
An Analysis of Tax Buoyancy in Nagaland

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Abstract

An effective tax structure is vital in order to maintain fiscal stability. In the context of fiscal policy, tax revenue serves as an indispensable source of public expenditure. Tax Bouyancy measures the responsiveness of tax revenue to changes in Gross Domestic Product. The main objectives of this study was to show the percentage share of each component to the total revenue and their responsiveness to the growth in Gross State Domestic Product for a period of 13 years (2011-23). The study found out that majority of revenue comes from grants from centre; above 60% for the whole period indicating high financial dependence on the centre. The share of own tax and own non tax to the total revenue was below 8% and 4% for the whole period. The study found out that the degree of tax buoyancy for total tax revenue was 1.2 which implies that total tax revenue increased more than proportionately to increase in income. It finding also showed that except for Own Non tax revenue (0.45) and Grants from centre (0.76), the buoyancy of own tax revenue (2.04), shared tax (2.44) and total revenue (1.2) are more than unity for a period. Among different component, own non-tax revenue and grants from centre showed stability during the same period. The article concludes by suggesting for revamping of sick industries, exploring petroleum reserve, lifting of Liquor prohibition in the state and developing tourism industry to enhance own revenue generation.

Key Word: Tax buoyancy, Revenue, Gross State Domestic Product.

JEL Code: E5, G2 and H2.

Introduction

An effective tax structure is vital in order to maintain fiscal stability. In the context of fiscal policy, tax revenue serves as an indispensable source of public expenditure. According to Economic Survey 2014-2015, in the immediate post-Fiscal Reforms and Budget Management Act, 2003 (FRBMA period 2004-2005 to 2007-2008), significant fiscal consolidation was achieved largely due to the growth in the tax revenues. One way to address the issue concerning the mobilization of revenue is through the measurement of tax buoyancy and tax elasticity. Both measures indicate the responsiveness of tax revenue to changes in gross domestic product (GDP). The differences between the two can be attributed to the way in which they measure the responsiveness of tax revenue. While tax elasticity measures the percentage change in tax revenue given a percentage change in GDP, tax buoyancy measures the actual or observed changes in tax revenue given a change in GDP (Timsina, 2007). We may evaluate the efficiency of a tax system by the empirical value of tax buoyancy and elasticity. In case of tax buoyancy, a unitary value implies that a tax is buoyant. In other words, there is equal or proportionate change in tax revenue given a change in income. A value lesser or greater than unitary implies that the tax revenue changes less than proportionately in case of former and more than proportionately in case of latter given a change in income. A study on the degree of tax buoyancy in India showed that the constant gross tax buoyancy is positively significant and more than unity during the pre tax reform period (before 1992) indicating that the increase in gross tax revenue is more than proportionate to the increase in income. On the other hand, the estimate of tax buoyancy was less than unity and thus the average propensity to tax (ratio of GTR to GDP) was decreasing with the increase in GDP during the post-tax reform i.e. after 1992 (Upender, 2008). However, with the inception of GST in the year 2017, the efficiency in tax collection has improved significantly. This can be attributed to the high Goods and service tax (GST) collection growth rate of 10% despite a slower growth rate of GDP of 9%. A tax buoyancy of 1.1 during the post GST indeed showed

a higher buoyancy than the pre-GST which implies an improvement in the efficiency of resource mobilization (“Has the GST Improved or Worsened Tax Collection?,” 2023).

