



---

## Effect of University Expenditure on Selected Performance Indicators

(With Special Reference to C.C.S. University Meerut)

Jyoti Siwach (Assistant Professor) SD College Muzaffarnagar &

Dr. Bharat Kumar(Assistant Professor) SPC(PG) Baghpat

### Abstract

This article reports the results of an empirical study of the impact of University expenditure on student performance in C.C.S University Meerut, using panel dataset constructed from the C.C.S University campus. For this purpose we use some statistical and econometric tools by using the performance indicators like graduation rate and average annual marks of students. The term 'per pupil expenditure' is the more specific indication of university expenditure that indicates the provision and allocation of resource inputs into university. The result of the multiple regression models shows that per-pupil expenditure and pupil teacher ratio have insignificant role in producing the academic attainment in terms of average annual marks and graduation rate of PG and M.Phil level. The access of university income over its expenditure reveals that university is not able to optimally use of its financial resources.

**Keywords:** *University expenditure, educational attainment, Average annual marks, graduation rate, pupil-teacher ratio*

### 1. Introduction

University education plays a vital role in national development and welfare of society. Indian higher education system has established itself as one of the largest system in the world in terms of the number of institutions and student enrollment. Higher education is spending more rapidly than the other level of education. The study discusses the impact of these developments on efficiency of university. Efficiency of university depends on educational finances and financial management. To determine optimum allocation of resources in a particular university and the optimal use of financial resources of university can be measured by education attainment of campus students.

In its size and diversity, India has one of the largest higher education systems in the world. Before independence, access of higher education was very limited and elitist, with enrolment of less than a million students in 500 colleges and 20 universities. Since Independence, the growth has very impressive. Now, it is recorded fact that there is an increase of 26 times in the number



---

of Universities, 64 times increase in the number of colleges, and the student enrolment has gone up to 81 times in the formal system of higher education as compares to the figure of independent Year of India. India presently has 611 universities, comprising 298 state universities, 130 deemed Universities, 5 institutions established under the state legislations (Annual Report MHRD 2011-12). According to the report of the Higher Education in India, issues related to expansion, inclusiveness, quality and finance, the access to higher education measured in terms of gross enrolment ratio (GER) increased from 0.7% in 1950-51 to 15% in 2012. And total allocation for higher education was only 170 million in 1950, which has gone beyond 90,000 million in 2004-05. This impressive increase is offset to some extent by the rise in prices and rise in the number of student entering higher education.

After the human capital theory was postulated by T.W. Shultz (1961) analysis and research on higher education has been both extensive and intensive. The broad area of research include the relationship between higher education and economy, modes of financing institutions of higher education, the impact of different modes of funding on equity and quality, role of multiple funding sources, efficiency of resources allocation and the cost effectiveness of educational expenditure. We discuss the pattern of university income and expenditure and its effect on student performance. According to the Mukherje, most of the studies in university finance in India did not discuss the cause and effect relationship between the finances and educational outcomes. There are lot of studies which are related to the finances in Indian universities such as Chalam (1987), Panchamukhi (1975), Mathew (1991) and George K.K (1995) and so on. The Indian Council of Social Science Research (ICSSR) and the University Grant Commission (UGC) in early 1970's felt the need to make elaborate studies on the financing on higher education in India. These two organizations jointly sponsored a series of university finances and approached selected universities for this purpose. The studies were conducted by Mathew, E.T (kerala University), Jha, D. (Patana University) and Nigam, M.S.(Rajasthan University), Mukharji, M. (Calcutta University) and Nanjundappa, D.M (Karnataka University).these studies had more or less the same objectives and covered the major sources of income, income adequacy of the income and the financial stresses which adversely affected the operational efficiency of universities. This study investigates the financial health of university and its effect on student performance with special reference to C.C. S University. Chaudhary Charan Singh University was established in 1996, to cater to needs of higher education in western Uttar Pradesh. It is one of the top leading universities in Meerut.



---

The present article has been planned with the following specific objective in mind:

- ❖ To analyze the relationship between university expenditure and student attainment with the special reference to C.C.S University.
- ❖ To identify the academic attainment of arts and science students at PG and M. Phil level.
- ❖ To identify the simple relationship (association) between the independent variable i.e. student teacher ratio (STR), per pupil expenditure (PPE) and dependent variable Graduation Rate and Average Annual Marks.

