

Fiscal Doldrums and Public Health Spending in the Fragile North Eastern States of India

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Abstract

Fiscal space outlined the budgetary space that enables the states to manage the resource requirements, also guaranteeing fiscal sustainability. Majority of the north eastern states are the small category states, barring Assam. The states are featured with poor economic and revenue base and overall fiscal doldrums which make the analysis interesting to establish how these poor economic and deteriorating fiscal structures which often push the states for expansionary fiscal policy. Such poor economic and revenue base of the states affect public health disbursement. Therefore, we attempt to explore the connection between the macroeconomic parameters and public health spending in the north eastern states using panel data analysis. The results obtained do not seem to be encouraging, rather dispiriting. The results clearly represented the poor growth of macroeconomic parameters, therefore incapable for a radical effect on public health expenditure. The study found Fiscal capacity and tax revenue positively affects the share of health expenditure to GSDP. The effect was significant, however negligible. Alternative parameters such as per capita GSDP, state's own revenue and non-tax revenue negatively affect the share of health expenditure to GSDP that contradicts the expectation of achieving an increment publically health disbursement with better fiscal space.

Key words: Fiscal capacity, Public health expenditure, tax revenue, non-tax revenue.

1. Introduction

Achieving platinum independence and still being a developing country is the irony of the Indian economy. Self- sustainability has taken an extended drive with frequent financial constraints. Several committees were enforced bearing on adhere to fiscal potency of the country for healthy purpose. India housing the highest number of deprived populous is additionally in the course of high deficiencies within the sub- national level in terms of fiscal and administrative capability. The government's financial gain capacity and expenditure plays a crucial role for the expansion of growth and development. Health, for instance, an important sector whose advantages are diversified; government's expenditure on health would translate to improved human development. However, to what level may the states administer the health expenses through their own capacity?

Fiscal space outlined the budgetary space that enables the states to manage the resource requirements, also guaranteeing fiscal sustainability. In this case, the Fiscal Responsibility and Budget Management (FRBM) 2003 have been enforced to watch the fiscal aspects of the states with principal objective to regulate fiscal deficits of the states. Given the varied expenditure requirements and resource availability, the states are entitled to redefine their priorities among the various sectors. However, the FRBM has urged the states to employ the front loading and back loading strategies. On meeting the

fiscal targets, the social sector had to pay the worth with a discount in expenditures. This reduction has affected the vulnerable sections [Vyas (1993); Panchamukhi (2000); Duggal (1997); Ahluwalia (2002); Dev & Mooij (2002); McCarten (2003); Joshi (2006); Ghuman & Mehta (2009); Aggarwal (2011); Jena (2012); Mukherjee (2019)].

Considering health expenditure, the trend depicts an inauspicious scenario. On the worldwide comparison, public health spending within the OECD accounts to 12.36per cent of GDP, SAARC with 4.37per cent and ASEAN with 4.72per cent (Rahman, Khanam & Rahman 2018). India in particular, has had numerous recommendations to extend public health expenditure, however remained stationary or rather creeping. The Planning Commission has therefore noted: “The total expenditure on Health Care in India, taking public, private and household out-of-pocket expenditure amounted to around 4.1per cent of GDP in 2008-09 (NHA 2009), which is broadly comparable to other developing countries, at the similar level of per capita income. The targets of accelerating public health expenditure of India to 3per cent GSDP by 2016-17 is clearly unproductive. Income elasticity of healthcare spending was less than 1per cent. A discount of central funds was observed from 2014-15 as the Centre responds to fiscal pressure concerning the fiscal management (Hemming 2020). To add, the 13th Finance Commission has advocated non-special category states to achieve the fiscal deficit targets by 2011-12.

The Macroeconomic policies certainly affect the functions of the economy and also the states by readjusting the macroeconomic instruments. Therefore, the consequences on public structure of public spending pattern are therefore subjected through the operating macroeconomic instruments such as gross state domestic product (GSDP), own tax revenue, grants and debt ratio. Behera& Dash (2019) has examined the impact of macro-fiscal factors such as tax revenue, direct tax, indirect tax, GDP on public health expenditure and Infant Mortality Rate. The regression has found a positive and statistically significant relationship between tax revenue and direct tax on public health expenditure. Interestingly, the study finds significant results between low- income and middle-income countries. Indirect tax revenue has a negative and statistically significant impact on public health expenditure in the low-income countries. Tax revenues and direct taxes have a positive and statistically significant impact on public health expenditure in middle income countries. Given the instabilities in the macroeconomic instruments, Tandon & Cashin (2010) has found India is additionally prone to fiscal crisis that usually leads to low fiscal capability and medium institutional capacity to combat with contemporary crisis. High dependency on external monetary assistance of most countries often causes issues in diversifying their expenditures given the restricted fiscal space. India and Indonesia above all has continuing problems towards health sector due to lack of budgetary allocation, prioritizing health sector and huge dependency on central grants for health.