A report on evaluation of state finances in Nagaland 2006-16 shows that the percentage share of own tax, own non tax revenue and shared tax to the total revenue was below 25% in 2015-16. The major share of revenue comes from centre as grant in aid with above 75% in 2015-16. Moreover, the fiscal deficit of the state was Rs. 3139.4 crores during 2015-16. The degree of tax buoyancy showed that total tax revenue increased more than proportionately to increase in income (Jamir et al, 2019). Thus, this paper attempts to study the percentage share of own tax, own non tax, shared tax and grant in aid from centre to the total revenue of state and also highlight the responsiveness of revenue with that of gross state domestic product (GSDP) in Nagaland for a period of 13 years (2011-23). To measure buoyancy of taxation simple ordinary least square (OLS) method was used: $\log(\text{Revenue}) = \alpha + \beta \log(\text{GSDP}) + \varepsilon$, where α is the intercept and β is the buoyancy coefficient and ε is the error (Bonga et al, 2014). The paper concludes by highlighting the problems facing Nagaland revenue and suggesting some policy measures which could enhance revenue generation in the state.

2) Result and Discussion

a) Composition and Growth in Revenue Receipts:

Revenue Receipts of the State Government consist of own tax revenue, own non-tax revenue, central tax transfers and grants-in-aid from Government of India (GoI). Table 1 depicts the composition of revenue receipts of the state government. It is seen that the share of state own tax revenue in the total revenue rose from 5.44% in 2011-12 to 8.82% in 2022-23. The compound annual growth rate (CAGR) of state’s own tax revenue was 14% for 13 years (2011-23), which is higher than own non-tax, grants from centre and the annual growth rate of the total state revenue. The share of state own non-tax revenue in the total revenue is the lowest. Its share was 4.17% in 2011-12 but its share keeps declining and it was only 1.87% in 2022-23. The compound annual growth rate (CAGR) of state’s own non-tax revenue exhibits the lowest growth rate with 2% for 13 years (2011-23). The share of own revenue (own tax + own non-tax) to total revenue rose from 9.61% to 10.69% during the same period. Thus, it can be seen that only a meagre percentage (below 11%) of revenue comes from State’s own resources during 2011-12 to 2020-23. The remaining revenue (above 84%) comes from government of India in the form of State’s share of taxes and Grants-in-aid. The combine share of shared tax and grant-in-aid in the total revenue of the state rose from 84.39% in 2011-12 to 89.39% in 2022-23. The share of central transfer through tax devolution in State’s total revenue receipt has increased from 14.38% in 2011-12 to 28.91% percent in 2022-23. The compound annual growth rate (CAGR) of shared tax was 16% for 13 years (2011-23) which is higher than own tax, own non-tax, grants from centre and higher than the total revenue. The share of grants-in-aid from centre to the state in the total revenue receipts of the state declined significantly from 76.01% in 2011-12 to 60.47% percent in 2022-23. The compound annual growth rate (CAGR) of grant-in-aid was 7% for 13 years (2011-23) which is higher than own non-tax. This analysis shows that Nagaland state is a financially dependent state depending mostly on central aid.

Table 1: Composition of Revenue Receipts of the state government (Rs. Crores)

Year	Own Tax Revenue	Own Non Tax Revenue	Shared tax	Grants from centre	Total Revenue Receipt
2011-12	303.88 (5.44%)	232.95 (4.17%)	803.2 (14.38%)	4246.35 (76.01%)	5586.38 (100%)
2012-13	339.95 (5.48%)	207.17 (3.34%)	917.14 (14.78%)	4740.03 (76.40%)	6204.29 (100%)
2013-14	333.4 (5.13%)	216.57 (3.33%)	1001.27 (15.41%)	4946.67 (76.13%)	6497.91 (100%)
2014-15	388.62 (5.08%)	270.62 (3.54%)	1062.68 (13.89%)	5929.04 (77.49%)	7650.96 (100%)
2015-16	427.10 (5.31%)	256.39 (3.19%)	1249.18 (15.53%)	6110.9 (75.97%)	8043.57 (100%)
2016-17	510.76 (5.41%)	345.52 (3.66%)	3032.62 (32.12%)	5553.37 (58.81%)	9442.27 (100%)

