GROWTH THROUGH REDISTRIBUTION: AN APPROACH TO FULFILL BASIC NEEDS AND EXPEDITE PROGRESS IN NEPAL

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Introduction

Deriving its inspiration from the Bergsonian General Welfare function, the Government in Nepal has launched a perspective Basic needs Fulfillment Programme (BNP) for the period 1985-2000 A.D. To put it in exact numbers, the size of this programme would be about 45 percent of the total development plan outlay and to the common or poor people, it means expecting to be able to earn Rs. 5.41 per head per day by the turn of the century.

However, the success of BNP is under question while it has just begun to act. For, there appear to be some prerequisites. Reflecting on the decision making rules and the internal dynamics of Nepalese political economy, Prof. Khanal (1988:66) opines:

Man's basic needs go beyond food, shelter and Rs. 3 They include freedom and justice which have proved themselves in history as no less potent basic needs. Yet, without being ready for corresponding moral and political commitment, we are assuming that the next fifteen years will be different some how in dramatic economic achievements.

Freedom and justice are not only basic needs but also *sine quo non* for achieving BNP targets of 'food, shelter and Rs. 3. This paper substantiates the egalitarian and democratic economic outlook that is necessary to translate the 'wish' regarding BNP and fast economic progress into a 'will' that have its sure way.

The above mentioned hypothesis has been tested by examining how less unequal distribution of income has led to higher rate of eoconomic growth and better state of social welfare in about 32 countries all over the world. Its implications for Nepal are then examined with respect to the three principal sectors that are directly under government perview viz. land reform in agriculture, restructuring of government expenditure and progressive taxation. We believe that this approach is consistent with the Structural Adjustment and Stabilization Programme (SASP) and the more recent Decontrolled Development of Financial Markets (DDFM) at a more deeper level.

Retrospect

Development planning in Nepal was initiated in 1956. During these past three decades, main emphasis has been on institution building, transport and telecommunication infrastructure, education and adaptive research. Whereas the sharing of the benefits of development among people was based basically on "trickle down" approach, or growth first thesis. So to say, the benefits of economic growth would drip down from rich people to poor ones and also would spread out from prosperous areas to backward regions.

For the last couple of years, public concern for above mentioned axioms and aspirations of development planning in retrospection, has been high enough to effect almost a revision in the planning priorities. Thus quite a good deal of achievements in building-up physical and institutional infrastructure has been registered, apart from their spatial concentration. However, efficient utilization and productivity of various public utilities both in terms of direct economic benefits and social welfare appear to be very low. This has been reflected in the two ultimate test of planned development stagnation in national income per capita and in further concentration in its distribution.

For example, the compound growth of GNP per capita during 1964-84 was only 0.1 percent (world Bank 1988) and the number of people falling below the line of absolute poverty has increased from 36.2 percent to 43.5 percent in a short span of time between 1977 to 1984 (NPC 1983 and NRB

1988) (Annex 2). More so, the production of foodgrain per capita during 1964/65-1987/88 has, in fact, declined at the rate of 1.01 percent per annum (Fletcher and Thapa, 1989).

In fact, when the dynamics of past decades was projected (Annex 2) to the year 2000 A.D., the annual per capita foodgrain production trended *down ward* from 199 kg in 1964/65 to 136 kg by 2000 A.D. against our target of increasing it to 248 kg while the population below poverty line trended upward from 36 percent in 1976/77 to 62 percent by 2000 A.D. against our target of bringing it down to zero.

Obviously, such a continued deterioration in production and distribution cannot be allowed to continue *sine die;* eventually some combination of changes in production knowhow and instituions will and must follow to arrest and reverse such trends.

The above interpretation on the approaches, expectations and achievements of developement strategy shows that the need for economic and democratic integration of public life has probably emerged as a top social priority; but so far as the methods thereof are concerned there appears to be lack of readiness for change.

Based on the experience of about 30 countries during last two decades this paper also outlines an alternative approach to development called growth through redistribution. It has been further substantiated by examining factual relations such as the relation between land distribution and its productivity, direction of public expenditure and taxation as found in the present day Nepalese economic conditions. The emphasis here has really been on outlining the liberal economic outlook that is necessary to realize the targets set by the state rather than defining each individual parameters of the policy package. So some issues for further research have also been setforth.

Prospect

The evolution of public economic outlook in countemporary Nepal can be phased out in three stages of 15 years period each. The emphasis on building up social overhead capital such as infrastructure during the first stage (1956-70) was switched over to more investment in productive sectors such as agriculture and small industry in the second stage (1971-85) and third stage (1986-2000) seeks not only to expedite the rate of economic growth but also envisages to tailor the entire production programmes for the fulfillment of basic needs of all people in general and those who are below the poverty line in particular.

The plan targets of BNP presented in Table 1 are almost a revolutionary expectations though these are already a more pragmatic and definitive expressions of what was once hot in the air – the Asian Standard.

Table 1

Growth and Redistribution Targets Envisaged in the Basic Needs Programme 1985-2000

Variables	Unit	Value

1. Growth of Income:
    Gross National Product (GNP)
    GNP per capita
2. Distribution of Income:
    Growth of PDI of bottom
    42.5% people
    Income Share of 42.5% people
	%/annum
	%/annum
	
	%/annum
	%/annum
		5.7
		3.3
		
		8.0
		23.0

PDI = Personal Disposable Income
Source: NPC (1989).

A sustained growth in GNP per capita at higher rate something as 3.3 percent a year and more so, on the income distribution side, the growth of personal disposable income of almost half of the poverty ridden population at the rate of 8 percent a year in order to double their share in national income from the present 12.5 percent to 23 percent in a short duration of 15 years has been achieved only in the economies bestowed with virtues such as egalitarian economic and social order, fast mobility of resources, progressive fiscal policy and higher rate of skill development. This underlines the need for logical coherence between the targets of economic progress and the strategy of accomplishing them.

Redistribution First

The nature of relationship between efficiency and equity., viz. complimentary, trade-off or neutral would depend on factors such as degree of inequality aversion, stage of technological and economic development, types of resource endowment of an economy and their combination in production, people's consumption and investment behaviour. More Equitable distribution

of wealth and greater access to means of production can lead to greater social coherence or democratic integration, better mobility, better equality of opportunity and peoples' stronger participation in the development process while reduced concentration of income, wealth or means of production among the landed gentry or family aristocracy circles at the upper end would cut down their conspicious consumption (and hence save resources for appropriate investment), release some factors of production for efficient utilization by those who need it most, leading to better input combination in the production process. More solvent economic order and appropriate fiscal policy would also help rise the entrepreneures from middle class in the management of small and medium industries. Finally, widely distributed equity shares can increase people's democratic participation in the management of public and private corporations.