India has returned an extended approach in terms of states revenue and spending management. However, provided the FRBM fiscal rules, fiscal rigidity of the states government’s resources has least ability to contribute to the recurrent budget. Current lack of finance and low resource base has adverse effects to inefficacious healthcare services. The distinction in state’s capabilities ends up in enormous disparities among the states of India. Consider the north eastern states, whereby majority are the special category states, the states are featured with exceptionally low economic status, deteriorating fiscal performances, fiscal dependency, increasing deficit burden and fiscal imbalances. The states therefore receive higher privileges of central transfers and are given bound fiscal relaxations [Vishnu (2021);

Dash (2011); Dash & Rath (2016); Dash & Rath (2016); Dash & Tiwari (2011); Dutta & Dutta (2014); Hassan & Mishra (2018); Sasmal & Sasmal (2020); Mohan (2003)]. Given this background, the study aims to explore the extend of deficiency within the state's capacity to finance health expenses.

2. Significance of the study

The NES covers eight states: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. From the outset, the NES are categorised at the small category states (excluding Assam) according to the Sample Registration System 2016. Based on the level of categorization, the majority of the NES are featured with inconsistent or poor economic features (low revenue generating capacity, constant tax and non-tax revenue, poor economic and social infrastructure and others) which are regarded as the cause of the state's backwardness. Therefore, through the literature review, we believe that at any point of time, a disequilibrium in the fiscal space of the states, the direct impact would be on the total public spending and revenue in general, and social spending in particular. Health being an important social component that would improve the overall productivity of the states; therefore, the possibility of achievements would be by attaining sufficient health spending. However, keeping in mind the influence of fiscal space on the budgetary allocation and the economic aspects of the north eastern states; we intend to study the effects of fiscal space on the share of public health spending to GSDP. In this regard, we believe that our study will provide a strong foundation in augmenting the well-suited policies for efficient management of public spending and overall economic welfare of north eastern states.

3. Literature review

Development in the Indian economy has not remained smooth given the various fiscal instabilities. On beginning with the New Economic Policy 1991, the policy consisted of broad objectives: liberalization, privatization and globalization which certainly brought positive development to the economy. However, Panchamukhi (2000) found that central's share on social sectors have been increasing at a much greater proportion relative to the state's proportion. Health spending in the 1st plan was 3.3per cent, which then experienced a continual decline until the 7th plan. The study period thus shows that budgetary deficits and social expenditures are positively correlated. However, with the economic reform that prioritized at reducing fiscal deficit, the social sector is vastly affected. Hence, post economic reforms, the social sector has received certain drawbacks with the advent of achieving a balanced fiscal deficit such as experiencing a cut in non-plan expenditure, non-filling up if vacant posts and delaying social programmes.

Social inequality and poverty do not vanish with increasing economic growth. Vyas (1993) has pointed out that stabilization programme has diverted the state's focus towards maintaining the budgetary deficits and high focus on economic activities. Curtailment of public social expenditure and reduction of subsidies have a huge impact on the poor and the vulnerable sections. Although the policy aimed at economic growth and assumed for a trickle-down effect of the overall growth; this has not paid positive results. Duggal (2007) finds a declining attention on healthcare spending post- structural adjustment programme and the new economic policy 1991. There was a sharp increase in the public healthcare mid 1980s with corresponding increase in healthcare facilities and infrastructure, however, this incentive and effort of the government was short lived. Post- structural adjustment period, private

healthcare has developed exceedingly and has dominated the healthcare market in India. Disinvestments by the state governments are supposed to release resources for a larger expansion of the sectors, however, little attention was paid towards the social sectors (health and education) which has directly impact the poorer sections of the society, widening of the rural-urban gap and ultimately poverty has taken sharp rise with every passing year.

Duggal (1997) has taken a broad view on the healthcare spending in India pertaining to the period pre and post new economic policies (liberalization, globalization and privatization). There has been a sharp reduction on social sector as the states resort to meeting the structural adjustment policies which increases public borrowings and a direct impact on the high interest payments. Private healthcare has increased to a large extent as states slows down its own healthcare expenditure but paved the way for private healthcare through provision of subsidies, soft loans, duty and tax exemptions. Central transfers have increased but the impact of the increased transfers will not be realized until the state's own expenditure increases alongside. Sheth (2014) finds that post liberalization, the state governments have hidden behind the curtain of heavy fiscal rules and enforcement which has caused a decline in their health expenditure and healthcare provision. The reduction in healthcare expenditure was seen post Structural Adjustment policy. There is limited accountability in public healthcare along with inadequacy. Public health sector has dropped down completely in various forms: provision of subsidies and lack of state-funded healthcare facilities; which has led to huge health market segmentation and the private sector has stood as the highest healthcare provider.