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2017-18	976.9 (8.86%)	338.53 (2.9%)	3353.13 (29.65%)	6639.27 (58.7%)	11307.93 (100%)
2018-19	921.1 (8.05%)	255.2 (2.23%)	3,717.7 (32.50%)	6,543.3 (57.21%)	11437.4 (100%)
2019-20	960.3 (8.41%)	339.3 (2.97%)	3265.01 (28.58%)	6858.69 (60.04%)	11423.3 (100%)
2020-21	1,025.0 (8.97%)	242.6 (2.12%)	3,407.0 (29.81%)	6,752.8 (59.09%)	1427.42 (100%)
2021-22 (Revised Estimates)	1,335.0 (10.43%)	264.8 (2.07%)	4,329.4 (33.82%)	6,870.4 (53.68%)	12799.57 (100%)
2022-23 (Budget Estimates)	1,417.5 (8.82%)	290.7 (1.81%)	4,646.8 (28.91%)	9720.20.4 (60.47%)	16075.1 (100%)
CAGR (2011-23)	14%	2%	16%	7%	9%

Sources: RBI and State Government Budget.

b) Gross State Domestic Product (GSDP):

The GSDP of Nagaland grows from Rs 9253.99 crores in 2011-12 to Rs. 18121 crores in 2020-21 (Quick Estimate given by the Government of Nagaland) with a compound annual growth rate (CAGR) of 5%. Thus, it is projected that GSDP will increase to Rs. 19017.05 crores in 2021-22 and to Rs. 19978.4 crores in 2022-23. As shown in table no.2, the growth rate of Nagaland state GSDP falls from 9.4% in 2011-12 to 6.5% in 2014-15, then it rose to 22.3% in 2015-16 which exhibits the highest growth rate over the highest annual growth rate. After 2015-16, the GSDP grows at a slow rate below 8% for the remaining years.

Table No. 2: Trends and Growth rate of GSDP

Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
GSDP (In Rs. Crores)	9253.99	10023.85	10671.06	11367.06	12139.65	14851.11
Growth Rate	9.4%	8.3%	6.5%	6.5%	6.8%	22.3%
Year	2017-18	2018-19	2019-20	2020-21	2021-22 (R E)	2022-23 (B E)
GSDP (In Rs. Crores)	15511.00	16352.00	16868.00	18121.00	19027.05	19978.40
Growth Rate	4.4%	5.4%	3.2% (Provisional)	7.4% (Quick Estimate)	5.0% (Projected)	5.0% (Projected)

Source: Economics and Statistical Department, Government of Nagaland and Own Projection.

c) Revenue Buoyancy:

Revenue buoyancy with respect to GSDP are shown in Table No. 3. It shows that except for Own Non tax revenue (0.45) and Grants from centre (0.76), the buoyancy of own tax revenue (2.04), shared tax (2.44) and total revenue (1.2) are more than unity for a period of 2011-12 to 2022-23. This indicates that revenue in the state grows more than proportionately to the growth of GSDP. It can also be seen that own tax revenue and shared taxes are more responsive to GSDP than total revenue of the state. However, own non-tax and grants from centre are less responsive to GSDP as compared to total revenue of the state. This means a small increase in GSDP will lead to a more than proportionate increase in the own tax revenue and shared taxes than own non-tax revenue and grants from the centre. In other words, own tax revenue and shared taxes are more productive than non-tax and grants from centre.

Table No. 3: Buoyancy of State Revenue (2011 to 2023)

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Revenue Heads	GSDP	R2	F- Test
Own Tax Revenue	2.04	0.95	224.36*
Own Non-Tax Revenue	0.45	0.45	8.99*
Shared Tax	2.44	0.96	276.22*
Grants from Centre	0.76	0.83	54.8*
Total Revenue	1.2	0.97	427.82*

*indicates 5% level of significant.

d) Tax Stability:

Among different revenue head it was found that own non tax and grants from the centre (as shown in table no. 4) are more stable with co-efficient of variation (CV) of 18.99% and 24.48% respectively.