Thus there is a logical basis for the postulation to hold that more equal distribution of interpersonal income would lead to higher rate of growth in the national income per capita. Conversely, wherever the distribution of income is highly unequal, the rate of economic growth will also be low.

In order to examine the effect of income distribution on economic growth growth, almost thirty-two different countries including Nepal were selected from five continents to represent all stages of economic growth and cultural, economic and political systems (Annex 3). The dependent variable is compound growth in GNP per capita per year largely during 1964 to 1984 period and the explanatory variables are percent distribution of GNP by quintele income groups.

The data on the distribution of the national income and the rate of growth in GNP per capita (Table 2) shows that the global rate of growth in production per capita is 2.53 percent per year; its standard deviation of 2.03 implies that the rate of economic growth on the average varied between 0.5 to 4.56 percent per year. Regarding the state of income distribution, the average share of poorest 20 percent people by country in national income is 5.4 percent which, on the average, ranges between 3.6 percent to 7.2 percent.

Viewed against this global perspective, the situation in Nepal with the GNP growth rate at 0.1 percent and income share of top ten percent at 46.5 percent is contrastingly out of normal bounds on both the scores; that is, *Nepalese economy is characterised by mini-min growth and maxi-max inequality.*

Table 2

Share of National Income by Income Classes and Economic Growth Rate

Income Classes	Mean	Standard Deviation
Bottom quintile (%)	5.44	1.85
Second quintile (%)	10.09	2.90
Third quintile (%)	14.84	2.59
Fourth quintile (%)	21.43	2.13
Fifth quintile (%)	48.42	8.21
Top ten percent	32.70	8.23
Economic growth (GNP/capita/year)	2.53	2.03

Source: Data from World Bank (1981-88)

Functional Relationship

Based on the conceptual relation outlined above, the question now is: to what extent the economic growth is explained by income distribution. The result of linear regression (cause and effect) analysis based on 29 countries has been summed-up in Table 3. The relationship postulated provides a satisfactory fit as around 40 percent variation in economic growth (i.e. the value of R^2) is explained by income distribution and the test of significance (i.e. the t-statistic) shows a degree of confidence well over 99 percent.

Table 3

Economic Growth and Income Effect on Economic Growth
(GNP/Capita/Year in %)

Income Share of People (%)	Initial Growth Level	Addition to Growth Rate	Elasticity
Lowest quintile	– 0.90	0.63	1.35
Fourth quintile	–10.27	0.60	5.82
Fifth quintile	10.26	–0.16	–3.06

Source: Data from world Bank (1981-88); see Annex 3.

The results show that the rate of economic growth is highly responsive with respect to changes in the income share of quintile groups as the coefficient of elasticity (showing percent change in income growth rate due to percent change in income distribution towards equity) is more than unity in all cases. The turning point regarding the effects of income distribution on economic growth depends on the income share between bottom 80 percent and top 20 percent people. If the top 20 percent people further increase their share in national income by one percent, the rate of economic growth would decrease by nearly 3 percent. On the other hand, the rate of economic growth will increase by as much as 5.8 percent if the income of fourth quintile people increases by one percent. If the percentage share in national income of lowest quintile increases by one percent point, it will add 0.63 in the rate of growth of GNP per capita. The negative sign of intercept implies that economic growth would not start at all unless the working population is provided with certain minimum income.

Policy Measures

We now look for those policy measures which can reduce the inequality in the distribution of income and, by the same token, increase the productivity and hence the rate of growth in Nepalese economy. In this light, the three fundamental areas set forth in this paper are land reform, public expenditure and taxation.

1.   Land Reform

Productivity of land and marketed surplus of agriculture still play a central role in the Nepalese economy. So one of the basic keys to boost-up economic activity in agriculture, trade and industry is to increase the productivity of land per labour unit substantially above his subsistence requirement. The issues of surplus creation and its appropriation in Nepalese agriculture has been dealt with separately (Thapa and Aryal, 1988).

The Gini-index of inequality in the distribution of land was not only as high as 0.64 in 1961/62 which is before the 'Land Reform Act 1964, but also has further increased to 0.69 after it, 1981/82 (Table 4). In this score, a report submitted to the twelveth session of the National Development Council says that land-ownership has not only helped towards centralization of the principal sources of income but also has unfavourable effects on production and productivity (NPC: 1989). But it is yet to be reflected in the concrete development programmes.

Table 4

Inequality in Landownership 1961-81

Time	Gini-index of Inequality
1. Before Land Reform, 1961	0.64
2. After Land Reform, 1981	0.69

Source: Thapa and Aryal (1988)

Land Use

Productivity of the present land distribution pattern can be accessed by examining the land use intensity on the whole and production per unit of land while growing a particular crop in question, both in relation to the farm size.

Table 5

Cropping Intensity and Farm Size

	Effect on Cropping Intensity	
Space and Time	Initial Level (%)	Changes due to Farm Size
1. Country – 1981/82	142.8	– 0.95
2. Tarai – 1983/85	160.3	– 3.25

Source: Data from CBS (1985) and DFAMS (1986); see Annex 4.

In Terai as the farm size increased by one hectare, the intensity of use of land decreased by about 3.3 percent points from the initial level of about 160.3 percent. This negative relationship between cropping intensity and farm size has presumably remained stable during the last fifteen years 1968 through 1981 to 1985 (Table 5 and Annex 4).

The macro implications of this micro-relation merits consideration. For example, it has been estimated in Annex 4 that the total loss of cropped areas in Terai alone due to negative relation between cropping intensity and large farm size is about 162 thousand hectares which at the productivity level of 1987/88 over there is tantamount to 224 thousand metric ton of wheat production foregone every year.

Productivity

Systematic data on the production of paddy, maize, wheat and potato by farm size classes are available from the Farm Management Studies of 1968/69, 1981/82 and 1983/85. These crops together account for nearly half of the agricultural output.

The grouped data available from these studies was subject to simple linear regression analysis to examine the relation between productivity and farm size. The results presented in Table 6 show that bulk of variation in yield, that is production per hectare, is explained by the farm size itself as the co-efficient of determination (R^2) is around 0.5 to 0.6 in most cases and around 0.9 in some cases (Annex 5).

