NEPALESE HEALTH POLICIES: SOME OBSERVATIONS FROM AN ECONOMIC DEVELOPMENT PERSPECTIVE

By:

Shiva Raj Adhikari[*], Nephil Matangi Maskay, Ph.D.[**] and Bishnu Prasad Sharma[***]

Abstract

There is a strong positive relationship between health of the people and sustained economic development of a nation. Given its importance for sustained economic development, the Nepalese health policies are examined through the perspective of the various development plans which suggests that enunciation of clear health objectives have only recently occurred starting from the fifth development plan. However, this contrasts with the empirical observations which suggest that Nepalese public health expenditure over the last decade has had limited direct impact on the health sector outcomes; this observation for Nepal is based on analysis from an input-output model, examination of extension of health facility and through results of an indicative regression. The paper ends with some policy recommendations to Nepalese health policies, based on the empirical analysis, to facilitate the nation's health to play its important role in economic development.

[*] Lecturer, Department of Economics, Patan Multiple Campus, as well as Nursing Campus both at Tribhuvan University, NEPAL.

[**] Deputy Director, Research Department, Nepal Rastra Bank, Baluwatar, Kathmandu, NEPAL. The author is also associated with the Claremont Institute of Economic Policy Studies, USA and the Department of Economics, Patan Multiple Campus, Tribhuvan University, NEPAL.

[***] Lecturer, Department of Economics, Patan Multiple Campus, Tribhuvan University, NEPAL.

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1. Introduction

Development economists agree that the objective of economic development is more than simply the growth of a nation's income: it should also encompass a nation's social development (World Bank (1997), Hsiao (2000) etc.). This is because both aspects are like two wings of a bird which are needed in equal strength to achieve flight (i.e. sustained economic development). In this regard, the health sector, an integral component for social development, has been receiving less priority in many nations especially from a macroeconomic aspect. This may be because the inter-linkages between the health sector and economic development have not been adequately understood (Hsiao, 2000). For this reason, there is a growing necessity for understanding the inter-linkages for achieving sustained economic development. It is suggested, and elaborated in the next section below, that appropriate policy for the health sector contributes towards a healthy population which is essential for sustainable economic development. However, many countries have not realized the importance of the health sector which can be seen in the *ad hoc* allocation of government budgets for this sector, with limited considerations for development implications. This is a tragedy as the effects of government policies on the health sector have many far reaching consequences on a nation's economic development.[1]

With this in mind, the following article was written to focus on Nepal, a predominantly agrarian economy in the preliminary stages of economic development[2] with the following objectives: firstly, discuss the inter-relationship between the nation's health and its economic development; secondly, to examine if policy for the Nepalese health sector has been given due emphasis; thirdly, to evaluate the effectiveness of Nepalese health policies using available statistical data; and lastly, to conclude and put forward some policy recommendations which fall out of the preceding analysis. It is hoped that this article will contribute to prioritizing this sector and assist in effective policy formulation for the attainment of sustainable economic development in Nepal.

The article proceeds as follows: the next section discusses the relationship between the health sector and economic development; the third section reviews Nepalese health policies as reflected in the various development plans; the fourth section puts forth some empirical observations of Nepalese health policy while the last section concludes by putting forward some policy recommendations.

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[1] For instance, government spending on social programs affects health care, nutrition, sanitation etc., similarly tax policies affect consumption of tobacco, alcohol and health insurance while exchange rate polices affect the prices of imported vaccines and medicines

[2] Nepal has a low per capita income of US $220 (WDR 2002) and 42 per cent population living below poverty line (NPC, 1997). It should be noted that the recent Mid-term Review of the Ninth Plan has stated that the poverty level has been reduced to 38 percent.

2. Health and Economic Development: An Interrelationship

The nation's health and economic development are highly interrelated. Because of this, it is confusing to identify which is the cause and which is the effect. However, the general view is that good health results from economic growth and development (i.e. that economic growth and development, through impact on per capita income, is the determinant of good health). However, there is an alternative view which states that economic growth and development results from good health (i.e. greater labor productivity and regularity at work results in greater economic growth and development). While it is difficult to differentiate between the cause and effect, it is certain that good health is essential for economic growth and sustained economic development.