Following the New Economic Policy 1991, the country has gone through a difficult fiscal phase. There was fluctuation in gross fiscal deficits throughout the period 1996-97 wherein fiscal deficits were seen to increase to 5.91 per cent of GDP in 2000. This has therefore necessitated an urgent watch for fiscal discipline. The FRBM was then implemented in 2003 with short- and long-term goals for maintenance of fiscal discipline in the country. Fiscal Responsibility and Budget Management Act (FRBM) 2003 aimed for fiscal sustainability while reducing the excess public debts of the states and the Centre. Undoubtedly, there was a significant improvement by the states until 2008-09 and this was possible due to the optimistic and modernization of tax administration. However, post 2008-09, the economic slowdown has given rise to unwanted fiscal deficits that were not keeping pace with the objective of the FRBM (Jena 2012; De 2012). At the cost of meeting the FRBM rules the states have seen to employ both front loading and back loading strategies post FRBM Act 2003. Front loading strategies were seen when states have increased their own tax revenue post FRBM to meet the required expenditures in the states. On the other hand, several states have seen to employ back loading strategies to a great extent such that there was a huge cut down of expenditure and the social expenditure face the highest brunt (Mukherjee 2019).

On witnessing the impact of the new economic policy and the FRBM act on the public spending pattern, it is understood that the effects are channelized through different instruments. As analysed by Rahman (2008) on the 14 major states of India, per capita income and literacy rate are the main determinants of public health spending. The income elasticity has been 0.686, 0.769 and 0.475 which depicts that public healthcare is not a luxury for Indian states but rather a necessity. On the contrary, other factors such as population above 60 years of age, population per primary healthcare and population per doctor have low impact on public health spending and they are rather insignificant. Behera & Dash (2017) has found a long run relationship between real per capita health expenditure and

real per capita GSDP and real per capita tax revenue. Through the FMOLS and DOLS, per capita GSDP and Per capita tax revenue positively affects per capita health expenditure in the long run. The VECM granger causality shows a unidirectional relationship running from PCGSDP to PCPHE; however, tax revenue positively affects growth of per capita health expenditure in the short as well as long run. However, the reverse causality from PCPHE to PCGSDP and tax revenue was not found.

Gupta & Mondal (2014) has used certain indicators GDP growth, inflation, tax revenue to GDP, fiscal deficit ratio to GDP, Debt to GDP and health expenditure to GDP and found that India as a whole have not flourished significantly towards reprioritizing health sector. Given that India has not performed well in the majority of the macroeconomic parameters, this has caused an adverse effect on health spending. Hemming (2020) finds income elasticity of healthcare spending was less than 1 per cent. NRHM has increased public health spending as the central funds have increased more on the health sector. However, the central funds have decrease from 2014-15 as the Centre responds to fiscal pressure regarding the fiscal management. Despite the improvements in tax structure and disinvestment since 1991, the country has rather suffered continuously. Tax structure has rather limit the revenue generation capacity due to the high informal sector and disinvestments have rather preferred highly economic sectors. Behera & Dash (2018) has found a positive short run impact of state's own revenue capacity, central fiscal transfer and fiscal balance on the growth of health expenditure. Tax revenue, non-tax revenue, indirect tax, central transfer, domestic debt and per capita GSDP have a long run positive effect on the growth of PHE. Behera, Mohanty & Dash (2020) finds instruments such as economic growth, revenue growth and fiscal transfers are found to have positive and significant effects on PHE but strangely fiscal deficit is not found to affect PHE. Economic growth has more impact on PHE in all the states but revenue growth has more impact on GCS. Fiscal transfers play a huge role in SCS due to the deficiency of revenue growth in the states. Nonetheless, public health expenditure in India is symmetrical which thus implies the pro-cyclical nature.

In the case of Andhra Pradesh, Lakshmi, Panda & Rout (2012) finds that certain factors (per capita income and literacy rate) determined a significant increase in public health expenditure. Other factors such as fiscal deficits have no significant impact on the public health expenditure as health expenditure does not increase proportionately with increase in total expenditure. Also, the government is not responsive to demand- related factors such as IMR as the government is bound to incur high expenditures on non-developmental components. In the case of Orissa, Mohanty (2015) has asserted a great need for government's provision on healthcare. The period from 1991-92 to 1998-99 showed a decline in the proportion of health expenditure to total budget expenditure from 4.6per cent to 1.23per cent. The proportion of health expenditure to social expenditure has decreased from 22.56per cent to 22per cent in 2002-03. An insignificant increase in the proportion of health expenditure to GSDP was found from 0.85 to 1.4per cent. A huge gap was observed between revenue and capital expenditure wherein the capital expenditure has reduced to less than 10per cent over the years.

4. Objective of the Study

To examine the effect of macroeconomic parameters (per capita GSDP, fiscal capacity, fiscal balance, state's own revenue, state's tax revenue and state's non-tax revenue) on the share of public health expenditure to GSDP.

5. Hypothesis

The macroeconomic parameters (per capita GSDP, fiscal capacity, fiscal balance, state's own revenue, state's tax revenue and state's non-tax revenue) positively and significantly affect the share of public health expenditure to GSDP.

