} + \mu ecm_{t-1}$$

Since the paper is based on annual data one year lag length has been included to examine the lag effect, which is believed to be enough for annual data. Because of the limited sample size, we could not include more than one lag in our dynamic model.

Therefore, the following parsimonious equations have been estimated, where insignificant variables has been dropped and valid restriction has been imposed where it is applicable.

Using budget deficit

$$\Delta LR = -0.50 + 0.16\Delta LR_{t-1} + 19.06\Delta bd_t + 21.96\Delta bd_{t-1} - 1.82\Delta cb_{t-1}$$
$$(0.37) \quad (0.16) \quad (12.40) \quad (14.61) \quad (0.95)$$
$$+7.02\Delta cpi_{t-1} + 4.88\Delta rgdp_t - 1.03ecm\ (bd)_{t-1} \quad (9)$$
$$(3.51) \quad (3.79) \quad (0.23)$$

$R^2 = 0.61$ Adjusted $R^2 = 0.51$ Se = 0.84 DW = 1.93

Using internal loan outstanding

$$\Delta LR = \underset{(0.39)}{-0.89} + \underset{(0.16)}{0.17}\Delta LR_{t-1} + \underset{(13.74)}{15.64}\Delta ol_{t-1} + \underset{(0.92)}{1.94}\Delta cb_t + \underset{(3.62)}{4.83}\Delta cpi_{t-1} + \underset{(4.03)}{3.75}\Delta rgdp_{t-1} - \underset{(0.23)}{1.01} ecm(ol)_{t-1} \quad (10)$$

$R^2 = 0.59$ Adjusted $R^2 = 0.49$ Se = 0.86 DW = 2.04

Interpretation of the Result

Error correction methodology (ECM) has been applied in the above equations. Modelling long-term nominal interest rate while using two different deficit variables produce similar results. As it is clear from equation (9) the current and one year lag growth of budget deficit as a ratio of nominal GDP is positively associated with the growth of long term nominal interest rate. Although the size of the coefficients indicates that the budget deficit marginally contributes to the higher long term interest rate, the t-values indicates that the size of the coefficient is too low to be significant.

Similarly modelling long-term nominal interest rate using the internal loan outstanding gives the similar result as it was found in using the budget deficit. The growth of one year lag internal loan outstanding has established a positive relationship, with long-term nominal interest rate and again most importantly the coefficient is insignificant affecting the interest rate.

Observing these results, it can be said that the effect of central bank holding of bonds is ambiguous, whereas the growth of consumer price index, and real GDP are unambiguously positively associated with long-term nominal interest rate in Nepal, which is in line with economic theory. Moreover, the coefficients of ECMs are negative, large and significant. In all cases, the long-term equilibrium plays an important role in determining the short run dynamics of the long-term interest rate in Nepal.

V. CONCLUSION

The result suggests that budget deficit and stock of public debt in relation to GDP have positive but statistically insignificant effect in the determination of long term nominal interest rates on of the government bonds in Nepal. Therefore, the sole conclusion about the effect of two deficit variables on the long term nominal interest rate is that there is a positive relationship between deficit and interest rate. The magnitude of the coefficient varies. The regression results are weak and insignificant. Therefore, the empirical evidence presented in this paper does support the theoreitical prediction that the deficit causes interest rates to rise but insignificantly in the Nepalese case. The less meaningful association with deficit

variables is mainly due to the inefficient government bonds market and certain characteristics associated with the debt structure and the intervention in the determination of interest rates in some catagories of debt issues. Both supply and demand for long term government securities have not been market based. Supply of securities is still determined by the fund requirement of the government for the budgetary purposes irrespective of the interest rate. The medium and long term interest rate are still determined administratively. The governemt was able to mobilise funds at lower than the market rates through administraive arrangement. In the past government bonds were not very popular among the public because of lower interest rate and as such most of the bonds had to be accepted by the NRB.

The findings of this paper provides an insight into a policy agenda for Nepal, especially to provide basic pre-requisites to ensure the smooth functioning of the market for achieving efficiency of the policies. Some of the important recommendations are as follows:

- The government's fiscal policy has produced insignificant positive effect on the determination of long term interest rate of the government securities. Monetary policy could only be the policy measure to influence the rate of interest in Nepal.
- Developed and market based debt instruments both for short term and long-term government bonds are felt necessary for the smooth functioning of the market.
- Reduction of the amount of governement bonds holding by the NRB in order to determine interest rate on a competive basis help the market forces to work in its own way.
- There should be a developed secondary market for the trading of short term as well as long term securities.
- The transactions including the issuance of long-term bonds should be market based so that the price of bonds will be determined by the market forces.

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