Table 6

Productivity and Farm Size

	Effect on Productivity (kg/ha)	
Crops, Regions and Years	Initial Level	Increment With Farm Size
1. Paddy: Hills 1968/69-83/85	2891.0	– 645.5
Tarai 1981/82-83/85	1638.6	– 16.0
2. Maize: Hills and Mountain 1983/85	1274.1	– 122.5
3. Wheat: Kavre 1968/69	1040.7	– 290.3
4. Potato: Mountain 1983/85	617.7	– 209.5
5. Livestock: Hills 1983/85	872.5	– 155.7

Note: The returns to livestock are gross income in Rs. per Livestock Unit related to farm size.

Source: Data from Farm Management Studies; see Annex 5

The fall in paddy yield in Hills due to rise in farm size by one hectare averages out to 645 kg and, likewise in Tarai, the decrease in yield due to increase in farm size averages out to 16 kg per hectare. The higher decline in yield in hill as compared to Tarai is partly because of limited variability of farm size. Regarding maize in Mountain and Hill, the decline in yield roughly averages out to 122 kg per incremental hectare. And so on.

The national loss because of inverse productivity farm size relation should be quite big. The estimates in Annex 5 show that the paddy production missed because of large farm size in Tarai region is 83 thousand metric ton a year. Likewise, the maize production foregone in Mountain and Hills is as high as 128 thousand metric ton per year.

Summing up the relation of land use intensity and productivity with farm size it may be argued that the inverse relationship emerges because of lack of drive for efficient use of land among the rich peasantry and landlords.

In total, the production of wheat and paddy in Tarai and maize in Hills and Mountain foregone for maintaining the present land ownership system sums up to 435 thousand metric tons every year, or in the edible form 23 kg/capita/year. Considering 173 kg/capita/year produced in 1987/88, this will leave food production 21 percent short of the BNP target, 248 kg/capita/year. On the other hand, the cumulative loss of 23 kg/capita/year in six years time will be nearly equal to the total foodgrain production in a year.

It also implies that in our institutional and technological context at this juncture of history, redistribution of land to promote peasant farming around some optimum farm size can bring about better combination of factors of production such as land and labour and increase the production per farm well above the subsistence needs and, thus, can also increase the marketed surplus of agriculture without any substantial public investment in the first place. This can set the ball in motion which would keep rolling across the sectors of Nepalese economy such as agriculture, trade and industry.

2.   Liberal Public Expenditure on Social Services

Harrod-Domar model of economic growth which was developed to estimate the total capital required to reconstruct post World war II Europe under the marshall Plan shows that the rate of economic growth (g) is equal to the ratio of investment (I) to incremental capital required per unit of additional output (ICOR). Nepalese plan documents also use the same planning technique whose values under BNP are as follows:

$$g = I/ICOR$$

where, $g = 5.7\%/year$
ICOR = 4.2
I = 25% of GDP

That is economic growth could be increased by increasing the supply of savings (for investment) and/or by increasing the productivity of capital.

Independent estimates of capital required per additional unit of output (which is 4.2 under BNP) vary from 4.0 (Sharma, 1989) to 5.8 (Paudyal, 1988). These differences are attributable to definitions, coverage and estimation methods. However, we shall only deal with the sectoral and macro issues in perspective following from these studies.

Of the factors constraining economic growth in Nepal, inadequate savings and inadequate foreign exchange earnings are quite often quoted. The two-gap model developed in the World Bank in the context of promoting international capital flow and free trade was also tested in Nepal which shows that these gaps work jointly implying a hybrid saving-and-trade constraints (Paudyal: 1988). Further when these estimates were extended to incorporate the more ambitious BNP, the saving gap and the trade gap as percentage of GDP rose between 1985 to 2000 A.,D. from 7% to 11.7% and from 19% to 24% respectively. That is the trade gap alone may be nearly one-quarter of the GDP.

Table 7

Values of Hybrid Saving-and-Trade Constraints
to Economic Growth by 2000 A.D.
(Unit: % of GDP)

Particulars	Gap in 1985/86	Gap by 2000 A.D.	
		As per 7th plan Growth Target	As per BNP Growth Target
(1)	(2)	(3)	(4)
1. Saving Gap	7.3	7.3	10.9
2. Trade Gap	18.9	21.8	23.5

Source: Figures in column (4) have been re-estimated to compare the BNP scenario with the rest. All other estimates and the underlying macro-economic parameters are from Paudyal (1988).

Functional classification of public expenditure, shows that the Government expenditure during last decade had been growing by 9.5 percent annually and was NRs. 279 per capita per year during 1984/85-86/87 (Table 8). This is about 20 percent of the GDP.

Table 8

Public Expenditure Pattern in 1974/75 Prices

Sectors	Growth Rate 1974/75 -86/87	Rs. Capita	% of GDP	% of ex-penditure
		1984/85 – 86/87		
Administration	7.85	41	3.0	14.8
Social Services	8.79	62	4.5	22.3
Economic Services	8.76	132	9.7	47.1
Loan Repayment and Interest	21.o7	27	2.0	9.8
Miscellaneous	11.69	17	1.2	6.0
Total	9.52	279	20.4	100.0

Note: The growth rate in government expenditure is based on the three years average of 1974/75-76/77 and 1984/85-86/87.

Source: Data from MOF (1988).

Some other noteworthy features are that: (i) the expenses on external loan repayment and interest has been growing at a highest rate of 21 percent annually, (ii) administrative overhead is high, with Rs. 41 per capita, consuming as much as 3 percent of GDP, and (iii) the expenses on social services is below half of that on economic services.

Economic Services

Nearly half of the Government expenditures (47 percent) goes to economic services, thus according almost twice the greater emphasis on it as compared to other LDCs. However if its productivity is not high and does not rise faster, it may find it difficult to sustain the expenses on loan repayment and interest.

Big government budgets do not necessarily promote economic growth and provide stability. As seen above government alone consumes about one quintile of GDP while it could raise only half the revenue (to be discussed below). Thus one of the ways to cut expenditure would be to withdraw from those sectors where the capital productivity is high and quick, where the commodities produced are or can be private goods. As may be seen in Table

9, capital productivity in agriculture, manufacturing and commerce is very high where the private sector could easily be drawn. However, in the present terminology these have become a priority sector, most of the government enterprises are confined here and are producing commodities which have the intrinsic property of private goods. As an alternative, government could withdraw from such investment and partly cut down its expenses and partly increase its resources in building infrastructure and real estate. In the latter case, the services produced have the property of merit goods and social goods whose social and long run return is high.

