

# Unit Public Expenditure on Education and Student-Teacher ratio in Mizoram, India: An Empirical Analysis

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## ABSTRACT

Since education is an important and basic input required to improve the quality of human resources, public expenditure on education has been regarded as investment in human capital which further leads to economic development. As per Union Budget-2020, India spent only 4.6 per cent of its total GDP on education, and ranked 62nd in total public expenditure on education per student in the world. This reveals that allocating higher public expenditure on education is obligatory to improve the economic aspects of the country. As a remote and backward state like Mizoram, it is clearly stated that quality of human resources through education has been the key economic tool for the improvement of the state economy. For instance, the main objective of the present study is to analyze the unit public expenditure and student-teacher ratio. The study covers the period of 1981-2014 and found that there has been gradual increase in public expenditure per student of school education in Mizoram both in current and constant prices with CAGR of 10.52 percent and 3.04 percent respectively. The per capita public expenditure has increased from Rs.738.07 in 1981-82 to Rs.23299.18 in 2013-14, while it has increased from Rs.738.07 to Rs.2625.55 at constant price during the same period.

## Keywords

Unit Public Expenditure, Education, Student-Teacher, Mizoram, Analysis

## Introduction

Expenditure on education is regarded as investment in human capital because it affects many aspects of life which have economic significance. Education plays a crucial role in the process of economic development of a nation. It affects economic growth, equity and poverty (Tilak, 2008). According to the human capital theory, expenditures on schooling, health, training, migration, etc., constitute investment in human beings, which enhance the capabilities of the people as producers and consumers in the labour market, in the households and in the society at large. (Michael Grossman 1972). Therefore, the financial resources that are being poured into education are important, since they are investment in human capital.

## Objectives of the Study

- (i) To analyse the growth trends of unit public expenditure in Mizoram.
- (ii) To examine student-teacher ratio in the state for the period of 1981-82 to 2013-14.

## Sources of Data and Methodology:

The present study is based on secondary data which were collected from several published as well as

unpublished records of the governments and other relevant secondary sources.

## Analytical Tools

Data collected from various sources are analyzed by using simple statistical techniques such as averages, percentages, mean, correlation and regression. The Compound Annual Growth Rate (CAGR) was also calculated by estimating log-linear regressions. A Wholesale Price Index (WPI) which is obtained from the website of the Office of the Economic Adviser, Ministry of Commerce, Government of India is used to convert the data into one series with a common base year (i.e., 1981-82=100). This is adopted for the conversion of current prices into constant prices and to deflate the budgetary expenditure at current prices in order to get the expenditure at constant prices. For this, the study covers 33 years from 1981-2014.

Simple log-linear regression model is adopted to examine the determinants of public expenditures on education. This model is adopted to avoid the likely econometric problem of multicollinearity due to the limited degrees of freedom and apparently same trends shown by the explanatory variables which may manifest in high correlation. The advantage of using log-linear regression is its applicability on

heterogeneous measurement units and its showing of constant elasticity. So, the regression model has been estimated on each of the selected variables to test their significance on public investment in education:

$$\log(Y) = \alpha + \beta \log X + u$$

Where Y denotes the dependent variable (public expenditure/investment on education/ health), X is the explanatory variable (determinant),  $u$  is the random disturbance term, and  $\alpha$  and  $\beta$  are constant and estimated coefficients respectively. Further,  $\beta$  indicates the constant elasticity of public expenditure.

### Socio-economic Profile of Mizoram:

Mizoram, one of the north-eastern states in India, covers a total area of 21,081 sq.km. The State is bounded in the north by Cachar district of Assam and the state of Manipur, on the east and south by Myanmar (Burma), on the west by Bangladesh and the state of Tripura. The boundary with Myanmar extends 404 kms and Bangladesh over 318 kms. It was one of the districts of Assam till 1972 but became a union territory of India thereafter. This tiny land achieved its statehood and became the 23<sup>rd</sup> state of India only on 20<sup>th</sup> February, 1987

### Development of Education in Mizoram

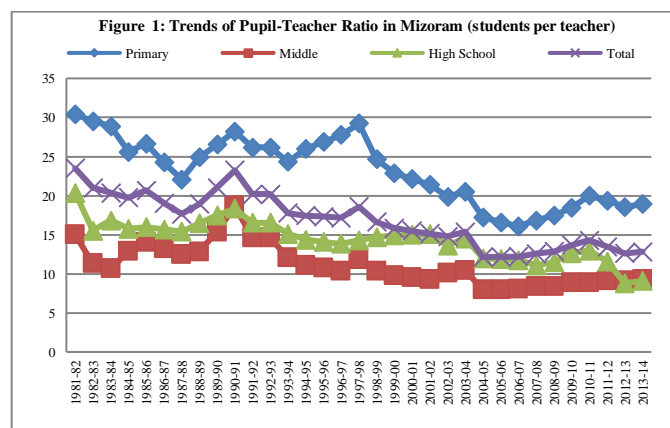
The foundation of modern education in Mizoram was laid down by two Christian missionaries who introduced Mizo Alphabets based on Roman script in 1894 and formal education had been evolved through the Christian Missionaries. The pioneers on education who introduced Mizo Alphabet were Rev. J.H. Lorrain (Pu Buanga) and Rev. F.W.Savidge (SapUpa) who arrived Aizawl on 11<sup>th</sup> January, 1894. Education was the key method of these Missionaries to the Gospel and their effort became the foundation and the origin of all formal education in the State. They established school on 2<sup>nd</sup> April, 1894 and this was the first Mission School in Mizoram which taught Mizo Alphabet. When Mizoram attained the status of a full-fledged state of the Indian Union on 20<sup>th</sup> February 1987. In 1989, the state's education department was, then, bifurcated into two: Directorate of School Education for elementary and secondary education, physical education, Hindi Propagation, SCERT, DIET; and Directorate of Higher and Technical Education for higher education, college and university education, Polytechnic, College of