It is purported that good health contributes to sustainable economic development since it is one of the basic forces which drive the economy. These forces in the economy can be broadly categorized as forces which raise or depress income.[3] Good health helps raise income since it maintains and promotes labor's efficiency and productivity. This is especially true in a developing, agricultural country, at the inception of the industrialization process.[4] In other words, good health is a human capital which enables full utilization of all passive factors of production.

The other side of the coin is that poor health will impede economic growth through cost of illness, which reduce labor productivity and lead to irregularity at work. These costs comprise of medical expenses related to diagnosis and treatment, opportunity cost of income, the pain and suffering borne by the patient and other members of the household due to illness etc. The higher the short-run cost, the higher will be the burden on the household. All these factors contribute to reduction in income. However, the poor health of the nation's population will also have long-term consequences. The fall in income affects the aggregate level of

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[3] Harvey Leibenstein (1957) developed this concept using the terminology of both income depressing and income raising forces. Income depressing forces reduce per capita income while income-raising forces raise the per capita income. If income raising forces are weaker (powerful) than income depressing forces, per capita income will decline (rise) leading to low level equilibrium trap. The authors has not, however, clearly defined which are income depressing forces and which are income raising forces. It is put forward that income raising forces are factors like education, infrastructures, technological innovations and inventions etc. while factors like ignorance, poor health are income depressing forces.

[4] If there is labor surplus in the economy with the marginal productivity of labor almost equals zero, improvement in health maintains existing per capita income and prevents income from falling. In case of labor scarce economy where the marginal productivity of labor is positive, good health, through greater productivity leads and promotes per capita income or economic growth. However, in both cases, whether the marginal productivity of labor is positive or zero, bad health is a depressing factor which cause per capita income to decline.

saving and consequently, capital formation. Similarly, reduction in labor supply and fall in labor productivity at the household level will, eventually, cause the nation's labor productivity and labor supply to decline. This, in fact, affects economic growth and development of the nation in the long-term.

There is another aspect, through the channel of poverty and the "poverty spiral" which is important for economic development. This is because the nature of the nation's population may magnify the cost of a disease. Thus if the economic cost of illness is high, this will likely push the non-poor into the poor category and the poor may fall to hard-core or marginal poor category which will result in a drain on economic growth and development. Thus, poor health is a major generator of poverty and impedes economic growth and development in the long run.[5] This poverty and health inter-linkage for a nation creates a quagmire of poor health within the already existing vicious circle of poverty. As a result, poor health becomes a risk factor to poverty and an impediment to economic growth and development.[6]

Fortunately, good health can contribute to economic growth and development as well as to poverty alleviation. This occurs through appropriate and effective health policy which should put forward a conducive environment for the health sector to play its catalytic role in the nation's economic development. Thus, having an appropriate health policy for the health sector contributes significantly to a healthy population and achieving the goal of sustainable economic development.

3. Review of Nepalese Health Policies as Reflected in the Various Development Plans

The previous section has established the important link between a nation's health and economic development. In this regard, the necessity for appropriate health policy which positively affects the health sector and through it the health of the nation, has been highlighted. For Nepal, it is thus essential to determine if health policies are given due

[5] This is especially true in developing countries which are characterized by epidemics of infectious diseases that are related to contaminated food and water supplies, inadequate sewage disposal and poor housing conditions etc.; these are the most common features of poor (Halmon and Pickett, 1984).

[6] This is especially true in Nepal with the poor having low access due to prohibitive costs of diagnosis and treatment as well as proximity of health services. Thus, it has been argued that the objective of the health policy of the government is to provide health services to the poor at affordable cost. In Nepal, the proportion of absolute poor are high in rural areas compared to urban areas and in the western and far-western region compared to central and eastern regions and in the hills compared to the Terai (NPC/UNDP, 1992). In contrast, the access to health services perceived by the households on the basis of place of residence is high in urban areas compared to rural areas, in the eastern and central part compared to the western and far western part and the hills compared to the Terai (NSAC, 1998, P.64).

emphasis. This section examines the Nepalese health policies, as reflected in Nepal's development plans, to determine if due emphasis is put forth in the plan objectives (since those guide the priorities for the annual budgets'); these are given in the table below:

Table 1: A Matrix of the Nepalese Health Objectives/Policies

Development Plans	Period	Health Objective/Programs
First Plan	1956 - 1961	The first plan had no specific health sector objective (simply called "objective from now on). However programs were aimed at smooth running of medical administration and quantitative expansion of health facilities outside Kathmandu.
Second Plan[7]	1963-1965	The second plan had no specific objectives. However programs implemented were aimed at control of malaria in the Terai, eradication of small-pox, control of TB, leprosy etc.; this was in addition to training of health manpower and extending health services in regions where none existed.
Third Plan	1965-1970	The third plan had no specific objectives. However programs existed which attempted to control malaria in the Terai, eradicate small-pox, control TB, leprosy etc.; this was in addition to training of health manpower and extending health services.
Fourth Plan	1970-1975	The fourth plan had no specific objectives. However there was continuation of the programs undertaken in the second and third plan along with programs to both improve and extend curative health services as well as to meet the increasing demand for middle level manpower and technicians in the health service
Fifth Plan	1975-1980	The primary health objective of the fifth plan was to raise life expectancy through reduction in death rates, maintain regional balance in the provision of health services and control population growth[8]
Sixth Plan	1980-1985	The primary health objective of the sixth plan incorporated similar health objectives of the fifth plan, including for the reduction of people suffering malnutrition and creation of a healthy environment through promotion of clean drinking water and sanitation
Seventh Plan	1985-1990	The primary health objective of the seventh plan was to promote physical, mental and community health of general public and to prepare healthy manpower, to provide maximum number of people with basic health services and to

[7] There was a one year plan holiday between the first and the second development plan due to political instability.
[8] This was the first phase of the 15 year strategy (1975 - 1990) in the health sector.

		reduce the death rate, increase longevity through promotional, preventive and curative health services, population control and extending maternity and child services
Eighth Plan[9]	1992-1997	The primary health objective of the eighth plan was to increase rural access to basic primary health and doctor's service to rural population, effective implementation of population control through mother child health and family planning service and development of specialized services within the country
Ninth Plan[10]	1997-2002	The primary health objective of the ninth plan was to ensure preventive, promotional, curative and rehabilitating health and family planning services as a part of human right to bring about a perceivable improvement in health status; ensure health manpower to labor market and uplift their capacity for income generation and alleviation of poverty

Source: His Majesty's Government, National Planning Commission, various issues of development plans.

Overall, it can be stated that there has been gradual improvements in the enunciation of the objectives and programs for health policies during the course of the five decades of planning exercise in Nepal. Further, it is clear from the above table that it had commenced only after the fifth development plan which also saw the initiation of a 15 year strategy (i.e. 1975 - 1990) in the health sector. It should also be mentioned first, that there is an indication from the "Concept Paper of PRSP/Tenth Plan" that health objectives will continue to be important and second, that Nepal is presently in the second long term health plan (i.e. 1997 - 2017) whose goal is to give a long-term vision for the country's health sector.

However, it should be noted that all the plans undertaken so far have laid greater emphasis on quantitative aspects (i.e. extension of facilities) and have overlooked the qualitative aspects (i.e. efficiency, equity and evaluation). Thus in the government sector, there were physical expansions in terms of buildings for sub-health posts, health posts, primary health centers and hospitals. However, neither adequate manpower nor provisions of drugs were ensured in the health institutions. This can also be seen in a recent study where 59 percent of households have the perception that they have less than adequate access to health service (NSAC,1998).[11] Thus the performance of government on the health sector was evaluated in terms of growth in health expenditures or inputs rather than outputs measured in

[9] There was a plan holiday for two years due to change in the country's political system.
[10] This was the first phase of the 20 year strategy (1997 - 2017) in the health sector.
[11] These realities were also reflected in the frequently appearing newspaper headings on Nepali national dailies (such as *Kantipur, The Kathmandu Post* etc.) stating that health post being run by peons, districts hospitals without a single doctor and broken down x-ray machines un-repaired for months etc.

terms of improved health indices. In contrast to this, the effectiveness of health sector policies will necessarily be evaluated using a different criteria as elaborated in the next section.