## 2. Data collection and Methodology

### 2.1. Data collection

In order to achieve the objective of the study the data have been collected through primary and secondary sources of C.C.S University. Primary data regarding to the income and expenditure of university have been collected from the Account department of C.C.S University. In addition to this, data of enrolment was calculated by the C.C.S University Enrolment –List, compiled from the Examination Cell of C.C.S University Meerut. Secondary data regarding to the number of teachers have been collected through the University website ([www.ccsuniversity.ac.in](http://www.ccsuniversity.ac.in)). Primary data of Annual result which indicated the performance of university students have been taken from the Computer Cell of C.C.S University Meerut.

### 2.2. Methodology

The following regression model has been used to analyze the impact of university input on student performance:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + e$$

Where:

**Y = PRIVATE FINAL CONSUMPTION EXPENDITURE (RS. CRORE)**

**X<sub>i</sub> =**

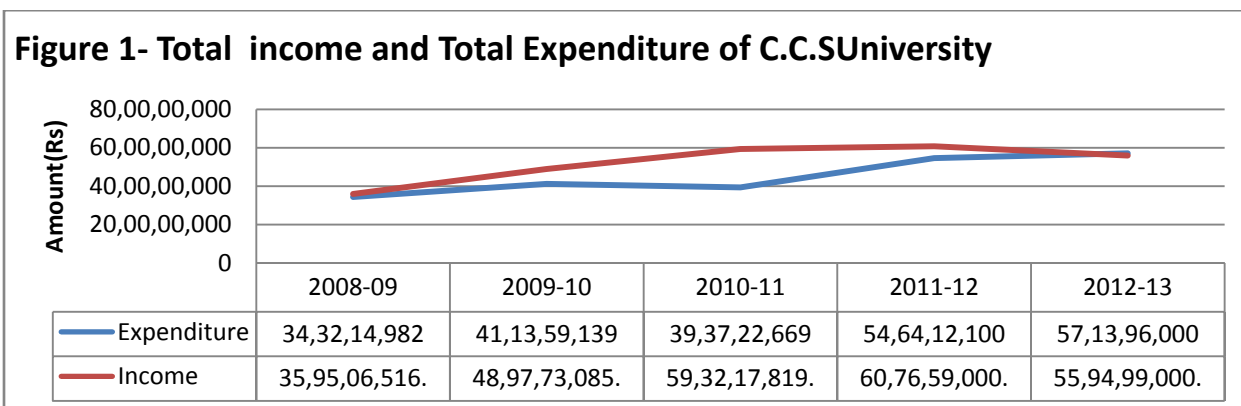
**β<sub>i</sub> = Parameter to be estimated (i=0,1,2)**

**e = random error term**

This study estimates the following multiple regression function with the following input and the output variables.

### 3. Data Analysis

Figure 1 shows a wide gap between total income and total expenditure in year 1010-11. It depicts the access of total income over total expenditure in year 2008-09, 2009-10, 2010-11 and 2011-12. The access of university income shows good financial health of C.C.S University. It depicts that University has adequate finance to use. Total income and expenditure both has increasing over the years. University income has grown with 11.63% CAGR but University expenditure grows more rapidly than income with 13.52% CAGR.

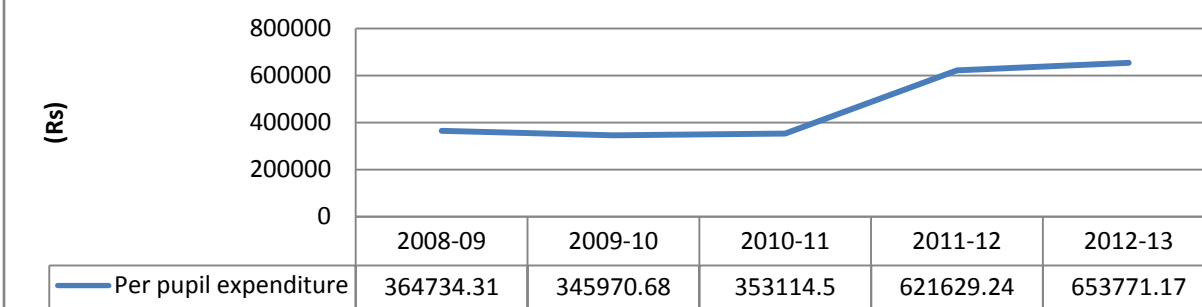


*Source: Calculated based on Annual account statistics, compiled from Account Department of C.C.S University, Meerut*