Table 9

Sectorwise Contributions and ICOR

Sectors	Share in GDP (1976/77) %	ICOR (1976/77-80/81)
1. Agriculture	71.6	2.3
2. Manufacturing Industry	4.7	3.4
3. Services and Commerce	11.1	3.5
4. Infrastructure	4.7	8.7
5. Finance and Real Estate	7.9	9.8
All	100.0	4.0

Source: Sharma (1989).

A large part of expenses on economic services goes to finance public enterprises (PEs). But the productivity of PEs is low as about six units of capital are needed to produce one unit of output (i.e. ICOR = 5.9) and that their productivity is stagnant as the value added per labour (about Rs. 12 thousand) has not improved during the last dacade (IDS: 1988, p. 137).

One of the keys to increase productivity of investment is to increase peoples' participation in the management of public enterprises and to find out those measures which could redistribute income. For example a large part of the Government expenses are incurred as subsidies and other current transfers.

Two findings from the global experience of less developed countries are noteworthy in this regard. Firstly Ganth & Dutto (1968) concluded that

every monetary unit of activity by public corporations needed support from the general Government revenue to the tune of its one-third with another one-third coming from loans.

Secondly, Short (1983) showed that without the burden of public enterprise support (defined as Government subsidies, transfers and net lending to public enterprises, *less* dividends and interest payment to governments), the extent of deficit in the Government budget would reduce to nearly one-quarter.

This is certainly a serious consideration in the management of Nepalese economy where the efficiency of public corporations is low and the inflationary pressure of deficit budget is high. For example, the excess of government expenditure over its revenue was just 2.1 percent of GDP during the Third Plan (1965-69) but it shut-up to 9.6 percent of GDP during 1985–87 (Table 10).

Table 10

Revenue - Expenditure Gap in Government Budgets

Time	Excess of Expenditure over Revenue (% of GDP)
Third Plan (1965-69)	2.1
Fifth Plan (1975-79)	5.6
Seventh Plan (Average of 1985/86 ¥ 86/87)	9.6

The public or government enterprises not only absorb government revenue but also "crowd out" private sector in the utilizaton of savings. Alternatively, if the equity shares of the government,commercial concerns and industrial undertaking are sold to the broadest possible range of people including the employees, it would infuse such positive attributes as commitment for work because of some sense of ownership, democratic management because of sense of accountability towards public and greater drive for funnelling the widespread savings because of direct dividends or profit. Such adjustments would not only increase the productivity of capital but also increase investment, both of which go on to increase the rate of economic growth as given by the growth equation mentioned above. In short, we may optly call this approach as growth through redistribution of equity

shares of public enterprises. Secondly, this can also undercut monopoly structure and infuse greater competition which is better for improved production and pricing situation.

Social services

Public expenditure on social service such as social security, health, education, housing, drinking water and like have direct effect on the physical quality of life. In this case, we emphasize for an increased role of government.

The Government expenditure on social services is low (i.e. 4.5% of GDP) and is concentrated in particular areas, sub-sectors and clouts. The average expenditure on social services which is 22 percent of Government expenditure is quite low as compared to 36 percent and 57.2 percent of Government expenditure in non-oil developing countries and industrial countries respectively. Also we might note that the Government Expenditure on social security alone varies between over 2 percent of GDP in India and Malaysia to over 10% of GDP in Chile and Uruguay, that on education in LDCs in 1977 averaged to 6 percent of GDP (e.g. Jamaica 6.2 percent, Malaysia 6.6 percent, Zambia 5.8 percent), both the ratios are increasing also (see Prest, 1985). Suffice to say that social security is a must for self respecting societies.

Our emphasis on increased public investment on social services is also suported by the rate-of-return from education presented in Table 11.

Table 11

Rate-of-Return to Education (%)

Stages Economies	Private Rates			Social Rates		
	Primary	Secondary	Higher	Primary	Secondary	Higher
Developing	29	19	24	27	16	13
Intermediate	20	17	17	16	14	10
Advanced	NC	14	12	NC	10	9

NC = Not computable, due to lack of control group of illiterates.
Source: Psacharepoulos (1983).

The rates-of-return to education in developing countries exceed those in other countries, rates-of-return are greater for primary than for secondary or

higher education in developing countries and the social rates are lower than private rates; this gap further increases with the level of education. This indicated to the fact that a mass based skill oriented education in Nepal could pay a very high dividends through improved income distribution and enhanced productivity.

Finally, income or benefit distribution impact of government expenditure on different classes of people in Nepal are not known and, to our knowledge, have not been studied as yet. The fiscal system in India appears to be more progressive than ours. Of the central government expenditure in India during 1973-74, the non-poor (accounting nearly half of the population) gained as much as over five-sixths whereas the poor (i.e. the another half of the population) could gain less than one-sixth. It was also found that for every rupee which the poor pay as tax, they receive only about 80 paise in return (Gupta, 1977).

Another study on the distributional impact of central, state and union territory governments combined in India relating to 1975-76 showed the following: (1) the share of the poor was only about one-third of the non-poor; (2) it is the non-poor living in relatively better-off area who gain more from the food, export promotion, interest and investment subsidies; and (3) the fiscal operations of the government have worked in the direction of making the poor poorer in terms of private-consumption expenditure (Gupta: 1984).

The distributional impact of government expenditure in Nepal is probably more worse than suggested by above two studies. Efforts should, therefore, be made to find the exact situation in Nepal while, at the same time, an expenditure policy designed to benefit the poor could make them more productive.

3.   Progressive Taxation

Nepal figures very badly in the field of tax revenue mobilization. During 1960 to 1970, the ratio of tax revenue to GNP at market price in LDCs has increased from 15 percent to 16 percent and that in a typical developed country it has increased from 25 percent (or over 30 percent including social security) to 26 percent (or over 34 percent including social security (Tait et al 1979). But in case of Nepal the tax ratio is dwindling around 6 to 7 percent; most of it has increasingly come from indirect taxes, so wellknown for their regressive incidence and effects.

Table 12

Revenue Structure, 1974/75-86/87

Revenue Sources	Growth Rate (%/annum)	Rs/Capita (1986)	Revenue Ratio (% of GDP in 1986)
Tax	6.5	106	7.2
Direct Tax	2.9	19	1.2
Indirect Tax	7.5	87	6.0
Non-tax	10.5	32	3.2
Total	7.3	138	9.4

Source: Data from MOF (1988).