4. Three empirical observations of recent Nepalese health policies

The previous section suggests that only recent development plans have highlighted the importance of the health sector. However, how effective have those health policies been in affecting the health sector? While the full period cannot be tested due to absence of data, this section applies various techniques for analyzing the effectiveness of recent outcomes of the Nepalese health sector. Two aspects should be noted, first that the application of these different techniques are constrained by the availability and the quality of data and second, that time series data related to factors determining health status (i.e. such as income distribution, female literacy, knowledge, attitude and practices related to health and cost of illness) are difficult, if not impossible, to attain. Because of these factors, simple tools, e.g. input-output model, extension of health facilities and indicative regression analysis, have been used to evaluate the impact of recent public spending on the Nepalese health sector; these are:

4.1 Input-Output Model for the Health Sector

This analysis is similar to that of the production function analysis which assumes the existence of a technical relationship between inputs and outputs in the health sector.[12] In the health sector, inputs are both public and private expenditures however for developing countries this is mainly limited to public expenditures (used by a number of authors such as Hsiao (2000)). The ultimate outcomes in the health sector is the increase in the life expectancy. However, in the context of developing countries, indicators like infant mortality rate, child mortality rate, crude birth rate, crude death rate etc. can also be included (Stiglitz, 1999). On the basis of available data, input-output matrix for health sector of Nepal has been presented below for the period 1989/90 - 2000/2001.

[12] An example of this is that an increase in input leads to increase in output by some determined factor where inputs are considered independent variables and outputs are taken to be dependent variable.

		Public Expenditure on Health		Per capita RGDP	**OUTPUTS**				
	Fiscal Year	As % of total Budget	As % of GDP	At 1984/85 price (Rs.)	Infant mortality Rate	Child Mortality Rate	Crude Birth Rate	Crude Death Rate	Life Expect ancy Rate
	1989/90	4.6	0.93	3102.3	128	197	41.6	16.9	53.5
I	1990/91	3.84	0.88	3230.7	107	197	39.6	14.8	54.0
N	1991/92	3.62	0.84	3308.5	107	197	39.6	14.85	54.0
P	1992/93	3.4	0.64	3329.2	102	165	39.6	14.85	54.02
U	1993/94	4.85	1.08	3501.8	102	165	39.6	14.0	54.0
T	1994/95	4.91	1.21	3531.2	102	165	37.5	14.0	54.0
S	1995/96	5.99	1.44	3642.9	102	165	37.5	13.8	54.0
	1996/97	6.19	1.42	3727.1	79	118	37.8	11.9	54.5
	1997/98	5.70	1.37	3766.8	74.7	118	35.4	11.5	56.1
	1998/99	5.69	1.34	3829.9	69.42	111.72	34.54	10.7	57.52
	1999/00	6.09	0.80	3987.6	66.78	108.78	34.1	10.3	58.25
	2000/01	4.52	0.56	4164.3	64.14	105.44	33.58	9.96	58.95

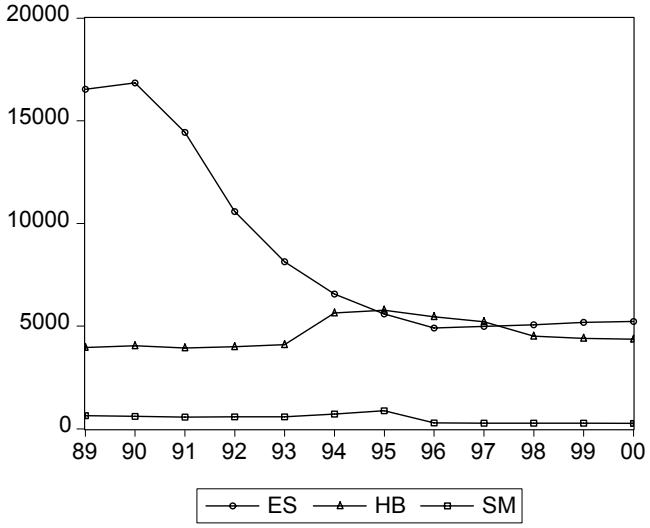
Note: The following are the raw data for Infant Mortality Rate (per 1000 live births), Child Mortality Rate (per 1000 live births), Crude Birth Rate (per 1000 live births) and Crude Death Rate (per 1000 live births) respectively.

