Evaluating Public Investment in Higher Education in India: Challenges and Perspectives

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Abstract

Public expenditure on higher education in India has significant implications for accessibility, quality, and inclusivity in education. This paper examines the trends, challenges, and impacts of public expenditure on higher education in India. The study provides an overview of the historical context, current expenditure patterns and policy frameworks shaping public spending on higher education. The paper concludes with recommendations for enhancing the efficiency and effectiveness of public expenditure on higher education in India, including improving governance frameworks, enhancing accountability mechanisms, and fostering innovation in funding models to ensure sustainable development and inclusive growth.

Introduction

Independent India experienced a rapid expansion of education, marked by significant increases in student enrolments, the number of institutions, and the number of teachers. This growth, often referred to as an 'educational explosion,' is also reflected in the rise of public expenditure on education (at least in current prices). In fact, the increase in public expenditure on education can be considered a key factor contributing to this educational expansion.

The importance of education was recognized by independent India from the outset, and the government prioritized education for development, as reflected in the very first Five-Year Plan. The National Policy on Education 1968 highlighted that education is an investment, and indeed, a 'crucial' one (National Policy on Education 1986).

Higher education is widely acknowledged as a cornerstone of socio-economic development, innovation, and progress within a nation. In India, the allocation and utilization of public expenditure towards higher education have garnered substantial attention due to their critical role in shaping the country's intellectual capital, workforce development, and global competitiveness.

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Public expenditure on higher education in India plays a crucial role in economic and social development, providing trained manpower and fostering critical thinking (Thomas & Bhasi, 2018). The Indian higher education system faces challenges in equity, access, quality, and globalization (Nigam et al., 2020). State intervention is justified by the divergence between private and social returns to education, with new growth theories predicting that higher levels of schooling lead to increased growth rates (Mukherjee, 2007). However, the effectiveness and efficiency of government resource allocation in education have been debated, with scope for improvement in both level and quality of publicly-funded education (Mukherjee, 2007). New institutional arrangements are being designed to address deficiencies in incentives and monitoring (Mukherjee, 2007). The expansion of higher education in India aims to meet the country's demands and emerge as a destination for global scholars (Nigam et al., 2020), while considering theoretical models and growth implications of educational expenditure (Lakshmanasamy, 1995).

Historical Context of Public Spending on Higher Education:

Public spending on higher education in India has evolved significantly over the years, shaped by historical events, policy frameworks, and socio-economic priorities. Here's a brief overview of the historical context and key policy frameworks that have influenced public expenditure on higher education in India:

1. **Post-Independence Era (1947 onwards)**:
    - After gaining independence in 1947, India prioritized expanding access to education as a means of national development.
    - The first Five-Year Plan (1951-1956) laid the foundation for public investment in education, including higher education, focusing on building institutions and expanding enrolments.
    - Institutions like the Indian Institutes of Technology (IITs) and Indian Institutes of Management (IIMs) were established during this period, emphasizing technical and management education.
2. **Expansion and National Policy on Education (1960s-1980s)**:
    - The 1968 National Policy on Education aimed to promote a socialist pattern of society through education, advocating for expansion, equity, and quality in higher education.
    - Public universities and colleges proliferated across states, supported by central and state governments through grants and subsidies.

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- Significant investments were made in infrastructure, faculty development, and research facilities to meet the growing demand for higher education.

3. **Liberalization and Economic Reforms (1990s)**:

    - The 1991 economic reforms led to a shift towards a market-oriented economy, influencing higher education policies.
    - Public funding for higher education faced constraints as the government encouraged self-financing and private sector participation in education.
    - Policies emphasized autonomy for institutions and introduced measures to enhance quality and accountability amidst fiscal constraints.

4. **Towards the 21st Century (2000s onwards)**:

    - The 2005 National Knowledge Commission recommended reforms to enhance the quality and accessibility of higher education, emphasizing public-private partnerships and innovative funding models.
    - Initiatives like the Rashtriya Uchchatar Shiksha Abhiyan (RUSA) were launched to improve infrastructure, quality, and governance in higher education institutions.
    - The introduction of schemes like the Central Universities and Colleges Faculty Salary Enhancement Scheme aimed to attract and retain talented faculty.