6. Data and Methodology

The NES became full-fledged states in different year post 1947. The development and growth of the NES vary significantly from other states of India. Given that the NES takes long years to establish in which the latest state Mizoram became a full-fledged state in 1987; the present analysis has taken into account the period from 1990-91 to 2017-18 due to the availability of data for all states post-1990-91. The period has undergone various fluctuations in the macroeconomic and fiscal structure which therefore provides the rationale to analyse how the macroeconomic features affect health spending in the states. Deliberately, the analysis is entirely dependent on secondary source and the Reserve Bank of India is the most reliable source. Reserve Bank of India State Finance Reports 1992-93 to 2019-20 has been taken to extract the current data. The GSDP current data has been taken from the series 1980-81, 1993-94, 1999-00, 2004-05, and 2011-12 of the Central Statistics Office. For a significant and precise analysis, converting the current data into a constant data is required; therefore, a deflator was constructed using the current and constant GSDP data for each state. Lastly, population data was extracted from census reports of 1981, 1991, 2001, and 2011.

Growth of public spending is exceedingly reliant on conducive macroeconomic features that includes economic growth (GSDP), revenue generation capacity, fiscal deficit/surplus level and debt ratio. These factors are the main determinants of fiscal space of government spending (Tandon & Cashin 2010). Any change in the fiscal indicators would directly affect public spending and health in particular. Given the state's fiscal space is subjected to various fluctuations and financial crisis is predictable, it is important to analyse how NES with instable fiscal space affect health spending in the NES.

Empirical model specification

On understanding the dependence of public health expenditure on the various macroeconomic variables, the basic linear equation follows

$$\begin{aligned} & \textit{Government Health expenditure} \\ & = f(\textit{GSDP, total government expenditure, state's own revenue, gross fiscal deficit}) \end{aligned}$$

Literature has clearly provided the importance of these macroeconomic variables and we therefore carry out the analysis using these variables. Panel estimation was opted for analysis as we are interested in finding the common parameters affecting the health spending among the NES (given the similar economic structure). The analysis was carried out using three methods subsequently; Pooled Least Square, Fixed Effect and Random Effect Model to find the effects of the macroeconomic variables on the share of government health expenditure to GSDP of the NES. On beginning with the Pooled Ordinary Least square regression [Monfort and Mulder 2000 and Mora 2006], the equation follows:

$$\gamma_{it} = \alpha_i + \beta X_{it} + \mu_i + \varepsilon_t$$

Clearly, γ indicates the dependent variable, i indicate the states and t indicates the time. X here indicates the independent macroeconomic parameters taken for the analysis. μ Indicate the unobserved individual state-specific effect. ε indicates the error term or the white noise. The POLS regression was first carried out with the assumption that the intercept of all the states is same, i.e, if independent variables are zero (or no change), the effect on the dependent variable will be the same for all states. It also explains no heteroscedasticity and no cross-section dependency. However, on rejection of the null hypothesis, the analysis was then transformed to a fixed and random effect model.

Fixed effect (FE) model, allows analysis of several explanatory variables and it thus assumes that the effects of the explanatory variables is fixed among the cross sections. On the other hand, Random effect (RE) assumes that the explanatory variables vary among the states such that the effects among the cross section are random. In other words, the Random effect model assumes that the individual state/ country specific intercept is not constant over time but random; therefore, the individual state/ country specific intercept is uncorrelated with regressors. But if in case, we establish that individual state/ country specific intercept is correlated with the regressors, the Random effect estimation will then be considered insignificant or rather inconsistent. In order to determine the accuracy of the model (Fixed effect or Random effect model); the Hausman test (1978) was applied. Clearly the null hypothesis of the Hausman test is that random effect model if applicable given the different explanatory variables and number of cross-sections. The test thus checks if the individual state/ country specific intercept is correlated with the regressors or uncorrelated. Rejection of the Hausman null hypothesis thus implies there is a methodical difference in the coefficients of the explanatory variables. Hence, the fixed effect model is applicable. The Fixed Effect model also assists standard errors that are strong towards autocorrelation and heteroskedasticity.

The analysis further is explained based on the fixed effect model as the Hausman test rejects the null hypothesis of application of random effect. The One-way econometric specification of the fixed effect model is as follows:

$$\begin{aligned} \ln THE/GSDP_{it} \\ = \alpha_{it} + \beta_1 PCGSDP_{it} + \beta_2 FB_{it} + \beta_3 FC_{it} + \beta_4 SOREV_{it} + \beta_5 TR_{it} + \beta_6 NTR_{it} \\ + \mu_i + \varepsilon_t \end{aligned}$$

THE/ GSDP- Share of health expenditure to GSDP

PCGSDP- Per capita income

FB- Fiscal Balance

FC- Fiscal Capacity

SOREV- State's own revenue

TR- State's tax revenue

NTR- State's Non-tax revenue

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ - Coefficients of the parameters