The annual account report reveals the wide variation in total expenditure of University. University expenditure has increased over the years as indicated by the Figure-1 it was increased from Rs. 343214981.9 in 2008-09 to Rs. 571396000 in 2012-13. Enrolment data of PG, M.Phil and other diploma courses of university students have been collected through the enrolment-list of C.C.S University which reveals the variation in total enrolment of University campus. Given the number of enrolment has increased from 941 in 2008-09 to 1115 in 2010-11. Per pupil expenditure has grown from Rs. 364734.31 in 2008-09 to Rs. 653771.17 in 2012-13. Figure 2 illustrates the trends in University spending per- student over the period of time from time from 2008-09 to 2012-13. As can be seen by the blue line, university expenditure per student has been almost same for first three years but for last two years PPE grew rapidly. It grew very fast for the year 2011-12 or 2012-13 due to decline in enrolment level.

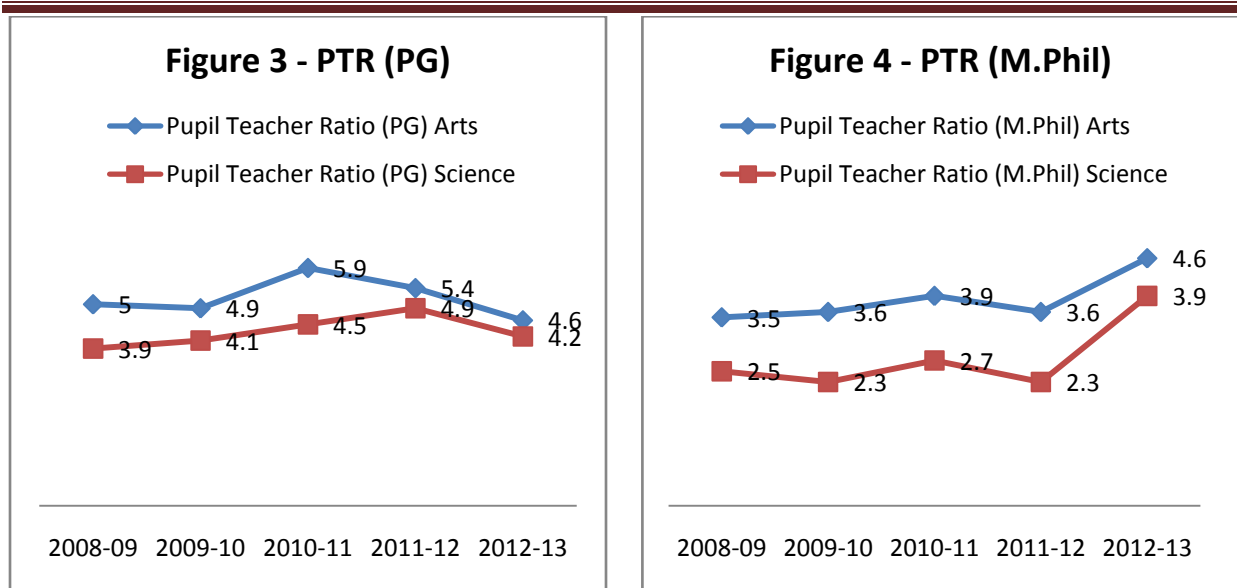


**Figure 2-Per pupil expenditure**



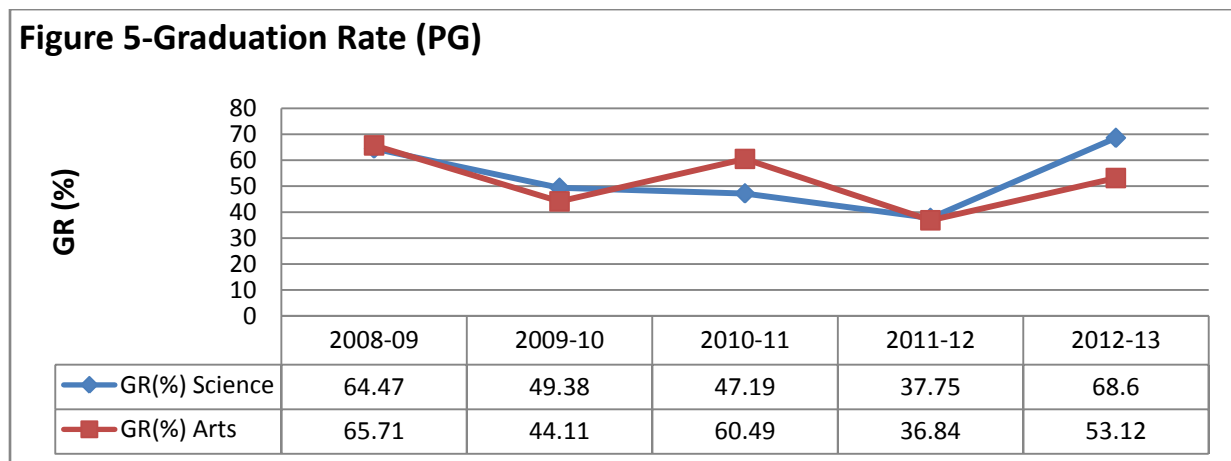
*Sources: Primary data collected from Computer Cell and Examination Department of C.C.S University Campus*

It is easy for a teacher to teach, evaluate and feedback if students are lesser in number in a classroom. It is considered that lower Pupil-Teacher Ratio (PTR) gives better results than those of higher PTR. Figure 3 and Figure 4 