Source: Economic Survey, 2001 and various issues of Nepalese budget speeches

The average public expenditures on health (i.e. the supply side of the health sector) as a percentage of both the total budget and of GDP is 4.95% and 1.04% respectively, which, overtime, is within a broad band of 20% and 30% respectively. Further, Nepalese health sector expenditures as a percentage of GDP compare favorably to some South Asian countries: Bangladesh-1.6, India-0.6, Pakistan-0.9 and Sri Lanka-1.4 (WDR, 2000/2001). However, it should be noted that according to the strategy of *Health for All by the Year 2000* guideline prepared by WHO, at least five percent of the GNP should be spent on health sector with the World Bank warning that concern is warranted if public expenditure is less than 2 percent of GDP in the health sector (World Bank, 1997). In this regard, the public health expenditure for Nepal over the above period have been consistently less than the 2% level of GDP.

4.2 Extension of Health Facility

Another perspective examines whether a stable expenditure on health exists through the extension of health facilities as represented graphically below[13]:



Note: ES = Extension of Services; HB = Population per hospital bed; SM = supply of skilled manpower.

The figures suggest that there has been a sharp increase in Extension of Services (ES) in terms of population per service (hospitals, health centers, health posts, Ayurvedic service centers, sub-health posts and primary health centers) since 1990 which has stabilized after 1995 leading to the decline of population per service from 16532 in 1990 to 4915 in 1997 although showing a slight rise since then. The population per hospital bed (HB) has been relatively stable fluctuating between 3947 to 5780 persons during this decade. The supply of skilled manpower (SM) has shown gradual improvement with 648 persons in 1990 to 266 persons per skilled manpower in 2000. These graphs suggest however that, after 1996 ES, HB and SM have had only marginal improvement (with ES even deteriorating).

[13] Figures are presented in the first appendix.

4.3 An Indicative Regression Analysis

A final perspective for viewing the relationship is to examine the results of a regression. For this, the following conceptual equations for the "health production function", similar to Filmer and Pritchett (1999), is estimated[14]:

$$(1)\ \ln(M_i) = \beta_1 \ln\left(GDP_i / N_i\right) + \beta_2 \ln\left(H_i / GDP_i\right) + \beta_3 X_i + \varepsilon$$

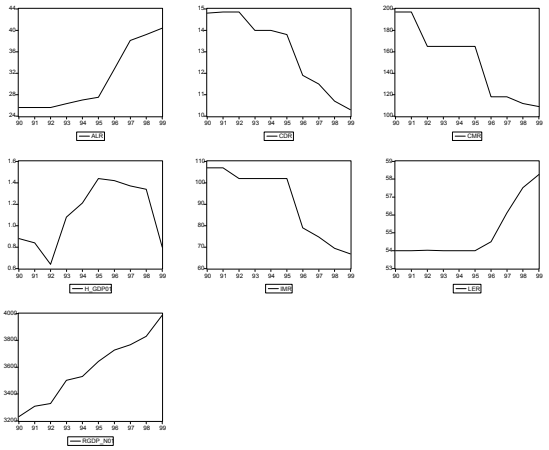
This equation relates the dependent variable, "*M*", which is taken to be either that of child death rate, child morality rate, infant mortality rate and life expectancy rate, to the log of mean per capita income and the log of the share of public health as a fraction of GDP. "*X*" are independent variables which control for a variety of other socio-economic factors. There are many such variable (discussed in Filmer and Pritchett (1999)) however, for Nepal, only the variable for adult literacy rate for the period 1990 - 1999 was found available.[15] The summarized statistics for all the raw variables[16] are given below:

	ALR	CDR	CMR	HGDP	IMR	LER	RGDPN
Mean	30.81000	13.07000	151.0500	1.102000	91.19000	55.03900	3585.570
Median	27.25000	13.90000	165.0000	1.145000	102.0000	54.01000	3587.050
Maximum	40.40000	14.85000	197.0000	1.440000	107.0000	58.25000	3987.600
Minimum	25.60000	10.30000	108.7800	0.640000	66.78000	54.00000	3230.700
Std. Dev.	6.206708	1.786244	34.18808	0.294120	16.52484	1.643779	248.5260

Note: The following are the raw data of Adult Literacy Rate of percentage of population above six years, Crude Death Rate (per 1000 live births), Child Mortality Rate (per 1000 live births), Health Budget to GDP, Infant Mortality Rate (per 1000 live births), Life Expectancy Rate and Per Capita Real GDP shown by ALR, CDR, CMR, HGDP, IMR, LER and RGDPN respectively.