5. **Recent Developments and Challenges**:

    - Despite efforts, challenges such as inadequate funding, regional disparities, and issues of equity persist.
    - The New Education Policy (NEP) 2020 envisions reforms to revitalize higher education, focusing on flexibility, multidisciplinary education, and global competitiveness.
    - Public spending continues to be a critical factor in addressing these challenges and ensuring inclusive growth in higher education.

Thus public spending on higher education in India has been influenced by various historical phases and policy paradigms aimed at expanding access, improving quality, and aligning with national development goals. However, the sector faces ongoing challenges that require innovative policy interventions and sustainable funding mechanisms to meet the diverse needs of a rapidly evolving society and economy.

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Literature Review

Zoran, T. (2015), Education is the structured journey by which individuals' personalities evolve in desired directions through tailored content that meets their age and specific needs.

Babalola, S.J.(2011), Education constitutes a vital aspect of a country's human resource development, equipping individuals with knowledge and enabling them to effectively apply it, thereby serving as a powerful tool for empowerment. It has historically been recognized as a critical driver of economic growth by supplying the economy with qualified and skilled manpower capable of optimizing available resources.

Mukit, D.M.A. (2012), as education is a key factor for achieving growth, public financing of education has been a priority for the governments of developing countries. Public expenditure on social sectors like education is often reduced due to economic problems caused by wars and other crises. More importantly, the levels of public expenditure do not return to their previous (pre-war) levels even several years after the economic crisis. (Tilak, J.B.G. 1998)

Devarajan, S., Swaroop, V., & Zou, H. F. (1996), Governments in developing countries spend an average of 26 percent of their Gross Domestic Product (GDP) on goods and services, a figure that has increased by eight percentage points over the past fifteen years.

De, A., & Endow, T. (2008), Public expenditure on higher education in India has exhibited significant trends and changes over recent decades. Although expenditure in real terms increased during the 1990s, it has stagnated since then, with the share of public expenditure on education remaining below 4% of GDP.

Tasleem Araf, C. (2016), the central government has played an increasingly significant role in state education financing through centrally sponsored schemes. Although the amount of expenditure has increased since 2001, it still remains below the required levels. State-wise analysis reveals varied results in subsidy distribution, often diverging from the national trend of being pro-rich. (Mitra, A. 2015).

The composition of expenditure has shifted, with an increase in the share of planned expenditure and a decline in non-planned expenditure. Despite these changes, concerns persist about the expansion, restructuring, and quality improvement of higher education to meet India's developmental needs. (Tasleem Araf, C. 2016).

Patel, G., & Annapoorna, M. S. (2019), the National Education Policies of India in 1968, 1986, and 1992 (revised) recommended spending 6% of GDP on education. However, over the past one and a half decades, the average expenditure has been only 3.77%. This insufficient funding can be considered one of the factors contributing to India's low ranking on the Human Development Index.

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Motkuri, V., & Revathi, E. (2023), Education, as a public good, requires state expenditure. As a concurrent subject in a federal system, it necessitates shared financial, regulatory, and developmental responsibilities. In India, public expenditure on education is approximately 4% of GDP, with only 1% funded by the Union and 3% by the states combined. To achieve the long-standing goal of spending 6% of GDP on education, it is essential that both the central and state governments share this responsibility equally, or else the development of education will remain an unfulfilled ideal.

Duraisamy, P., & Duraisamy, M. (2016), the privatization of higher education in India is a result of increased demand, particularly from growing middle-income families, and the inability of state governments to enhance public funding for higher education. This has led to a rise in enrolment in private unaided institutions, which grew from 25 percent in 2000–2001 to 58 percent in 2012–2013. As a result, the burden of financing higher education has shifted from the state to households.