Table No 4: Tax stability of Revenue receipt

Revenue Head	Mean	CV
Own tax	661.61	60.61%
Own non tax	250.79	18.99%
Shared tax	2368.14	61.15%
Grants from centre	5762.38	24.48%
Total revenue	9042.88	33.04%

e) Own Tax Revenue:

The total collection in respect of state's own tax revenue during 2011-12 to 2022-23 are presented in table no. 5. Sales Tax/VAT was the major source of own tax revenue for state government till 2016-17. Its share increases from 76.06% during 2011-12 to 78.34% in 2016-17 but with implementation of SGST from 2017-18, its share keeps declining and it was 18.45% during 2022-23. The compound annual growth rate was 31.23%. After the implementation of SGST in 2017-18, its share in own tax revenue is high and it remains above 56% on an average. The CAGR of SGST was 83% for the entire period. The other important source of own tax revenue was taxes on vehicles which rose from 11.38% during 2011-12 to 15.91% during 2017-18 but it declined to 6.63% during 2022-23. The CAGR of taxes on vehicle shows a negative result of -16.73%. The share of professional tax which was 8.89% during 2011-12 decreased to 1.9% during 2022-2. Its CAGR was 1.54% for the entire period. The share of land revenue remained below 1%, stamps and registration remained between 0 to 1 percent, state excise fluctuates between 1% to 2% except during 2018-20 and 2022-23, taxes on goods and passengers also fluctuates between 1% to 2% and the share of electricity was very insignificant during the entire period. Table No. 5: Composition of Own Tax Revenue of the state government (Rs. Crores)

Year	Professional Tax	Land Revenue	Stamps and Registrations	Sales Tax/Vat	State Excise	Taxes on Vehicle	Taxes on Goods and Passengers	Taxes and Duties on Electricity	Others/SGST	Total Own Tax Revenue
2011-12	27.02 8.89%	0.68 0.22%	1.85 0.61%	231.12 76.06%	3.36 1.11%	34.58 11.38%	4.85 1.60%	0.04 0.013%	0.38 0.13%	303.88 100%
2012-13	27.22 8.01%	0.72 0.21%	1.58 0.46%	257.21 75.66%	3.73 1.10%	41.59 12.23%	6.71 1.97%	0.05 0.015%	1.14 0.34%	339.95 100%
2013-14	28.3 8.49%	0.7 0.21%	1.77 0.53%	250.21	4.86	36.15	10.79 3.24%	0.04	0.58 0.17%	333.4 100%

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				75.0 5%	1.46 %	10.84 %		0.012 %		
2014-15	27.96 7.19%	0.75 0.19%	1.93 0.50%	294.29 75.7 3%	4.7 1.21 %	46.46 11.96 %	9.73 2.50%	0.03 0.008 %	2.77 0.71%	388.6 2 100%
2015-16	29.65 6.94%	0.75 0.18%	2.04 0.48%	328.58 76.9 3%	5.12 1.2 %	53.08 12.43 %	5.88 1.38%	0.06 0.014 %	1.94 0.45%	427.1 0 100%
2016-17	30.28 5.93%	0.82 0.16%	2.05 0.40%	400.12 78.3 4%	4.63 0.91 %	57.39 11.24 %	14.76 2.89%	0.063 0.012 %	0.65 0.13%	510.7 63 100%
2017-18	34.87 4%	0.9 0.09%	2.62 0.27%	287.54 29.4 3%	4.19 0.43 %	101.5 3 10.39 %	17.59 1.8%	0.06 0.01%	527.6 54.01%	976.9 100%
2018-19	35.3 3.83%	1.1 0.12%	2.5 0.27%	186.7 20.2 7%	126.22 13.7 0%	4.64 0.50 %	20.16 2.19%	0.086 0.01%	544.3 59.09%	921.1 100%
2019-20	30.64 3.19%	1.04 0.11%	2.79 0.29%	175.14 18.2 4%	113.93 11.8 6%	3.24 0.34 %	18.09 1.88%	0.08 0.01%	615.4 64.08%	960.4 100%
2020-21	31.24 3.05%	1.09 0.11 %	2.25 0.22%	205.49 20.0 5%	4.55 0.44 %	93.29 9.10 %	15.62 1.52%	5.41 0.53%	666.02 64.98%	1,025 .0 100%
2021-22 (Revised Estimates)	30.06 2.25%	0.8 0.06 %	3 0.22%	265 19.8 5%	3 0.22 %	110 8.24 %	18.5 1.39%	4.75 0.36%	899.91 67.41%	1,335 .0 100%
2022-23 (Budget Estimates)	32.94 1.90%	0.85 0.05 %	3.1 0.18%	280 16.1 4%	320 18.4 5%	115 6.63 %	20 1.15%	4.75 0.27%	957.65 55.22%	1,734 .3 100%
CAGR (2011-23)	1.54%	1.73 %	4.05%	1.49 %	31.2 3%	- 16.73 %	11.51 %	44.41 %	83%	14%