provides the information on pupil teacher Ratio (PTR) of University over five years from 2008-09 to 2012-13. Pupil-teacher ratio has been computed by divide the number of students by number of teacher per head at a specific level of education. Number of students and number of teachers have been compiled by primary source of data. Variation in pupil teacher ratio is presented through the Figure 3 and 4. It is clear from the figures that pupil teacher ratio is higher at PG level than M.Phil for both Arts and Science students. Figure 3 shows that PTR is 5.0 in 2008-09, than decline to 4.9 in 2009-10. PTR of PG Arts students has grown since 2009-10 by about 5.9, than decline to 5.4 and 4.6 in 2011-12 and 2012-13 respectively. PTR for PG science student has continuously grown since 2008-09(3.9) and reach to 4.9 in 2011-12, than decline to 4.2 in 2012-13. From Figure 4 it is clear that PTR is always higher for M.Phil Arts students than M.Phil science students. But the variation in both is almost the same direction in 2008-09 PTR is 3.5 and 2.5 for M.Phil arts and science students respectively. PTR for Science students has decline to 2.3 in 2009-10, than increase to 2.7 in 2010-11. Since 2011-12 PTR has grown for both M.Phil arts and science students.



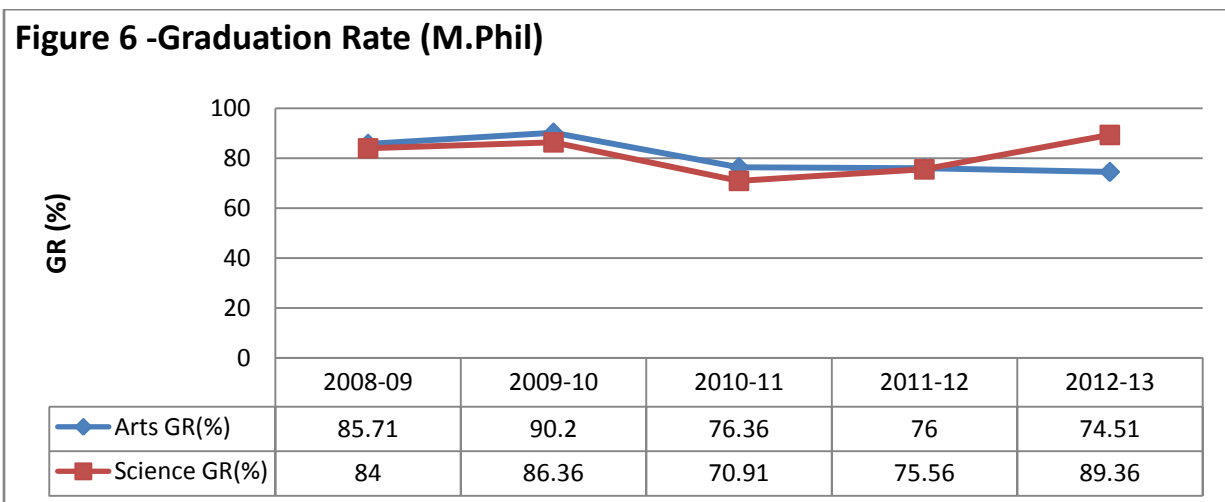
Source: Calculate based on primary and secondary data compiled from Computer Cell and Website [www.ccsuniversity.ac.in](http://www.ccsuniversity.ac.in)