Harisha, B. & D.V. Gopalappa (2023), Higher education is a crucial component of social infrastructure that shapes the destiny of any nation. Public policy on education is a key element of contemporary development strategy, and in a developing country like India, investment in education is of paramount importance. The higher education sector in India has experienced a paradigm shift in recent years. To foster future social and economic progress, it is essential to expand, restructure, and enhance the quality of education in the country.

Jha, M. N., & Srivastava, R. (2021), Higher education is a crucial factor in the economic development of a nation. An educated individual is equipped with the skills and knowledge needed to foster an empathetic environment and promote social justice in society. Higher education empowers individuals with skills, knowledge, and awareness. But in recent years, there has been variations in enrolment across various higher education programs.

Nasiya, V. K. (2022), the proportion of expenditure on higher education relative to total education expenditure in India and Kerala has been declining over the years. Additionally, the proportion of government expenditure on higher education relative to Kerala's Gross State Domestic Product (GSDP) has decreased over the past few decades. This trend was further exacerbated by the introduction of the new economic policy in 1991, which encouraged private sector participation in areas previously dominated by the public sector.

Bhakta, R. (2015), the study finds that significant disparities continue to exist across gender, regions, and rural-urban areas, although these gaps are gradually narrowing. While per capita public expenditure on various levels of education has steadily increased, there remains consistent spatial variation in allocation patterns. The models estimating the annual increase in education indicators show that social status still plays a crucial role in determining actual progress in educational outcomes. The proportion of expenditure on higher education is a key factor in achieving a higher percentage of the population completing higher education, but expenditure on adult education does not significantly impact literacy rates.

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Singla, M. L. (2015), the higher education sector has seen a tremendous increase in the number of institutions since independence, becoming the largest in the world. The number of universities and degree-awarding institutions has grown approximately 26-fold, from 27 in 1951 to 712 in 2014. Similarly, the number of colleges has increased around 64-fold, from 578 in 1951 to 36,671 in 2014. However, despite this growth, the Government of India has not achieved significant success in its education projects, and the Gross Enrolment Ratio (GER) remains relatively low compared to advanced countries.

Objectives of the Study

- To analyse the pattern of public expenditure on higher education.
- To examine the relationship between public expenditure and the Gross Enrolment Ratio (GER).
- To offer policy suggestions to strengthen quality initiatives in higher education.

Hypothesis:

- H1: There is a significant impact of public expenditure on GER in Higher Education.
- H0: There is no a significant impact of public expenditure on GER in Higher Education.

Methodology

The study examines the relationship between public expenditure and the Gross Enrolment Ratio (GER) based on secondary data published by the Government of India in its AISHE report for a period of ten years from 2011 to 2021. A regression analysis is conducted to assess the impact of public expenditure on GER.

Table 1: Expenditure on Universities and Higher Education by Education Department (in Crores)

Year	Total Expenditure	Total Share (In Percentage)
2011-12	36234.04	12.91
2012-13	42504.61	13.12
2013-14	47460.52	12.97
2014-15	51112.99	12.63

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2015-16	55662.85	12.84
2016-17	59780.47	12.85
2017-18	64959.08	12.80
2018-19	70449.92	13.06
2019-20	70814.27	11.68
2020-21	74184.46	11.86

(Source: AISHE Report GOI)

Table 2: Gross Enrolment Ratios in Universities and Higher Education

Year	GER in Higher Education (In %)
2011-12	15.2
2012-13	21.5
2013-14	23.0
2014-15	23.6
2015-16	24.3
2016-17	24.1
2017-18	24.6
2018-19	24.9
2019-20	25.6
2020-21	27.3

(Source: AISHE Report GOI)

Application of Tools: Regression Analysis

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The regression analysis investigates the relationship between the dependent variable (GER) and the independent variable (Total Expenditure on higher education by the Education Department). The regression equation is:

$$GER=10.9+0.000218\times TE$$

Where GER represents the Gross Enrolment Ratio, TE represents the total expenditure on universities and higher education by the Education Department. The statistical results provide insights into the significance and strength of this relationship.