Examining the summarized statistics from the times series above, does not suggest there to be any outliers in the data.

[14] The functional form of the equation, i.e. double logs, is taken as given thus other functional forms are not examined in detail.
[15] The time series for Adult Literacy is given in the second appendix.
[16] The definitions and sources of the variable time series are given in the third appendix.



This conclusion is further emphasized by examining the graph of the individual time series given graphically above.[17]

The next step is to test the individual time series[18] for unit roots. A caveat is that with only ten data points, the empirical tests have low power. Running tests for unit root, using the Augmented Dickey-Fuller test, on the log levels of the above time series suggests that all variables cannot reject the null of a unit root at greater than 20% level of confidence. Tests are once again run after having taken the log difference each of the variables. Two things occur: first, the ADF statistics, in general, increase in confidence however, the variables are still unable to reject the null of no unit root at the normal levels of confidence (i.e. at the 5% and 10% level). This is understandable given the limited data set where the degrees of freedom have decreased by one after having taken the log differences. However, the test statistics are generally able to reject the null in at least the 15%, if not the 20%, level of confidence. Given this caveat of limited degrees of freedom, a "looser" acceptance of the

[17] The time series for LER, however, suggests a structural break may have occurred in 1995. However, the limited degrees of freedom for the whole series, not speaking of the series being broken down for a structural break test, suggest that the formal test may for a structural break may not be possible. Because of this, the acceptable graphs of the remaining time series suggest that this single time series will not have significant effects on the regression results.

[18] It is important to determine if the variables have a unit root since its presence would lead to spurious results. Consider the general relationship :

(1) $y_t = \alpha y_{t-1} + \varepsilon_t$

If $|\alpha| < 1$ then y is I(0), i.e. stationary, but if $\alpha = 1$ then y is I(1), i.e. non stationary

α. The Dickey Fuller (DF) test is utilized, from Dickey and Fuller (1979) against the null of a unit root (i.e. $H_0 : \alpha = 1$). Critical values are given in Davidson and Mackinnon (1993) with the lag length arbitrarily set at one.

variables is allowed and the time series are taken to be acceptable. Thus, the following four equations are run whose results are:

	DLIMR	**DLCMR**	**DLCDR**	**DLLER**
Variable	Coefficient	Coefficient	Coefficient	Coefficient
C	0.001145	-0.033817	0.014811	0.005274
	(0.9817)	(0.7306)	(0.6325)	(0.5784)
DLHGDP	0.057394	0.084618	-0.000247	-0.010700
	(0.5062)	(0.6117)	(0.9962)	(0.5064)
DLRGDPN	-1.209048	5.127415	-9.164298	-0.577256
	(0.9276)	(0.8437)	(0.2898)	(0.8167)
DLALR	-0.975741	-0.905928	-0.570182	0.092310
	(0.0354)	(0.2314)	(0.0411)	(0.2065)
R-squared	0.638418	0.328517	0.620783	0.008418
Adjusted R-squared	0.421469	-0.074373	0.393253	0.011558
F-statistic	2.942709	0.815401	2.728354	1.009658
Prob(F-statistic)	0.137753	0.538091	0.153818	0.461383

Note: The following are the log differences of Adult Literacy Rate, Crude Death Rate, Child Mortality Rate, Health Budget to GDP, Infant Mortality Rate, Life Expectancy Rate and Per Capita Real GDP shown by DLALR, DLCDR, DLCMR, DLHGDP, DLIMR, DLLER and DLRGDPN respectively.

In general, the above equations are not very strong. The two equations of DLCMR and DLLER can be rejected outright since they are unable to reject the joint hypothesis of all the equation coefficients being zero. The first and third equations of DLIMR and DLCDR can be accepted at the 15% level of confidence by this criteria.[19] Additional indicative evidence is that the explanatory power (i.e. adjusted R-squared) of the accepted equation, being 42% and 39% against the eliminated equation of -7% and 1% respectively.

4.4 Analysis

The analysis is based on the evidences put forward by the three given empirical observations. Prior to interpreting the results, a note of caution is necessary. The limited data set, low degree of freedom and resulting poor power of the test suggest that these result should, at best, be indicative only especially given the "looser" regression results. Because of this, caution is called for in the interpretation.