The cohort – Graduation rate (GR) is the usual measure of the degree completion in the literature. From the figure 5 that about 5.2 GR for PG arts students was 65.71% in 2008-09 since than it was decline to 44.11% in 2009-10. Than we show an increase in GR, it was increased to 60.49% in 2010-11 than decline to 36.84% in 2011-12. In 2012-13 GR was 53.12 % for PG arts students. For PG science Students GR was 64.47% in 2008-09, it was decline to 49.38%, 47.19% and 37.75% for year 2009-10, 2010-11 and 2011-12 respectively. In 2012-13 GR for PG arts students reach to 68.60%.



Source: Calculated based on selected educational statistics, compiled from Computer Cell of C.C.S University Campus

Figure 6 Shows that about 85.71 % for M.Phil arts courses and 84.00% for M.Phil science courses are completed their degree in 2008 -09. Than we calculate about 5% growth in GR for M.Phil arets students and 2% growth in M.Phil science students. Than we show continuously decline in graduation rate for M.Phil art students, it reach to 74.51% in 2012-13. GR for M.phil science students has also decline since 2008-09. But it is increased to 89.36% in 2012-13.



Source: Calculated based on selected educational statistics, compiled from Computer Cell of C.C.S University Campus

#### 4. Result and Findings

Table 1, Table 2, Table 3 and Table 4 present the magnitude of the differential impact of Per Pupil Expenditure and Student Teacher Ratio on student achievement as measured by the multiple regression analysis coefficients. From the Table 1 t-value is insignificant for both science and arts students at PG level. It shows that PPE and PTR has not significant role in producing student achievement in terms of average annual marks as a dependent variable. As shown in Table 2 the dependent variable is Graduation Rate at PG level of University education. The coefficient of explanatory variable RATIO and EXPEND shows that there is negative relationship between the variable. From the negative sign of coefficient RATIO and EXPEND, it is derived that funds and resource inputs are not being used at the optimal level as Hanushek (1996a) pointed out that resource inputs were used effectively when coefficient were positive and significant.



**Table 1:** The Differential Impact of PPE and PTR on Average Annual Marks (PG)

Explanatory Variable	Coefficient		Std.Error		t-statistic		P-value	
	Science	Arts	Science	Arts	Science	Arts	Science	Arts
Constant	106.32	84.94	23.32	19.9	4.55	4.26	0.04	0.05
RATIO	-16.4	-4.75	6.17	3.45	-2.65	-1.37	0.11	0.3
EXPEND	3.39	-2.43	1.6	1.04	2.05	-2.35	0.17	0.14

Note: Dependent variable is average annual marks, level of significance is 0.05

**Table 2:** The Differential Impact of PPE and PTR on Graduation Rate (PG)

Explanatory Variable	Coefficient		Std.Error		t-statistic		P-value	
	Science	Arts	Science	Arts	Science	Arts	Science	Arts
Constant	168	86.04	80.06	93.78	2.1	0.91	0.16	0.45
RATIO	-21.04	-3.01	13.9	16.29	-1.51	-0.18	0.26	0.87
EXPEND	-1.5	-3.95	4.17	4.8	-0.36	-0.8	0.75	0.5

Note: Dependent variable is Graduation Rate, level of significance is 0.05

Table 3 displays the result for testing the effect of student teacher ratio and per-pupil expenditure on average annual marks of M.Phil students. From the value of coefficient and t-value we found positive but insignificant result for both arts and science students. Furthermore the impact of PPE and STR both are insignificant and negative for M.Phil arts students. There is insignificant but positive effect of STR on Graduation Rate of M.Phil arts students. However, the impact of PPE on student achievement is some positive but insignificant.