The regression equation is

GER = 10.9 + 0.000218 TE

Predictor	Coef	SE Coef	T	P
Constant	10.914	2.644	4.13	0.003
TE	0.00021801	0.00004511	4.83	0.001

S = 1.75047 R-Sq = 74.5% R-Sq(adj) = 71.3%

The statistical results of the regression analysis are detailed below.

The constant term (Constant) is 10.914 with a standard error of 2.644. The coefficient for TE is 0.00021801, and its standard error is 0.00004511. Both coefficients are statistically significant (p = 0.003 for the constant and p = 0.001 for TE), indicating that there is evidence to reject the null hypothesis that the coefficients are equal to zero.

The t-value for the constant (4.13) and TE (4.83) further supports the statistical significance. The t-values are calculated by dividing the coefficient by its standard error. In both cases, the t-values are well above the critical value, providing additional evidence for the significance of the coefficients.

The standard error of the regression (S) is 1.75047. The coefficient of determination (R-Sq) is 74.5%, indicating that 74.5% of the variability in GER can be explained by the model. The adjusted R-squared (R-Sq(adj)) is 71.3%, considering the number of predictors in the model.

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Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	71.576	71.576	23.36	0.001
Residual Error	8	24.513	3.064		
Total	9	96.089			

The analysis of variance (ANOVA) assesses the overall significance of the regression model. The F-statistic is 23.36, with a corresponding p-value of 0.001. This suggests that the regression model is statistically significant, and there is evidence to reject the null hypothesis that all coefficients are equal to zero.

OLS Regression Model Equation:

GER=10.914+0.0002×Total Expenditure

Parameter	**Value**	**Interpretation**
Intercept (Constant)	10.914	The baseline GER when expenditure is zero.
Coefficient for Total Expenditure	0.0002	For each crore increase in expenditure, GER increases by 0.0002%.
R-squared	0.745	74.5% of the variance in GER is explained by expenditure.
Adjusted R-squared	0.713	Corrected for the number of predictors; strong explanatory power.
P-value for Expenditure	0.001	Indicates a significant relationship ($p < 0.05$).
F-statistic	23.36	Shows the overall significance of the model.
Standard Error (Coefficient)	4.51e-05	Indicates the precision of the expenditure coefficient.
Condition Number	2.8e+05	A high value suggests checking for multicollinearity.

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Results:

- **R-squared:** 0.745 indicates that approximately 74.5% of the variability in GER can be explained by the total expenditure on higher education.
- **Adjusted R-squared:** 0.713 shows a slight correction for the number of predictors, indicating a strong explanatory power.
- **Coefficient for Total Expenditure:** 0.0002, implying that for every crore increase in expenditure, the GER is estimated to increase by 0.0002 percentage points.
- **P-value for Total Expenditure:** 0.001, which is highly significant ($p < 0.05$), confirms that the relationship between expenditure and GER is statistically significant.
- **Intercept (Constant):** 10.914 suggests the baseline GER when expenditure is zero.

Interpretation:

- The regression confirms a statistically significant positive relationship between total expenditure on higher education and GER.
- The model explains a substantial portion of GER variation (74.5%), supporting that expenditure is a critical factor.
- The positive coefficient (0.0002) reflects that increased financial investment in higher education correlates with improved enrolment.
- The low p-value (0.001) underscores that this relationship is not due to random chance.

The hypothesis test (H1) is concerned with the impact of public expenditure on GER in higher education. The regression results provide strong evidence in support of this hypothesis. The positive coefficient for TE (0.00021801) implies that for each unit increase in total expenditure, the GER is expected to increase by 0.00021801 units.

In conclusion, the regression analysis indicates a significant relationship between public expenditure on universities and higher education and Gross Enrolment Ratios. The positive coefficient suggests that higher expenditure is associated with higher GER. These findings provide empirical support for the hypothesis that there is a significant impact of public expenditure on GER in higher education. The model explains a substantial proportion of the variability in GER, as indicated by the high R-squared values.