μ_i – Individual state-specific effect

ε_t - error term or the disturbance term

7. Data analysis and Interpretation

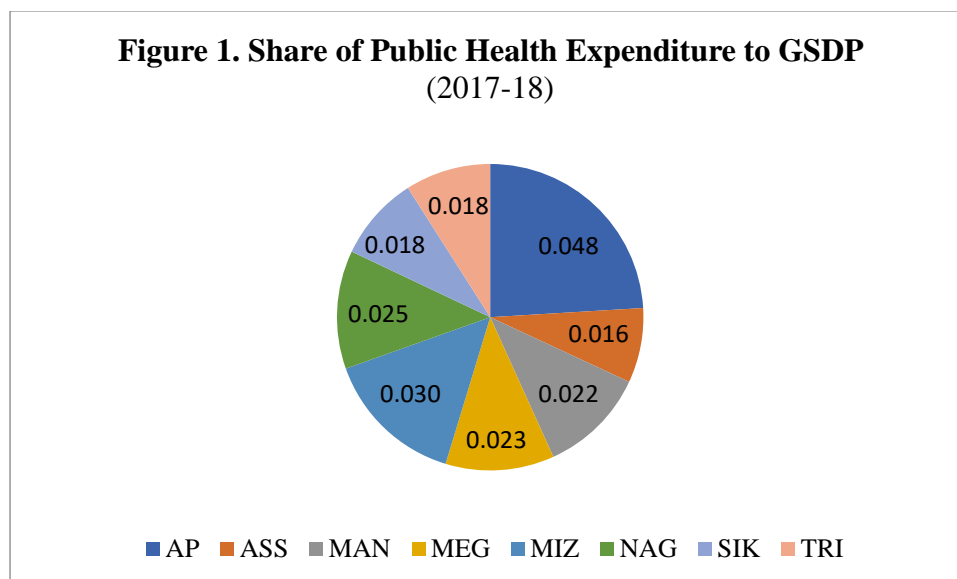


Figure 1 shows the share of government health expenditure to GSDP (taking reference period 2017-18). Clearly Arunachal Pradesh spends the highest with 4.78per cent and the lowest in Assam with 1.57per cent. National Health Mission 2002 has recommended the increase of health expenditure to GSDP to 2-3per cent and the figures obtained clearly depicts the achievements and maintenance in the share of health expenditure among the NES, barring Assam and Tripura.

The variables taken for analysing fiscal space of the NES are: public health expenditure, gross state domestic product, total government expenditure, gross fiscal deficit, state’s own revenue, state’s tax revenue and state’s non-tax revenue. The parameters (fiscal balance, fiscal capacity, state’s own revenue, tax revenue and non-tax revenue) are then constructed that would indicate the fiscal space of the NES [Durairaj & Evans (2010); Tandon & Cashin (2010); Gupta & Mondal (2014); Meheus & McIntyre (2017); Behera & Dash (2018)]. Table below represents the descriptive statistics of the fiscal indicators taken into account. Clearly, the mean PCHE is 719; with minimum amount of 112 and maximum of 2413. The standard deviation thus depicts huge variation in PCHE. The mean share of health expenditure to GSDP is 2.44per cent with maximum share of 6.05per cent and minimum of 0.69per cent. The mean fiscal balance amounts to 4.64per cent with maximum fiscal deficit of 27per cent and minimum fiscal surplus of -15.56per cent. The table also exhibits the correlation of PCHE with other fiscal indicators. Government health expenditure to GSDP is positively correlated with PCHE, fiscal capacity, fiscal balance, state’s own revenue, tax revenue and non-tax revenue; but negatively correlated with per capita GSDP.

Table 1. Description of Variables and Panel Descriptive statistics

Fiscal Doldrums and Public Health Spending in the Fragile North Eastern States of India

		Mean	Standard Deviation	Minimum	Maximum	Correlation
1. Health expenditure to GSDP	Government Health expenditure/ GSDP	0.02443	0.010247	0.006921	0.060467	
2. Per capita GSDP (PCGSDP)	GSDP/ population	30088.81	18820.36	6324.733	127505.1	-0.08119
3. Fiscal capacity (FC)	Total government expenditure/ GSDP	0.521756	0.319788	0.175502	2.047429	0.748255
4. Fiscal balance (FB)	Gross fiscal deficit or surplus/ GSDP	0.046437	0.053243	-0.15556	0.276963	0.361174
5. State's own revenue (SOREV)	Total State's own revenue/ GSDP	0.113588	0.231136	0.023691	1.436451	0.406933
6. State's tax revenue (TR)	Tax revenue/ GSDP	0.038034	0.049703	0.003852	0.332086	0.034932
7. State's non-tax revenue (NTR)	Non-tax revenue/ GSDP	0.090061	0.22643	0.002226	1.399824	0.443789

Source: Reserve Bank of India State Finances; All variables at constant 2004-05 base year.

Empirical results

India is among the L-26 countries (resource poor and low-income countries); Durairaj & Evans (2010) has found fiscal deficits in the country adversely affect public spending pattern and health spending in particular. The financial status of the country often lead the country to resort to external assistance. In majority of the Indian states, per capita health spending declines with every increase in fiscal deficits. Likewise, the NES, being among the vulnerable states due to its poor economic structure (revenue generation capacity, low infrastructural base, deteriorating fiscal structure), the states are heavily dependent on central financial assistance.