**Table 3:** The Differential Impact of PPE and PTR on Average Annual Marks (M.Phil)

Explanatory Variable	Coefficient		Std.Error		t-statistic		P-value	
	Science	Arts	Science	Arts	Science	Arts	Science	Arts
Constant	49.1230	55.84	12.3362	7.36	3.9820	7.57	0.0576	0.01
RATIO	2.7123	1.1	5.0709	2.25	0.5348	0.49	0.6462	0.668
EXPEND	2.48	-2.5	2.24	6.53	0.1107	-0.38	0.9219	0.737

Note: Dependent variable is average annual marks, level of significance is 0.05





**Table 4:** The Differential Impact of PPE and PTR on Graduation Rate (M.Phil)

Explanatory Variable	Coefficient		Std.Error		t-statistic		P-value	
	Science	Arts	Science	Arts	Science	Arts	Science	Arts
Constant	69.9372	110.67	21.3432	28.9116	3.2767	3.8279	0.0818	0.0619
RATIO	4.2516	-5.0303	8.7732	8.8441	0.4846	-0.5687	0.6758	0.0619
EXPEND	-7.5	-2.3	3.88	2.56	-0.0192	-0.9015	0.9868	0.4624

Note: Dependent variable is Graduation Rate, level of significance is 0.05

Overall, the study finds mixed effects. As tables show negative effect of PPE and PTR on student achievement. It means that university funds have no effect on student performance.

### 5. Conclusions and Policy Implications

Graduation Rates and Average annual marks are the most frequently applied measures of university performance and continue to draw the attention of both academic and policy makers. This paper has sought in the first place to analyze financial health of C.C.S University and secondly to determine whether per pupil expenditure(PPE) and pupil teacher ratio (PTR) influence university performance in terms of graduation rate (GR) and average annual marks of students. The results of multiple regression models show that an increased in pupil teacher ratio (PTR) tends to decrease in students performance at PG level of education. The relationship and differential impact of student teacher ratio (STR) is statistically insignificant and negative on academic attainment of both arts and science students at PG level. Furthermore, the impact of student teacher ratio (STR) is insignificant but positive for the academic attainment of M.Phil students. However the impact of STR is insignificant and negative on the average annual marks of M.Phil arts students. It is derived from the regression result that per pupil expenditure (PPE) has positive but insignificant role in producing the academic attainment in terms of average annual marks of science students at PG or M.Phil level. But the impact is in negative direction for arts students. The study found that an increase in per pupil expenditure tends to decrease the percentage of graduation rate for both PG and M.Phil courses. It is clear that C.C.S University has adequate finance to use. Income and Expenditure both has been increasing. But it should be ensured that funds or resource inputs are being used at their optimal level. It is the policy implication of the study that PPE and other inputs may have positive and significant effect if PPE and other inputs are properly allocated or equalized and effectively utilized at the optimal level of their usages. Then academic achievement in higher education may be improved to a large extent.



## References

Aristovnik, A., & Obadic A. (2011); 'The funding and efficiency of higher education in Croatia and Slovenia: A non-parametric comparison with EU and OECD countries', William Davidson Institute Working Paper No-1007

Chandrasiri, S (2003); 'Financing of University Education in Sri Lanka' Higher Education, Vol. 45, No. 1, pp.91-108

Estevez, J.G., & Brown, N.D. (2012); 'Student Graduation: To what extent doe university expenditure matter?'

Johnes, J.(2012); 'Measuring efficiency and input substitutability: Evidence from English Higher Education Sector over a Period of Expansion', department of Economics, Lancaster University

Lindsay, A.W. (1982); 'Institutional Performance in Higher Education: The Efficiency Dimension' review of Educational Research, Vol.52, No.2, pp. 175-199

Ryan,J.F. (2004); 'The Relationship Between Institutional Expenditures and Degree Attainment at Baccalaureate Colleges', Research in Higher Education, Vol.45, No.2.

University Grants Commission (UGC), Annual Report

Website of C.C.S University Meerut [www.ccsuniversity.ac.in](http://www.ccsuniversity.ac.in)