Before going further, let us examine the taxable capacity and tax effort in Nepal. The econometric techniques developed by Chelliah, Bahl and Tait (1971 and 1975) define taxable capacity on the basis of what one might expect a country with given characteristics to do in the taxation field such as the openness of the economy, income per head or sectoral composition of GNP (see Annex 6). The intensity of tax effort in a country is measured on the basis of the relationship between the predicted and actual ratio.

In these models, the degree of openness (approximated by share of mining in GNP), export ratio (excluding mineral exports) and per capita non-export income (in constant US $) increase the taxable effort whereas the share of agriculture of GNP decreases it. But it may be noted that in case of Nepal, this openness is underestimated because of two reasons: (i) mining and quarrying forms only a very small fraction of GNP (0.22%); and (ii) the official estimates of export ratio (4.5%) might have been underestimated because of open border and unrecorded flow of goods.

The results re-estimated corresponding to the value of variables during 1980/81-82/83 are as follows:

International parity of tax	=	11.93%
Actual tax ratio	=	7.20%
Index of Tax effort	=	$\frac{7.2}{11.93} \times 100 = 60.3$ percent

That is the tax effort is about 60 percent of taxable capacity in Nepal. This is an improved situation as compared to the tax effort of 37 percent during 1968-71 but still it is the lowest effort as ever in the world (Chelliah *et al* 1975). This situation further aggravates if we take cognizance of the fact that most of these tax revenues comes from indirect taxes (82.1%) whose very nature is regressive.

Regarding the state of direct and indirect taxes, a report submitted to the Twelveth Session of National Development Council, 1987, rightly says that the rate of indirect taxes is already too high with no more scope for their further increase. It is now necessary to move ahead towards direct taxes; this is appropriate from the point of social justice too (NPC: 1989).

The underlying institutional structure of the economy as presented in Table 13 also support the idea for direct taxes. For example, about 45 percent of the GDP comes from non-agricultural or roughly synonimously from industrial and allied sector and, as a proxy to its distribution, the Gini-index of inequality of distribution of household income in urban areas has increased from 0.50 to 0.85 between 1976/77-83/84 (NPC: 1983 and NRB: 1988). Likewise as the single most comprehensive proxy for the distribution of agricultural income, the household distribution of cultivated land is not only highly unequal but also increasing i.e. from 0.64 in 1961 to 0.69 in 1981. Thus an increase in direct taxes is not only necessary but also both efficient and equitable proposition.

Table 13

Distribution of Income in Urban Sector

Particulars	Unit	Value
1. Share of industry and allied sectors in GDP	%	45
2. Concentration of household income in city (i) 1976/77	Gini-index	0.50
(ii) 1983/84	Gini-index	0.85

Source: NPC (1983) and NRB (1988)

Like government expenditures, the distributional impact of taxes on different income classes of people in Nepal is not known. This is necessary

to establish who should pay how much, and in what form, to the fiscal authority.

A study on tax burden in India, an economy where tax system is presumably more progressive than ours, shows that under most progressive assumptions, the tax burden on the highest consumption expenditure group in the urban sector was of the order of 86.6 percent compared to 19.68 percent for such class in the rural sector whereas in the least progressive assumptions the tax burden in the top rung in urban and rural sectors was 71.4 percent and 22.02 percent of the consumption expenditure respectively (Gupta: 1984). It further says that the tax system has failed to adapt itself to the rural and urban differences.

In the context of Nepal, the rate of tax would be lower but the gap may be further widened if the tax as percent of consumption expenditure were successively expressed as a percent of actual income and a percent of potential income based on established production capacity. A systematic study on the distribution of benefits from and the contribution to the Nepalese fiscal system in relation to different income classes is indispensible for fulfilling basic needs programme. Tentatively, it is clear that there is room to increase direct taxes and thus to increase economic growth.

In view of this situation, we argue that efforts should be made to double the tax ratio. This will enhance the state's ability to step-up expenditure on infrastructure and on social services. Secondly most of these taxes should come from progressive direct taxes such as income tax, wealth tax, property tax and inheritance tax. The property tax has to be viewed also in the context of highly unequal distribution of land, wealth and income on one hand and the negative relationship of land use and productivity with the farm size on the other. This means that the progressive taxes of these sorts will do both increase the revenue productivity as also output growth.

Conclusion

This paper begins from a comparison of targets of economic progress during 1985-2000 against its performance during last two decades. The perspective plan in itself is a land mark in the evolution of development planning as it quantifies the rate of growth of income of poor people (8 percent annually) vis-a-vis the average GNP per capita (3.3 percent). But the stationary state of income level and growing inequality in its distribution in the past imply that it may not be feasible to accomplish these targets unless there is a change in the basic development strategy.

The inspiration of search for an alternative development strategy comes from the experience of about thirty countries during the last two decades. It was found that more equal (or less unequal) distribution of income has led to a higher rate of economic growth.

In case of Nepal, the basic components of strategy called growth through redistribution could be as follows: (i) Land reform: (ii) liberal public expenditure on social services and democratic management of economy; and (iii) progressive income, wealth and property taxes.

Some preliminary analysis of Farm Managment Survey data and Agricultural Census data suggest that both the use and productivity of land would grow with redistribution. Likewise, some key indicators of trends in public expenditure during last decade have been analysed in conjugation with the experience of many developing and developed countries in the field of public economics. It has been argued that government expenditure should be restructured by withdrawing expenditure from quick-and-high productive areas where the private sector could effectively take part, and by government decontrol over public enterprises. We have also argued for systematic studies on the distributional impact of public expenditure and revenue mobilisation system. It has been shown that equitable and higher level of public expenditure in social services is a must in a self-respecting society. Finally, attention has been drawn to the low tax efforts in Nepal from the international standard. It has been proposed that we need to double our tax effort. Here emphasis has been on progressive direct taxes such as income, wealth property and inheritance taxes. These taxes could not only increase revenue productivity but also promote economic growth.

The targets of economic progress set forth are revolutionary in view of our past record, modest in view of the present state of quality of life and economically feasible given the will to adopt requisite policy strategy: that is land reform, displacement of government by private sector in quick-and-high capital productive areas, privatization of public enterprises producing private and merit goods, increased government expenditure on infrastructure building and social services, progressive taxation and sincere efforts to estimate the distributional impacts of fiscal operations. The present paper only presents the bare elements of a comprehensive strategy. It only indicates at the broad trend. Otherwise various econometric relations need to be updated and reinvestigated with greater rigour. This would only substantiate the present approach and make it more operational.