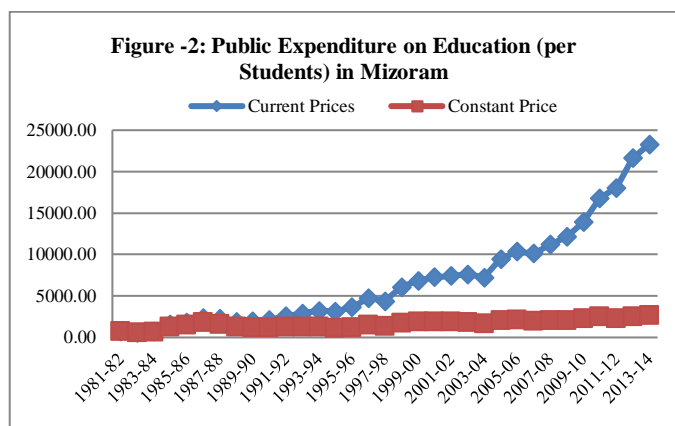
Teacher Education, Distance education etc. As a result, there was a recommendable progress in education in the state, the literacy rate was also significantly improved even in the national level.

### Estimates of Unit Public Expenditure on Education

It is an academic interest to analyze the trends of expenditure per student. The key variables for this analysis are total expenditure (current and constant prices), total students' enrolment and number of teachers. While it is desired to have longer period for trend analysis, data in respect of higher secondary, college and other educational institutions are not available for a longer period, though they are available only since recently. Thus, this analysis adopts the enrolment and number of teachers up to high school only to ensure uniformity of data and longer time period, and we may also call it as school education. Since the contribution of school education on all indicators to total budget expenditure on education is excessively high (more than 75 percent) in comparison to other institutions (higher secondary, college and technical), unit expenditure of school education is expected to be the best indicator for the entire education sector in Mizoram. In addition, the interpolated values were adopted for some years where there was no official record in respect to the variables of interest.

To clearly understand the general trends of expenditures per students, it is considered pertinent to present the increasing availability of teacher per students (pupil) over the years side by side with the increasing public expenditures. In Figure-1&2 and Table-1 are presented the trends of student-teacher (pupil-teacher) ratio and public expenditure per student since 1981-82 till 2013-14.





It is observed from Figure-1 and Table-1 that number of teachers per student have increased continuously in Mizoram since 1981 as indicated by the declining student-teacher ratios over the years. This should be taken as the achievement of state government in providing education services to the people as more and more teachers are available per student. The student-teacher ratios have declined from 23.49 students per one teacher in 1981-82 to 12.83 students per teacher at annual compound rate of decline (i.e.CAGR) of -1.88 percent per annum. At present, the pupil-teacher ratio is the lowest in case of high school and highest in primary schools. Thus, the availability of teacher per student is lowest in Primary level education in Mizoram while it is highest in High School.

**Table -1: Student-Teacher Ratio and Estimated Public Expenditure per Students**

Year	Student-Teacher Ratio (Students/Teacher)				Expenditure Per Student (Rs)	
	Primary	Middle	High School	Total	Current	Constant
1981-82	30.37	15.05	20.36	23.49	738.07	738.07
1984-85	25.60	12.90	15.75	19.72	1555.50	1295.17
1985-86	26.66	14.06	15.99	20.68	1843.38	1470.00
1989-90	26.56	15.35	17.48	21.01	1934.75	1167.62
1994-95	26.00	11.10	14.37	17.45	3127.38	1120.83
1999-00	22.89	9.78	14.91	15.84	6866.44	1907.06
2004-05	17.22	7.93	12.02	12.15	9475.11	2041.48
2009-10	18.45	8.83	12.67	13.67	13898.99	2289.33
2013-14	18.93	9.29	9.08	12.83	23299.18	2625.55
<b>CAGR (%)</b>	<b>-1.64</b>	<b>-1.78</b>	<b>-1.59</b>	<b>-1.88</b>	<b>10.52</b>	<b>3.04</b>

Source: (1) Statistical Handbooks (Various Issues), Directorate of School Education, (2) Economic Survey of Mizoram, (3) Demand For Grants (Various Issues); Government of Mizoram

It may be observed from Figure-2 and Table-2 that there has been gradual increase in public expenditure per student of school education in

Mizoram both in current and constant prices with CAGR of 10.52 percent and 3.04 percent respectively. The per capita public expenditure has increased from Rs.738.07 in 1981-82 to Rs.23299.18 in 2013-14, while it has increased from Rs.738.07 to Rs.2625.55 at constant price during the same period. It may thus be concluded that the state has achieved significant raise in budgetary expenditure in consonance with the increasing demand and economic development of the state.