Fiscal capacity clearly defined as the share of total government expenditure as a percentage of GSDP, is the ability of government's spending. It explains the expansionary and discretionary policy adoption in fiscal structure. If state has high share of government expenditure to GSDP, it explains the poor revenue generating capacity of the states; therefore, the states adopt expansionary policy to augment the demand for goods and services. On the other hand, if the share of government expenditure to GSDP is comparatively low, it implies a better revenue base and economic base. Additionally, the states thus employ the discretionary fiscal policy and eases government spending. This is an important element through which the government's public health spending could be contextualized. Fiscal capacity would clearly define the ability of the government to finance other sectors that includes health. It is expected that fiscal capacity would have a statistically significant effect on health spending. To support this

argument, [Fan & Savedoff (2014), Tandon & Cashin (2010), Behera & Dash (2018)] has found that fiscal capacity has a positive and significant relationship with public health spending.

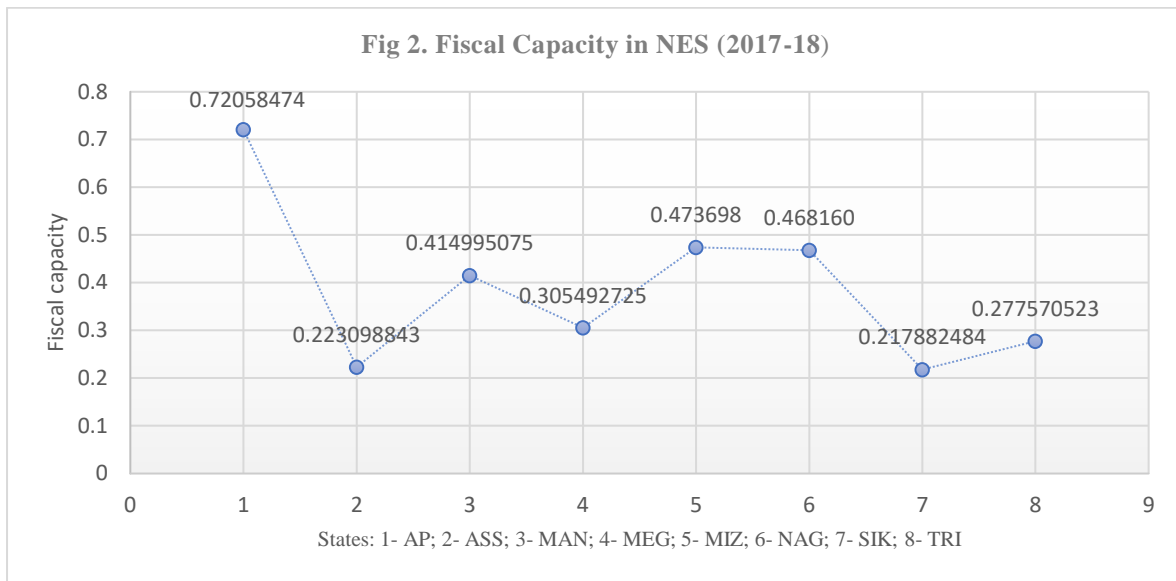


Figure 2 depicts the fiscal capacity of the NES. Clearly, fiscal capacity in Arunachal Pradesh is 72.06 per cent implying a poor fiscal structure of the state. This also implies the adoption of expansionary policy due to its low revenue generation capacity. From the figure, fiscal capacity of Assam, Sikkim and Tripura seems to be performing better in terms of fiscal performance as given by the low fiscal capacity value with 22.31per cent, 21.79per cent and 27.58per cent respectively. However, Manipur, Meghalaya, Mizoram and Nagaland seem to have performed better as well with fiscal capacity value 41.50per cent, 30.55per cent, 47.37per cent and 46.82per cent respectively. This indicates the discretionary policy adopted by the states by allowing more private sectors and thus increases the revenue generation in the states.