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ANNEX 1

A NOTE ON CORRELATION ANALYSIS

The correlation or regression analysis helps to quantify the cause and effect relation present in the data. A simple linear relation given below has been estimated here.

$$y = a + bx + u$$

where,

x = Dependent variable
x = Explanatory variable
a = Value of 'y' when 'x' is zero
b = Change in 'y'due to unit change in 'x'
u = Random error showing deviations from the predicted line.

Using this function, the relation between the annual rate of growth in gross national product per capita and the distribution of national income (in percent) among quintile income groups has been examined (Annex 3). Similarly, the degree of association between the cropping intensity or farm productivity on one hand and the farm size on the other has also been analysed (Annex 4 and 5).The same linear relation has been used to project the food grain production and the incidence of poverty (Annex 2).

ANNEX 2

POVERTY AND FOOD PRODUCTION

1. Incidence of Poverty

The Basic Needs Income (BNI) has been defined as the level of income per capita whose 65 percent, if spent to purchase food, would provide 2340 calories/day/capita (c/d/c) in Mountain/Hill or 2140 c/d/c in Terai, or 2250 c/d/c in country; the rest of income would be used to meet other necessities (NPC:1989). Thus the BNI is synonymous with the absolute poverty level income.

The absolute poverty level food energy requirement prescribed by the Nutrition Expert Group of the Indian Council of Medical Research for the rural and urban sectors (Datta:1981)has been averaged here by applying Nepalese rural-urban population weights of seventies in order to facilitate comparison.

The Nepalese norms of daily calories requirements are about 7.6 percent below that recommended for India (approximately 2420) and about 9.8 percent less than that recommended for the average condition of Uttar Pradesh and Himanchal Pradesh (approx.2470 calories).

The BNI required to meet the daily food energy requirement fixed by the National Planning Commission of Nepal has been estimated to be Rs.160.8/capita/month for Mountain and Hill and Rs.125. 64/c/m for the Terai. Corresponding to these BNI, the incidence of poverty in the Mountains has been reported to be 44.1 percent of population while that in Hills is 50 percent and in Terai is 34.5 percent of population (NRB:1988)

The cost of living in Mountain is higher than that in Hill, so the BNI for Mountain was re-estimated by using the above mentioned Rastra Bank data. These are retail prices of agricultural commodities (Table A- III), food consumption pattern in rural Nepal (Table G-VII) and in urban Nepal (Table G - VIII) and the distribution of household monthly income by decile groups (Table F- XV) .The average foodgrain price in Mountain was found 23 percent higher than that in Hill. Correspondingly, the BNI for Mountain was reworked out to be Rs.197.8/capita/month.

The incidence of poverty in Mountain corresponding to the revised

estimate of BNI is 55.83 percent.

Regional population weights were projected on the basis of 1971-81 population growth rates as shown by Population Census. Thus the incidence of poverty in Nepal in 1983/84 averaged out to be 43.5 percent of population. It was 36.2 percent in 1976/77.

Also note that the all-India incidence of poverty was 51.5 percent in 1972/73 and 48.4 percent in 1979/80 (GOI:1981).

The comparative Nepalese and Indian data on food energy requirement, incidence of poverty and the pattern of income distribution (Annex3) imply that the incidence of poverty in Nepal is more serious than reported.

2. Trends in Food Production

Future scenario of edible food grain production per capita (FGP/c) in kg/capita/ year against the time trend in years (T) was based on the past data of 1964/65 to 1987/88. It assumes a linear relation as follows:

$$(FGP/c) = 198.8 - 1.77 \ T \ (1964/65)$$
$$FGP/c \ in \ year \ 2000 \ A.D. = kg/c \ /year$$

Likewise, the incidence of poverty (IP) as percent of people below poverty line in the population was also projected based on the data from two major national surveys conducted in 1976/77 and in 1983/84 by the Planning Commission (NPC:1983) and Rastra Bank (NRB:1988) respectively. It also assumes a linear relation.

$$IP = 36.2 + 1.04 \ T \ (1976/77)$$
$$IP \ in \ the \ year \ 2000 A.D. = 62\% \ of \ the \ population.$$

Recall that linear trend projections remain more or less valid as long as the structure of the economy does not change, more so in the short run. Secondly what is more important here is the general direction of change, not the exact numbers.

ANNEX 3

DATA ON INCOME DISTRIBUTION AND ECONOMIC GROWTH, 1964-85

The countries considered for analysing the relationship between economic growth and income distribution has been listed below. Economic growth is measured in terms of annual rate of change in the gross national inocme (GNP) per capita. Income distribution has been expressed as percentage share in the GNP by quintile income groups in ascending or descending order.

Table 3.1

Economic Growth Rate and Income Distribution by Countries

Countries	Growth in GNP/Capita (% annum)	Distribution of GNP (%)			
		Bottom 20% People	Lower 80% People	Top Quintile People	Top 10% People
1. Nepal	0.1	4.6	40.8	59.2	46.5
2. India	1.7	7.0	50.6	49.4	33.6
3. Sri Lanka	2.9	5.8	50.2	49.8	34.7
4. Thailand	4.0	5.6	50.2	49.8	34.1
5. Peru	0.2	5.1	39.0	61.0	42.9
6. Philippines	2.3	5.2	47.5	52.5	37.0
7. Zambia	1.6	3.4	38.9	61.1	46.4
8. Turkey	2.6	3.5	43.3	56.5	40.7
9. Korean Rep.	6.6	5.7	54.7	45.3	27.5
10. Kenya	1.9	2.6	39.6	60.4	45.8
11. Yugoslavia	4.1	6.6	61.3	38.7	22.9
12. Japan	4.7	8.7	62.5	37.5	22.4
13. Indonesia	4.8	6.6	50.6	49.4	34.0
14. Arjentina	0.2	4.4	49.7	50.3	35.2
15. German Fed. Rep.	2.7	7.9	59.5	39.5	24.0
16. Sweden	1.8	7.4	52.3	47.7	28.1
17. Costa Rica	1.4	3.3	45.2	54.8	39.5
18. Tanzania	0.9	5.8	49.6	50.4	35.6
19. Egypt	3.1	5.8	49.6	50.4	35.6
20. Italy	2.6	6.2	56.1	43.9	28.1
21. Hungary	5.8	6.9	64.2	35.8	20.5
22. Hong Kong	6.1	5.4	57.0	47.0	31.3
23. Isreal	2.5	6.0	59.1	39.9	22.6
24. Netherland	3.1	8.3	63.8	36.2	21.5
25. Norway	3.3	6.0	61.8	38.2	22.8
26. Cote d' Ivori	0.9	2.4	38.6	61.4	43.7
27. Venezuela	0.5	3.0	46.0	54.0	35.7
28. Belgium	3.8	7.9	64.0	36.0	21.5
29. Sudan	-0.3	4.0	50.2	49.8	36.4
30. China	4.8	9.0*			
31. Syria	4.0	7.8*			
32. Rumania	8.2	14.4*			

* Not available; therefore predicted by using the equation given in the text.