Sources: RBI and State Government Budget.

f) Buoyancy of Own Tax Revenue:

The buoyancy of own tax revenue is shown in table no. 6 From the table it can be seen that the buoyancy of total own tax revenue is mostly influenced by the buoyancy of State Excise (3.78), Taxes on Goods and Passengers (1.71), Taxes and Duties on Electricity (5.89) and Others/SGST (10.82). These four taxes have buoyancy more than unity indicating that they respond more than proportionately to the growth of GSDP during the same period. In other words, these four taxes are more productive and have a high potential for growth. The buoyancy of all other taxes was less than unity, indicating low productivity.

Table No. 6: Buoyancy of State Own Tax Revenue (2011-23)

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Revenue Heads	GSDP	R2	F- Test
Professional Tax	0.25	0.57	13.13*
Land Revenue	0.48	0.54	11.66*
Stamps and Registration	0.74	0.81	43.94*
Sales Tax/VAT	-0.15	0.03	0.28
State Excise	3.78	0.47	8.98*
Taxes on Vehicles	-2.24	0.19	2.38
Taxes on Goods and Passengers	1.71	0.8	38.99*
Taxes and Duties on Electricity	5.89	0.58	13.6*
Others (SGST)	10.82	0.71	24.64*

*Indicates at 5% level of significance

g) Composition and trends of state own non-tax revenue:

State own non-tax revenue compose of interest receipts, dividends and profits, general services, social services and economic services. General services consist of public service commission, police, jails, supplies and disposals, stationary and printing, public works, other administrative services, contribution and recoveries towards pension and other retirement benefits and other miscellaneous general service. Social service compose of education, sports, arts and culture, medical, public health and family welfare, water supply and sanitation, housing, urban development and other social services. Economic services compose of crop husbandry, animal husbandry, fisheries, forestry and wild life, co-operation, other agricultural and rural programmes, major and medium irrigation, minor irrigation, village and small scale industries, industries, plantations, power, petroleum, ports and light houses, road transport, tourism and others. The composition and trends of state own non-tax revenue is shown in table No. 7. It can be seen that revenue from economic services constitute major part of the total own non-tax revenue. Its share in the total own non tax revenue was 63% on an average for a period of 2011-23. The CAGR of economics service for the same period was 5%. The next important component of state own non-tax revenue is social services. Its share during 2011-12 was 8.24% which increased to 37.82% during 2016-17. But after 2019-20 it began to decline and reached 5.22% in 2022-23. The share of general services in the total own non-tax revenue has been decreasing over the years. Its share was 27.09% in 2011-12 which fell to 5.43% during 2022-23. The share of interest receipt revolves around 2 to 4 percent on an average during 2011-23. The CAGR for interest receipt, general receipt and social services shows and negative growth rate with -9%, -12% and -4% respectively.