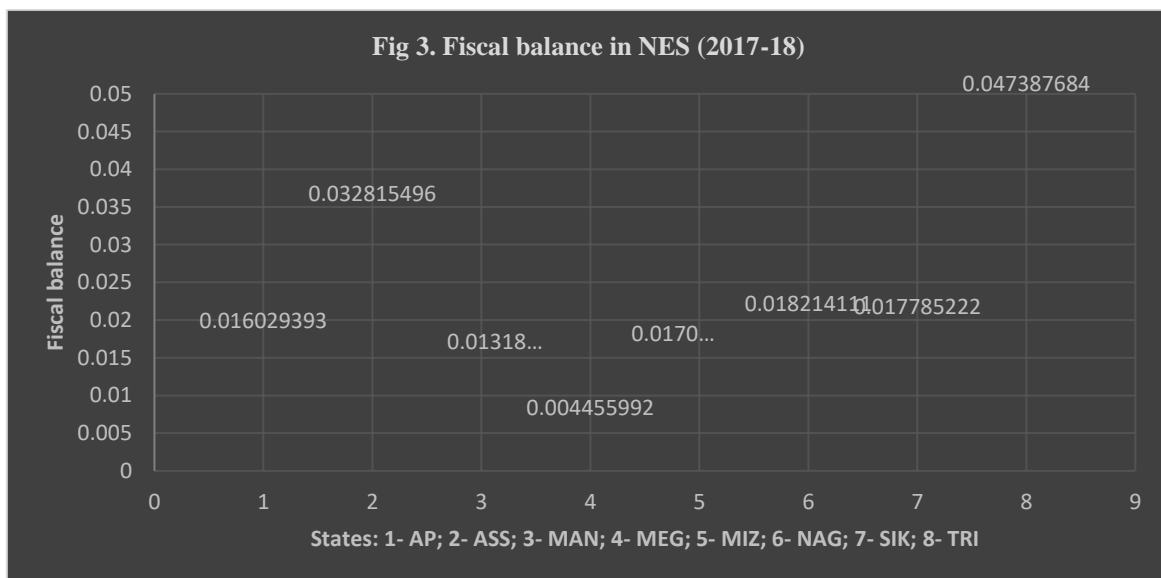


Figure 3 depicts the fiscal balance of the NES. It is distinct that the NES are subjected to fiscal imbalance given the poor economic features existing in the states. Fiscal balance is bound to improve the public spending pattern and allocation. Behera & Dash (2017) has found fiscal balance to have a

significant favourable effect on government health spending in major states of India. However, given the peculiar economic features of the NES, fiscal imbalance is obvious.

Wealth of a state or country obviously determines the government spending; however, the role of government spending is restricted by its fiscal structure or revenue base. In this case, the ratio of government's expenditure to GSDP depicts the government's ability or capacity and therefore the capacity of the government to finance health expenditure. The responsiveness of public healthcare spending to GSDP manifest whether commendatory macroeconomic conditions could convert to higher public health spending.

Table 2 represent the results of the Pooled Least Square estimation. Note that, the estimation is initially carried out while assuming no cross-section dependency and that the intercept is same among the cross-sections. Intercept here would mean that if there is no change in the explanatory variables, the effect among the cross-section will be the same. However, the null hypothesis of cross-section dependency stating that there is no cross-section dependency is rejected. This thus imply, a difference in the intercept and that if there is no change among the explanatory variables, the effect among the cross-section will behave differently. Therefore, the analyses further proceed using fixed effect and random effect estimation.

Table 2. Pooled data estimation- THE/ GSDP as the independent variable)

Variable	Coefficien t	Std. Error	t- Statistic	Prob.	Cross section Dependency			
PCGSD	-3.57E-05	0.00076	-	0.9628				
P		6	0.04666	9	Test	Statistic	d.f.	Prob.
FB	0.000308	0.00027	1.10326	0.2711	Breusch- Pagan LM	84.5673	4	28
FC	0.018199	0.00128	14.1787	0.0000	Pesaran scaled LM	7.55912	9	0
SOREV	-0.001016	0.00090	1.12658	0.2612		7.85829	9	0
		2	2	0	Pesaran CD			
NTR	-0.000132	0.00081	0.16153	0.8718				
		6	6	0				
TR	0.00056	0.00062	0.90207	0.3680				
		1	1	0				
C	0.038702	0.00843	4.59094	0.0000				
				0				
Number of cross- sections		8						
Total Balanced panel observations		224						

R-squared	0.71575
	6
F-statistic	91.07128(0.0000)

Author's calculation

Table 3 represents the estimated results of FE and RE model. Given the weak fiscal structure of NES, the panel estimation thus depicts how the macroeconomic parameters affect the share of government health spending to GSDP in the NES. Given that the share of government health expenditure to GSDP among the NES is not too depressing even when compared to the national level, the results obtained is of little significance and rather substandard. Fixed and random effect model found fiscal capacity and tax revenue to have a positive and significant effect on the share of government health expenditure to GSDP; however, the coefficient is extremely low and negligible. The effect of fiscal capacity of FE and RE being 0.021768 and 0.020322. PCGSDP, SOREV and NTR are found to have a negative effect on the share of government health expenditure to GSDP in both the estimated model. Here, the results obtained are absurd as Behera & Dash (2017) has found a positive and significant effect of PCGSDP on government health expenditure. This is rather expected that with every increase in PCGSDP it would translate to incremental health expenditure. However, this does not apply in the NES.

Table 3. Estimated results of Fixed and Random Effect Model

Variable	Fixed Effect Model		Random Effect Model	
	Coefficient	Prob.	Coefficient	Prob.
PCGSDP	-0.00253*	0.0340	-0.001254	0.12510
FB	0.000345	0.1664	0.000338	0.17180
FC	0.021768*	0.0000	0.020322	0.00000
SOREV	- 0.004792*	0.0018	-0.002883	0.00610
NTR	- 0.00170**	0.0586	-0.000924	0.24750
TR	0.002991*	0.0001	0.002004	0.00130
C	0.059971	0.0000	0.050166	0.00000
R2	0.794229		0.588851	
F-statistic		62.35015		51.79813
State-specific effect			Yes	
Number of Cross- sections			8	
Total Balanced panel observations			224	

Source: Author's calculation; * and ** imply 5per cent and 10per cent level of significance

Majority of the NES clearly have per capita income much higher than the national average which could be the plausible reason that the government are least interested in increasing public healthcare expenditure. The other observation from the estimated results is the negative effect of SOREV and NTR on the share of government health expenditure to GSDP which then summarise the averseness to translate its resource to the much-needed sector. Clearly, the NES are subjected to fiscal imbalance therefore; it has a positive but insignificant effect on share of government health expenditure to GSDP. The overall estimation thus depicts the elasticity of public health spending being lesser than 1per cent,

indicating that healthcare in the NES is a necessity than a luxury. The results are comparable to Khan & Husain (2019); Pattanayak & Chadha (2016); Bhat & Jain (2006); Bhat & Jain (2010); Khan & Muhumud (2015) which clearly found healthcare to be a necessity in India as a whole and at the sub-national level.