[19] The third equation has a borderline p-value of 0.153818 however it is acceptable given the reasons elaborated above.

Having said this, a striking feature seems to be the contradiction in evidence for the effectiveness of public health expenditures. On the one hand, evidence from the Input-Output Model of the Health Sector of a relatively constant ratio of public health expenditure in the overall budget (also reflected in the approximately constant extension of health facility especially after 1995) with improving health statistics implies that the overall efficiency of public expenditure is increasing. However, the indicative results from the regression analysis suggests that public health expenditure have not been effective for improving particular health indicators.[20] This contradiction can be resolved as the input only reflect public sector input however the examined output is of an aggregate nature. Specifically, private sector input has not been accounted for. For example, Rana (2001, p.5) suggests that the government public expenditures in 1995/96 met only 13 percent of the cost (or Rs. 83 of the total estimated cost of Rs. 525 per person) being made in the Nepalese health sector.[21] This fact is also shown in NSAC (1998) who find that the households provide largest share of the health expenditure funds (76 percent out of total health expenditures) while the government (10 percent), development partners and donors etc. (14 percent) accounted for much smaller levels (NSAC,1998). These evidences should be taken in perspective since there have been many important developments since their time. In other words, this suggests that the improving statistics cannot be solely attributed to the contribution of the public sector as private sector relative to the public sector have been omitted.[22] Thus, all evidences point in the same direction.

There are also two interesting observations from the indicative regression analysis. First, "Adult literacy" is the only variable which has an effect seen in two of the four cases at the 5% confidence level for reducing infant mortality and child death rate respectively. This suggests that increasing adult literacy will have a greater effect for decreasing respective factors than public health sector expenditure of the public sector.[23] The second observation is that "Per capita income" is not significant, in all the cases. This is interesting since it contradicts results from other countries which suggest that increasing per capita income leads

[20] This conclusion is consistent with Filmer and Pritchett (1999) who looked at a number of regions throughout the world and reach a similar conclusion. Also, Bajracharya and Maskay (1998) reach the same conclusion for Nepalese agricultural policy. However, Gupta, Verhoeven and Tiongson (2001), using a special technique called "ecological inference" to disaggregate the data, found that public health spending is most favorable to the poor.

[21] Rana (2001, p.5) goes further to state that although the government is only responsible for a small portion of total health expenditures, it remains the major, if at times only, provider of health services for the poor especially those located in the remote areas of the country.

[22] While this suggests the possibility of omitted variables to capture the liberalization period of Nepal, the limited degrees of freedom did not allow for concrete test of structural (or "floating" structural) breaks.

[23] This conclusion is also consistent with a number of publications such as Filmer and Pritchett (1999) and World Bank (1997). However, the above mentioned citations differed from the study as focus occurred for female literacy however during the study adult literacy (i.e. of male and female) was used.

to a decrease in the respective health sector figures. This observation is also paradoxical however it may be attributed to the present low (i.e. subsistence) level of economic development in Nepal where only after reaching a particular (i.e. critical) level of income does this relationship hold.[24] Thus, it can be concluded in economic terms, that health variables are not sensitive to changes in per capita income unless a, as yet undetermined threshold, is passed.

5. Summary and Conclusion

There is a strong relationship between the health of a nation and its economic development where a nation's health is described as a force for either raising or depressing national income. Given its importance for sustained economic development, the Nepalese health policies are examined through the perspective of the various development plans. The examination suggests that enunciation of clear health objectives only recently occurred with the fifth development plan. While there has been clear enunciation of health objectives since the fifth development plan, examination of available statistical data suggests that Nepalese public health expenditure over the last decade has had limited direct impact on the health sector outcomes; this observation for Nepal is based on analysis from an input-output model, examination of extension of health facility and through results of an indicative regression.
The empirical results, therefore, suggest a number of broad policy recommendations which are put forward as:

- First, to reassess the prioritization of the health sector policies in formulating Nepal's economic policies. This is important since it has been shown that good health is essential for the nation's economic development, however in Nepal there has presently been limited allocation in the health sector which has average approximately 1.04% of GDP during the period 1989/90 to 2000/2001. A first step in this direction would therefore be to increase the amount of health sector budget to breach the 2% critical threshold (as put forward by the World Bank in their 1997 report) as a positive signal in this regard.[25]

- Second, to heighten the effective utilization of allocated public health sector expenditures. It has been shown in the three empirical observations above that public health expenditures have had limited effect. It is felt that the mentioned objective can be achieved, on one hand, by having health sector expenditures formulated and prioritized

[24] This conclusion is similar to Bajracharya and Maskay (1998) who find that agricultural production in Nepal is not sensitive to market prices.