Table No. 7: Composition and trends in State Own Non-Tax Revenue (Rs. Crore)

Year	Interest Reciept	General Services	Social Services	Economic services	Total
2011-12	9.62 4.13%	63.1 27.09%	19.2 8.24%	141.03 60.54%	232.95 100%
2012-13	5.9 2.85%	18.85 9.10%	53.52 25.83%	128.9 62.22%	207.17 100%
2013-14	7.62 3.52%	13.97 6.45%	76.86 35.49%	118.12 54.54%	216.57 100%
2014-15	7.23 2.67%	19.61 7.25%	112.92 41.73%	130.86 48.36%	270.62 100%
2015-16	10.13 3.95%	18.96 7.39%	85.21 33.23%	142.08 55.45%	256.39 100%
2016-17	6.73 1.95%	49.199 14.24%	130.67 37.82%	158.92 45.99%	345.519 100%
2017-18	6.97 1.79%	85.63 22.04%	143.36 36.90%	152.57 39.27%	388.53 100%
2018-19	12.06 4.74%	33.93 13.33%	18.72 7.35%	189.88 74.58%	254.59 100%

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2019-20	5.73 1.70%	62.95 18.71%	71.79 21.33%	196.02 58.25%	336.49 100%
2020-21	4.55 1.89%	26.44 11.01%	13.16 5.48%	195.98 81.61%	240.13 100%
2021- 22(Revised Estimates)	3.25 1.23%	15.42 5.83%	18.44 6.98%	227.18 85.96%	264.29 100%
2022-23(Budget Estimates)	3.25 1.12%	15.77 5.43%	12.25 4.22%	258.91 89.22%	290.18 100%
CAGR (2011- 12)	-9%	-12%	-4%	5%	2%

Sources: RBI and State Government Budget.

h) Buoyancy of Own Non-Tax revenue.

The buoyancy of own non-tax revenue is depicted in table No.8. It can be seen that only Economic services has positive buoyant value of 0.9 but it don't grow proportionately with the growth of income. Thus, this table shows that the productivity of own non-tax revenue is mostly influenced by economic services and less by interest receipt, general services and social services.

Table No.8: Buoyancy of State Own Non-Tax Revenue (2011-23)

Revenue Heads	GSDP	R2	F- Test
Interest Receipt	-1.1	0.46	9.39*
General Services	-0.19	0.01	0.08
Social Services	-0.73	0.05	0.54
Economic services	0.9	0.85	62.99*

* indicates at 5% level of significant

3) Conclusion and suggestion:

From the analysis, it was found that the share of grants from the centre is higher than any other components to the total revenue. The percentage share was above 60% for the whole period indicating high financial dependence on the centre. The share of own tax and own non tax to the total revenue was below 8% and 4% for the whole period. Thus, to make Nagaland a financial independent state, few suggestions are pointed out here.

- i) The state has a huge petroleum reserve which is one of its biggest assets. Therefore, it is suggested that the state should start exploring the petroleum and establish petro-chemical industries in the state. Using these resources will not only generate more taxes but multiple employment will be generated both directly and indirectly.
- ii) It is suggested that the state revive the sick paper mill industry at Tuli, Mokokchung and Wuzuho cement industry at Meluri, Phek.
- iii) In order check the outflow of revenue to Assam state and increase state excise revenue, lifting of Nagaland liquor total prohibition act, 1989 (NLTPA) in the state is required.
- iv) Nagaland with its rivers has the potential to generate more hydro power. Therefore, it is suggested that all river resources be utilized well.
- v) It is suggested that proper water and electricity supply be provided to the citizens and proper accounts of revenue generated be maintain so that there is no leakage in revenue collection.
- vi) The state could not utilize it lush and verdant flora and fauna, cliff, waterfall, forest , mountains, etc., to its advantage of harvesting the fruit of tourism. Therefore, it is suggested that proper mapping and development of these areas will attract more tourist and generate more revenue. Moreover, proper connectivity to all districts and tourist spot should be given priority by the government.

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