Table 4. Hausman estimation to compare FE and RE model

Null hypothesis: Fixed vs. Random effect				
Test summary	Chi square statistic	P-value		
	30.250163	0.0000000		
Cross section Fixed effect comparison				
Variable	Fixed	Random	Var (Diff.)	Prob.
PCGSDP	-0.002538	-0.001254	0.000001	0.1383
FB	0.000345	0.000338	0.0000000	0.819
FC	0.021768	0.020322	0.0000040	0.4425
SOREV	-0.004792	-0.002883	0.0000010	0.0834
NTR	-0.001708	-0.000924	0.0000000	0.0591
TR	0.002991	0.002004	0.0000000	0.0102

Author's calculation

In order to check the appropriateness of the fixed effect model and random effect model, the Hausman test was employed. Given the null hypothesis of accepting the random effect model, it would imply that the coefficients affect the cross-sections randomly. However, on rejection the null hypothesis, it thus implies the biased estimators which clearly violate the Gauss Markov assumptions (Park 2009). The estimation rejects the null hypothesis at 1per cent level of significance and therefore accepts the fixed effect estimation.

8. Policy Recommendation

High per capita income does not guarantee the entire income could be used for medical care. As mentioned earlier, there is a negative correlation and effects between PCGSDP and the share of health expenditure to GSDP. This indicate that the government relies on private use of healthcare which leads to insufficient public own healthcare. Per capita GSDP of the NES is definitely higher than the national

average; however, the government should not be reluctant towards provision of healthcare given the large rural populous of the NES. Therefore, we recommend that the government should not neglect public healthcare services. The government should take healthcare provision as a pivot responsibility rather than engage in private motives. Given the large rural areas of the NES, the government needs to identify certain remote areas to ensure the availability and accessibility of public healthcare. Secondly, the economic statuses of the NES are featured with limited revenue generating capacity. Nevertheless, to improve public health spending, the improvement of the NES's fiscal capacity could be achieved by expanding its own tax base by increasing domestic taxes, controlling non-productive expenditures, and reducing reliance on centralized aid, so that the states are in a favorable position, thereby enhancing the fiscal capacity of the states.

9. Conclusion

Fiscal space in the NES greatly cast down the future development and growth. The NES characterised by an inconsistent and unstable economic structures or fiscal doldrums, with least hope of development for any sector for that matter. The analysis begins with an overview of public health spending and the trend is encouraging. The share of health expenditure to GSDP also stands at a much better position than India's overall. However, the difficult macroeconomic structure of the NES is deteriorating. Thus, it affects the public spending habits and health in particular. Analysis is performed to determine how macroeconomic parameters (per capita GSDP, fiscal capacity, fiscal balance, state's own revenue, state's tax revenue and state's non-tax revenue) affect the share of public health expenditure to GSDP. The estimate is despairing as we establish an almost negligible macroeconomic effect on the share of public health expenditure to GSDP. This clearly describes the level of deficiency of the NES. From the results, we therefore could not accept the hypothesis entirely as the hypothesis was proven right only for fiscal capacity and tax revenue. The significance of fiscal capacity on public health spending is also in line with studies [Khan et.al (2020); Durairaj & Evans (2010); Tandon & Cashin (2010); Gupta & Mondal (2014); Meheus & McIntyre (2017); Behera & Dash (2018)].

The NES have the status of the Special Category states in India and are advantageous to heavy central assistance. In terms of normal central assistance, the special states receive 90 per cent as grants and 10 per cent are provided as loans. Given the large imbalances in the expenditure and receipts, the gap filling approach of central assistance especially in the case of NES is leading the states to high fiscal dependency and increasing non plan expenditure with unproductive spending mechanism. The fiscal scenario of the NES is characterised by an increasing deficit burden, increasing non-plan expenditure, unattainable revenue sufficiency and distorts revenue management and low development expenditure [Mohan (2003); Dash & Rath (2016); Dash & Rath (2016); Vishnu (2021)].

Overall, the NES are at a fiscal doldrums is afflicted due to the rigidity of government's functions, poor economic structures (limited revenue generating capacity, stable revenue account, high budget deficits, and poor resource allocation), in addition, the states lack the ability to develop due to its low economic base. As a result, public health spending is depressed and has the least scope for future growth. The fiscal set up of the NES thus requires an efficient resource mobilization and own revenue management for effective public spending on health as well as other economic and social sectors.

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