Source: world Bank (1981-88).

The annual growth rate of GNP/C was regressed against income distribution. The results have been summarised in Table 3.2.

Table 3.2

Relationship between Economic Growth and Income Distribution

Income Groups	Intercept	Slope Co-efficient	Elasticity Co-efficient	t-statistics	Co-efficient of Determination (R^2)
Lowest quintile	-0.90	0.62	1.35	3.63	0.33
Fourth quintile	-10.27	0.60	5.82	4.18	0.39
Bottom four quintile	-5.44	0.15	3.07	2.68	0.39
Fifth quintile	10.26	-0.16	-3.06	4.32	0.42
Top 10% people	7.83	-0.16	-2.08	4.51	0.43

ANNEX 4

WHEAT PRODUCTION FOREGONE DUE TO DECREASE IN CROPPING INTENSITY ASSOCIATED WITH INCREASE IN FARM SIZE

The data on cropping intensity available from the latest farm management study (FMS) and agricultural census has been analysed by using simple linear regression. Its results are presented in Table 4.1 below:

Table 4.1

Relationship between Cropping Intesity and Farm Size

Regions/Districts & Year		Intercept (CI in $)	Slope (% CI/ha)	t-stati stics	Co-efficient of Determi nation (R^2)	Degrees of Freedom
Country	1981/82	142.8	-0.95	1.134	0.20	6
Hill: Kavre	1968/69	140.5	-42.50	3.020	0.65	5
Syanga	1968/69	123.3	-2.69	0.580	0.06	6
Tarai:						
Rupandehi	1968/69	142.5	-1.65	3.587	0.69	6
Kailali	1968/69	164.2	-2.50	5.834	0.85	6
Bardiya	1968/69	170.0	-2.72	2.211	0.81	6
Tarai total	1983/85	160.25	-3.25	2.588	0.87	1

Source: MOFA (1971)
           DFAMS (1986)
           CBS (1985)

Note: The degrees of freedom is small as the regression is based on the data grouped by farm size classes. Nevertheless the t-values are high and the size of R^2 is big both of which provide sufficient statistical validity in case of small sample size.

At the present level of technology, the cropping intensity (i.e. the ratio of cropped area to cultivated area) in Tarai is predicted to be 160.25 percent; when the farm size increases by one hectare, the predicted decrease in cropping intensity is 3.25 percent points. That is,

$$CI = 160.25 - 3.25 \times FS$$

Where,

CI = Cropping intensity in percent
FS = Farm size in hectare.

The decrease in cropping intensity is mainly due to fallow land in the winter-season; among others, it could be used for the production of wheat. The decrease in cropping intensity is particularly serious in large farms.

In the Nepalese context, a farm size holding greater than 3.0 ha may be regarded as large farm; their average size of holding in Tarai is 6.15 ha (or 9.22 bigha) which is five and half times more than the national average (see Table 4.2).

Table 4.2

Farm Size and Distribution of Cultivated Landholdings, 1981

Region/Size of Holdings	Number of Households	Percentage of Total Households	Total Cultivated Hectares	Percentage of Total Cultivated Land	Average Cultivated Hectares Per Holding
Nepal					
less than 0.5 ha	1,107,902	50.5	161,987	6.6	0.15
0.5-1.0 ha	335,420	16.2	264,522	10.8	0.74
1.0-3.0 ha	535,964	24.4	868,201	35.3	1.62
More than 3.0 ha	194,623	8.9	1,160,628	47.3	5.96
Total	2,193,909	100.0	2,455,338	100.0	1.12
Tarai					
Less than 0.5 ha	434,210	45.6	38,705	2.8	0.09
0.5-1.0 ha	123,250	13.0	91,367	6.5	0.74
1.0-3.0 ha	262,336	27.6	463,521	33.1	1.77
More than 3.0 ha	131,312	13.8	807,833	57.6	6.15
Total	951,108	100.0	1,401,426	100.0	1.47
Hills and Mountains					
Less than 0.5 ha	673,692	54.2	123,282	11.7	0.18
0.5-1.9 ha	232,170	18.7	172,155	16.4	0.75
1.0-3.0 ha	273,628	22.0	404,680	38.4	1.48
More than 3.0 ha	63,311	5.1	352,795	33.5	5.57
Total	1,242801	100.0	1,053,912	100.0	0.85

Source: CBS, 1985.

The inverse relationship between cropping intensity and farm size, on one hand, and the highly unequal distribution of cultivated area on the other can be used to estimate the missed food production opportunities; in this regard, the estimation of wheat production foregone given below merits consideration:

1. Cropping intensity predicted for large farms
    = 160.25 - 3.25 × 6.15 = 140.26 percent
2. Predicted cropped area if there were no large farms
    = 6.15 × 1.603 = 9.86 ha
3. Predicted cropped area per large farms
    = 6.15 × 1.402 = 8.62 ha
4. Loss in cropped area due to large size holding
    a) Loss per holding = 9.86 - 8.62 = 1.24 ha
    b) Loss per hectare $= \dfrac{1.24}{6.15} = 0.20$ ha.
5. Total loss of cropped area due to farm size greater than 3 ha (or averaging 6.15 ha) in Tarai (from Table 4.2).

    802 thousand ha × 0.20 = 162 Th. ha.
6. Wheat production foregone
    The average wheat productivity in Tarai in 1987/88 was 1.38 MT/ha.

    Now if we assume,

    WPF   = Wheat production foregone
    WPF   = wheat area foregone
    WY   = wheat yield per hectare

    We have,

    WPF   = WAF × WY
          = 162 × 1.38 = 224 thousand MT.

That is the wheat production foregone in Tarai alone is 224 thousand MT per year.