**Determinants of Public Expenditures on Education**

As it was observed that there was a significant increase in public education expenditure during the last 30 years, it is felt necessary to analyze the factors that determine the increase in public education expenditure in Mizoram.

Table-2 presents the results of estimated log-linear regression of public expenditure per student (total expenditure divided by enrolment) on student enrolments, number of teachers and number of schools in Mizoram. The estimated coefficients may also be interpreted as the sensitivity (elasticity) of unit expenditure on these factors.

**Table-2 : Estimated Regression Results of Total Unit Expenditure on School Education**

Factors	Constant	Coefficient	R-Square
<b>Student Enrolment</b>			
Primary	-8.7***	2.41***	0.59
Middle	-3.14***	0.97***	0.73
High School	-0.17	0.72***	0.57
<b>No. of Teachers</b>			
Primary	-0.05	0.87***	0.73
Middle	2.0**	0.63***	0.7
High School	2.87***	0.57***	0.67
<b>No. of Schools</b>			
Primary	-1.99**	1.3***	0.76
Middle	2.41***	0.75***	0.73
High School	3.82***	0.61***	0.64

\*\*\*Significant at 1% level, \*\*5% level and \*10% level

The estimated coefficients are found to be significant in all cases, while the constants are insignificant in case of student enrolment for high school and number of teacher for primary school. The estimated R-squares are fairly acceptable in the range of 0.59 to 0.76. It is observed that the estimated coefficient or elasticity is highest for

primary education in each of the cases. The coefficients of unit expenditure for primary school are 2.41, 0.87 and 1.3 for student enrolment, number of teachers and number of schools. This indicates there is more than proportional relationship between unit expenditure on primary education and such factors as enrolment, teachers and schools; while there are less than proportional relationship in case of middle and high school. Thus, the unit cost on primary education is most sensitive to these factors. This may, otherwise, be taken as the vulnerability of primary education in the state and at the same time, it also suggests the possibility of significant improvement with increased budgetary expenditures.

### Major Findings and Conclusion:

- There was commendable progress and development in the education sector during the Union Territory period. The number of primary schools increased at a very fast rate with the CAGR of 8.1 per cent, while the total number of enrolments and teachers also improved with the CAGR of 2 per cent and 7.2 per cent respectively. At the same time, a positive growth rate was also seen with respect to number of institutions, enrolments and teachers at the middle school standard. The Compound Annual Growth of institutions was 7.7 per cent, while it was calculated at 4 per cent and 10 per cent for enrolment and teachers respectively.
- After attaining the statehood in 1987, the number of institutions, enrolments and teachers has substantially increased from elementary to college level education. It is also realized the development of education through technical and professional educations in the state.
- The contribution of Centrally Sponsored Schemes like Sarva Shiksha Abiyan (SSA) and RMSA is quite remarkable for the improvement of education in the state. The literacy rate was also significantly improved from 0.92 per cent in 1901 to 91.58 per cent in 2011, so that the state become among the highest even in the national level/India.
- It is observed that there has been continuous increase in government expenditures for education throughout around 30 years (1981-2014) both in current and constant prices. Both plan and non-plan expenditures, current prices and constant price, are showing significant annual increase over the years. The CAGR of expenditures are 16.83 percent and 12.1 percent for plan and non-plan expenditures respectively. In constant term, plan and non-plan expenditures are increasing at the rate of 9.38 percent and 4.95 percent respectively.
- The number of teachers per student has increased continuously in Mizoram since 1981 as indicated by the declining student-teacher ratios over the years. The student-teacher ratios have declined from 23.49 students per one teacher in 1981-82 to 12.83 students per teacher at annual compound rate of decline (i.e. CAGR) of -1.88 percent per annum.
- The pupil-teacher ratio is lowest in case of high school and highest in primary schools. Thus, the availability of teacher per student is lowest in Primary level education in Mizoram while it is highest in High School.
- There has been gradual increase in public expenditure per student of school education in Mizoram both in current and constant prices with CAGR of 10.52 percent and 3.04 percent respectively. The per capita public expenditure has increased from Rs.738.07 in 1981-82 to Rs.23299.18 in 2013-14, while it has increased from Rs.738.07 to Rs.2625.55 at constant price during the same period. This shows that the state has achieved significant raise in budgetary expenditure in consonance with the increasing demand and economic development of the state.
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