[25] A corollary to this is the acceptance of the broadness of the health sector to affect and to be affected which is seen in the indicative regression results, where health indicators are responsive to education. Therefore, an increase in educational expenditures will complement the health sector outcomes.

from a health economics perspective.[26] This would increase the appropriate allocation and efficient utilization of the limited health sector resources. Likewise, this objective can also be achieved through the creation of performance measures to assist in health sector evaluation. This thus highlights the necessity for a National Health Accounting System to facilitate data collection, analysis (and comparability with other countries) leading importantly to accurate evaluation.

- Lastly to understand and harness the private sector in contributing to positive outcomes of the health sector (i.e. a nation's health) and thus to overall economic development in general. This is especially important given the increasing role played by the private sector in Nepal. Further, with greater liberalization of health services envisaged with Nepal's entry into the World Trade Organization, it is not only important to understand this inter-relationship but essential to put forward appropriate rules and regulations to heighten both competition and provide quality[27] in this sector for ensuring the nation's health.[28]

These three broad recommendations, which fall out of the analysis of the empirical observations, are consistent with numerous publications such as the recent Medium-Term Expenditure Plan on the health sector. As such, the analysis and conclusions put forward in the paper are not earth shattering. Rather, the plethora of publications with similar conclusions suggest that there is a need to move from simple recommendation to concrete implementation. Thus, it is felt that with sincere operationalization of the above mentioned three broad recommendations, these will be a first step for attaining the ultimate goal of Nepal's sustainable economic development.

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[26] This may simply be doing cost-benefit, cost-effectiveness, cost-utility etc. analysis using various tools such as the concept of the disability adjusted life year.

[27] Interestingly, the midterm review of the ninth five year plan has reported that the quality of health care provided by the private as well as by NGOs, cannot be assured.

[28] Some suggestions in this regard are put forward in Rana (2001).

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Appendix 1: Extension of Health Facilities

Fiscal year	Extension of services (population per service)	Hospital beds (population per bed)	Skilled manpower (population per skilled manpower)
89/90	16532	3963	648
90/91	16840	4046	612
91/92	14434	3947	577
92/93	10580	4000	591
93/94	8137	4097	593
94/95	6568	5644	727
95/96	5591	5780	882
96/97	4915	5464	290
97/98	4990	5214	283
98/99	5076	4514	285
99/00	5181	4413	281
00/01	5236	4365	266

Note: 1. Extension of service include hospitals, health centers, health posts, ayurvedic service centers, sub-health posts and primary health centers; 2. Skilled manpower include doctors, nurses, Kabiraj, Baidyas, health assistants, health workers, village level health workers, trained sudeni and Female health volunteers

Source: Economic Survey 2001, p. 82

Appendix 2: Time series of adult literacy rate

Year	Adult literacy rates
1989	-
1990	25.6
1991	25.6
1992	25.6
1993	26.3
1994	27.0
1995	27.5
1996	32.8*
1997	38.1
1998	39.2
1999	40.4
2000	-

Note: "-" data not available; "*" denotes simple interpolation of data (i.e. average of FY 1995 and 1997) Source: Human Development Report 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000 and 2001, UNDP; Other social variables may be percentage of population with access to safe drinking water, access to sanitation, Gini coefficient (income inequality), but data on these variables are not available.

Appendix 3: Data Sources

The data sources for the following time series are:

- Adult Literacy Rate (LALR) : Economic Survey 2001
- Child Death Rate (CDR) : Economic Survey 2001
- Child Mortality Rate (CMR) : Economic Survey 2001
- Health Budget to GDP (HGDP) : Economic Survey 2001 and various Budget Speeches
- Infant Mortality Rate (IMR) : Economic Survey 2001
- Life Expectancy Rate (LER) : Economic Survey 2001
- Per Capita Real GDP (RGDP) : Economic Survey 2001 and Statistical Pocket Book 1998, CBS

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