ANNEX 5

PRODUCTION OF PADDY AND MAIZE FOREGONE DUE TO DECREASE IN PRODUCTIVITY ASSOCIATED WITH INCREASE IN FARM SIZE

Paddy production Foregone in Tarai

The grouped data on productivity and farm size available from various farm managment studies has been analysed by using simple linear regression as given in Annex - 1. Some of the results have been presented in Table 5.1 below:

Table 5.1

Relation between Productivity and Farm Size

Crops Regions and Years		Intercept (kg)	Slope (kg/ha)	t-statistics	Co-efficient of Determination (R^2)	Degrees of Freedom
Paddy:						
Kavre	1968/69	2465,9	-945.2	1.63	0.53	5
Dhading	1968/69	3765.3	-762.9	2.30	0.56	6
Syangja	1968/69	2653.7	-446.2	12.75	0.97	5
Tanahun	1983/85	2678.9	-427.8	1.80	0.77	1
Rupandehi	1983/85	1113.4	-11.4	2.66	0.54	6
Kailali	1983/85	1595.2	-22.8	1.04	0.18	6
Parsa	1981/82	1713.3	-20.8	1.75	0.48	3
Dhanusha	1981/82	2132.7	-8.8	1.66	0.48	3
Maize:						
Kavre	1968/69	2823.6	-795.6	2.02	0.45	5
Dhading	1968/69	1654.1	-386.2	2.41	0.49	6
Syanga	1968/69	2302.7	-374.8	2.24	0.69	5
Mountain	1983/85	1354.8	-286.1	1.73	0.75	1
Hill	1983/85	1266.1	-106.3	31.70	0.99	1
Bardiya	1968/69	973.3	-10.9	0.87	0.13	6
Wheat:						
Kavre	1968/69	1040.7	-290.3	1.73	0.38	5
Potato:						
Mountain	1983/85	617.7	-209.5	4.35	0.95	1
Livestock:						
Cattle, Hill	1983/85	659.9	-89.6	2.71	0.88	1
Buffalo, Hill "		1086.0	-222.2	2.07	0.80	1

Source: CBS (1985)
           MOFA (1971)
           DFAMS (1986)

.Gross income in rupees per Livestock Unit related to farm size.

The productivity of paddy based on the farm managment studies (FMS) in Rupandehi, Kailali, Parsa and Dhanusha districts during the first half of eighties out of 1638.6 kg per hactare; while predicted rate of decrease in productivity due to increase in the farm size averaged at 15.96 kg per hectare (see the intercept and slope in Table 5.1). These are simple averages. This and the information on the land distribution (Table 4.2) are helpful to perform the following estimation of missed production potential of food:

1. Predicted level of productivity in large farms is given by,
   1638.6 - 15.96 × 6.15 = 1540.4 kg/ha
   That is, 6 percent loss in yield.

2. During 1987/88 paddy was grown in 1050 thousand hectare in Tarai where the average yield was 2.26 MT/ha. So, the total production of paddy foregone in Tarai due to negative productivity farm size relation and the present land ownership pattern, is given below.

   If we assume,

PPF	= Paddy production foregone
PAT	= Paddy area in Tarai
ALF	= Area under large farms (proportion)
PY	= Paddy yield
PDL	= Productivity decline in large farms (proportion).

   We have,

   $$
   \begin{aligned}
   PPF &= PAT \times ALF \times PY \times PDL \\
   &= 1050 \times 0.58 \times 2.26 \times 0.06 \\
   &= 83 \text{ thousand MT}
   \end{aligned}
   $$

   That is the paddy production missed in Tarai alone is 83 thousand MT a year.

Maize Production Foregone in Hills and Mountains

1. Maize is the most important crop in Hills and Mountains. There the total area under maize in 1987/88 was 575 thousand hectare: 9 percent was in mountains and the rest 91 percent was in hill sub-region. The maize yield at present level of technology predicted for these regions from the farm management study data (Table 5.1) can be averaged using these area weights as follows:

a) Initial yield level (kg/ha):
    $1354.8 \times 0.09 + 1266.1 \times 0.91 = 1274.1$ kg/ha
b) Rate of decline in yield associatd with farm size (kg/ha):
    $- 286.1 \times 0.09 - 106.3 \times 0.91 = -122.5$ kg/ha

2. Level of yield in Large Farms
    The average size of holding in large farms (greater than 3 ha) in Hills and Mountains is 5.57 ha. So the predicted level of yield in the large farms is given by,
    $1274.1 - 122.5 \times 5.57 = 591.8$ kg/ha
    That is, 46 percent loss in yield in the large farms.

3. Maize production Foregone
    The average yield of maize in mountain and hill region during 1987/88 as shown by production estimates was 1.42 MT/ha.
    Now if we assume,
    MPF   = Maize production foregone
    MAHM   = Maize area in hills and mountains
    ALF   = Area under large farms (proportion)
    MY   = Maize yield
    PDL   = Productivity decline in large farms (proportion)

    We have,
    MPF $= MAH \times ALF \times MY \times PDL$
           $= 575 \times 0.34 \times 1.42 \times 0.46$
           $= 128$ Th. MT.
    That is the maize production foregone in hills and mountains alone turn out to be 128 Th.MT every year.

ANNEX 6

INTERNATIONAL PARITY OF TAX EFFORT IN NEPAL

The regression equation developed by Bahl and Chelliah from the data of 1969-71 in order to predict the international parity of tax ratios is as follows:

$$T/Y = 15.66 + 0.35 \, NY - 0.08 \, AY, \quad R^2 = 0.442$$
$$\quad (11.07) \quad (4.44) \quad (2.37)$$

Where,

T/Y	= tax ratio
N/Y	= share of mining in GNP,
AY	= share of agriculture in GNP.

As an alternative, the following equation was also estimated.

$$T/Y = 11.47 + 0.001 \, (Yp - Xp) + 0.44 \, Ny + 0.05 \, Xy$$
$$\quad (7.84) \quad (0.38) \quad (5.45) \quad (1.17)$$

$$R2 = 0.376$$

Where,

(Yp - Xp)	= per capita non-export income in US$
Xy	= export ratio excluding mineral exports.

Regarding the magnitude of these explanatory variables in Nepal, the trinium average during 1980/81-81/83 turned out to be as follows: Share of mining and quarrying in GNP 0.22 percent, share of agriculture in GNP 55.67 percent, national income per capita US$ 146.5, the per capita non-export income US$ 139.1 and finally the export ratio excluding minerals was 4.5 percent.

Despite the cautions of underestimation mentioned in the text above, the tax ratio for Nepal predicted by first equation is 11.2 percent of GNP and that by the second equation is 11.93 percent of GNP. This is against the actual tax ratio of 7.2 percent during 1980/81-82/83 average. With these results, we are in a position to evaluate the international parity of tax effort in Nepal