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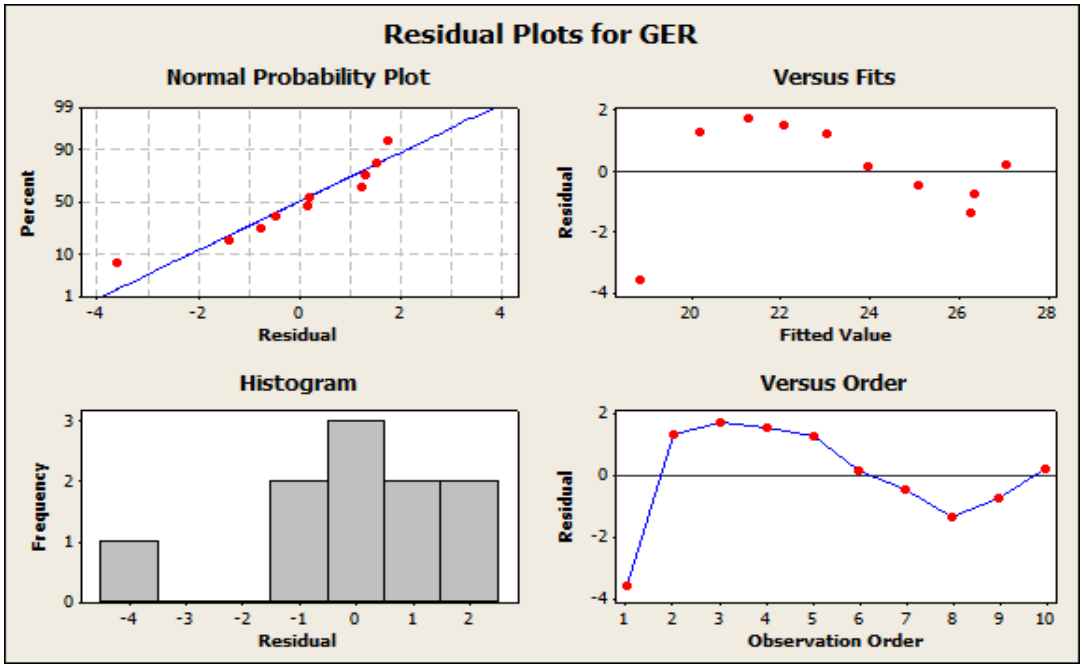

The analysis indicates that there is a significant positive relationship between public expenditure and GER, with an R-Squared value of 74.5%, suggesting that 74.5% of the variability in GER can be explained by public expenditure.

Findings

- **Strong Positive Correlation:** The significant positive coefficient indicates a direct relationship between total expenditure and GER, confirming that increased funding is associated with higher enrolment rates indicating the importance of adequate funding for improving higher education accessibility and quality.
- **Significant Predictive Model:** The p-value and R-squared values confirm that total expenditure is a meaningful predictor of GER.

Suggestions

To enhance the quality and accessibility of education, it is essential to increase government funding and ensure the efficient allocation of resources. This can be complemented by streamlining regulatory approval processes for new institutions and courses, fostering public-private partnerships to enrich educational offerings, and improving data collection mechanisms to track enrolment trends and identify areas in need of improvement. Furthermore, establishing feedback mechanisms involving students and stakeholders can provide valuable insights to continuously improve educational policies and practices. Additionally, facilitating industry-academia partnerships can bridge the gap between education and employment, ensuring that educational curricula align with the demands of the job market and contribute to a more skilled workforce.

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Conclusion

Public expenditure on higher education in India faces challenges such as inadequate funding, uneven resource distribution, and bureaucratic inefficiencies. Despite recent increases in budget allocations, funding remains insufficient to meet growing demands. There is a pressing need for structural reforms to optimize the utilization of available funds, transparent allocation mechanisms, better governance, and effective monitoring of expenditures. Leveraging private sector participation through public-private partnerships can supplement resources and improve infrastructure and educational outcomes. Policymakers should prioritize increasing public investment in higher education, ensuring equitable distribution across regions and disciplines. Targeted scholarships and financial aid can enhance access for economically disadvantaged students. A strategic vision for higher education funding is necessary, aligning with national development goals and emphasizing research, innovation, and skill development to meet global challenges.

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