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Women's Participation in Self Help Groups and Financial Empowerment: An Empirical Investigation in Rajasthan

Dr. Sanjay Kumar Patel* and Aditi Soni#

**Assistant Professor, Department of Commerce, School of Commerce and Management,Central University of Rajasthan, Ajmer, Rajasthan, India.*

#Research Scholar, Department of Commerce, School of Commerce and Management,Central University of Rajasthan, Ajmer, Rajasthan, India.

#Email: aditi.soni093@gmail.com, M: 9660062547

Abstract

Reducing gender inequality and empowering women is one of the main goals among the Sustainable Development Goals 2030 of United Nations Development Programme (UNDP). Financial empowerment of women is one of the key steps in this direction. Empowerment means providing an individual with the power to exercise their rights and take their own as well as household decisions. Financial Empowerment of women is concerned with making women financially independent so that they can take their decisions and exercise their rights. In India, Self Help Groups (SHGs) have played a key role in empowering women with special focus on financial strengthening. The objective of the present study is to develop an index for measuring the Financial Empowerment (FE) of women associated with SHGs in Jaipur district of Rajasthan and measure the FE of using empirical data. The study is based on data collected from women who are member of SHGs in Jaipur. The data is collected using Interview Schedule from both rural and urban area of Jaipur. Indices are calculated for both rural and urban areas and a comparative analysis is conducted. The results show that the urban SHG members are more empowered as compared to rural SHG women.

Keywords : Financial Empowerment, Women, Financial Empowerment Index

1. Introduction

Women empowerment is one of the key issues at present. As per Human Development Report 2016, the present status of women is not at par with the men and still there is a need of great deal of efforts to provide women with same opportunities and lifestyle same as men. Women empowerment is providing women with the equal rights as the men. Empowerment means increasing the power of an individual so that he/she can make the decision. Women in India do not possess equal rights as the men do. In India, the SHGs have achieved a tremendous success in empowering women and providing them with the opportunities for growth and development. SHGs provide the members with the basic savings and loan facility.

1.1 Self-help groups (SHGs)

An SHG is a group of 10-20 individuals who come together for mutual help and benefit. The SHGs organize the meeting on weekly, fortnightly, or monthly basis depending on the convenience of the group members. The main agenda of the SHGs is to generate the saving of the members and use that savings for providing the loan to the members at a nominal rate of interest.

The SHG movement was started in India, in 1987, when in Andhra Pradesh a group was formed for cumulative savings and using that saving for providing loan to the members. Later, in 1992, 500 SHGs were linked to banks by the NABARD as a pilot project for financial inclusion of the people who are associated with the SHGs. The movement was highly successful and at present National Rural Livelihood Mission, (earlier SGSY) is launched to include the existing SHGs and creating new SHGs to promote livelihood and entrepreneurship which later empower the beneficiaries.

1.2 Rajasthan State-A brief description

Rajasthan belong to northern part of India and the largest state in the country. The geographical area covered by the state is approx. 342239 km square. The state shares the national borders with Punjab, Haryana, Uttar Pradesh, Madhya Pradesh and Gujarat and international border with Pakistan. The capital of Rajasthan is Jaipur. Rajasthan state is famous for its heritage value which make it one of the desirable tourists' destinations in the world. A major part of the state is covered with Thar Dessert which make it the driest state of the country.

Economically and financially, Rajasthan belongs to lower end. The state is among the poorest states in the country. The poverty figures in the state shows that out of 69 million people 10 million are poor. However, the pace of poverty reduction in Rajasthan is fastest in the country. But if we see the lower income group the poverty reduction is still very slow.*(documents. worldbank.org, 2016)*

1.3 Women Financial Empowerment

The concept of financial empowerment means making an individual financially strong so that he or she can take decision independently. The efforts in the direction of financial empowerment includes providing individual with access to savings, credit insurance and financial knowledge. In India, the women are not financially empowered as compared to men. They do not have access to the financial resources of the household. In Rajasthan, the situation is even worse. The women here face more discrimination even in the access to basic resources.

3. www.investrajasthan.com

Table 1: Review of Literature

S. No.	Author	Objective	Methodology	Conclusion
1.	**Weber & Ahmad (2014)**	To study the impact of micro finance on women empowerment in Pakistan.	Loan cycle was independent variable and social and financial empowerment were dependent variables. Data was collected using from 90 participants and used logistic regression for analysis.	The study found that the women in higher loan cycle are more empowered as compared to those who are in first loan cycle. The study also concluded that other factors like marital status, education, age rural vs. urban have impact on women's empowerment.
2.	**Mittra, Sharmin & Akanda (2017)**	Studied the impact of income genera -tion on decision making ability of women and relation between the demographic characteristics and women empowerment in Bangladesh.	105 respondents were studied using ten selected characteristics.	It was found that only four have significantly positive impact on decision making ability. 27.62% have low; 39.05% have medium and 33.33% have high impact on empowerment through income generating activities.
3.	**Datta (2014)**	To study the impact of JeeViKa, a rural poverty reduction programme, on women empowerment.	Indicators of empowerment are mobility, decision making and confidence to engage in	JeeViKa was unable to change the income earners in the households. However, the households having any member associated with SHG have low debt burden as compared to those
4.	**Rajasekhar, Dr Manjula, R. & Suchitra, J. Y. (2017)**	To study the extent to which NGO microfinance has improved the livelihoods and reduced poverty among Adivasi households in Karnataka and Tamil	Primary data was collected using FGDs from 5 NGOs (1 from Karnataka and four from Tamil Nadu, 20 SHGs, 3 from each NGO).	It is found that microfinance has not significantly improved the livelihoods of Adivasis.

5.	**Dubey (2015)**	To find out whether the women associated with SHGs are economically empowered.	Data from 100 respondents of Chatarpur area of Madhya Pradesh has been collected using Interview Schedule and Observation method.	It was found that the membership of SHGs have improved the financial status of women.
6.	**Sandhu (2015)**	To study the effect of SHGs on socio-economic status of women in Jalandhar district, Punjab.	Data was collected using Interview Schedule method from two blocks (90 women randomly selected from 9 SHGs).	Improvement in standard of living and social standing of the members has been observed. SHG membership has also developed saving habits among the members and helped in reducing family
7.	**R.Evangeline & Dr.S.Mathivannan (2017)**	To recognize the role of SHGs in economic development of women.	Primary data of 370 households associated with SHGs was collected in Tuticorin district, Tamil Nadu. ANOVA and Garret Ranking was used for analysis.	Study found that households are benefitted from group savings and group loans. However, nature of position, experience and monthly contribution towards savings do not have any impact on empowerment.
8.	**Sarania (2015)**	To study the effectiveness of SHGS in improving the empowerment status of women in Assam.	Primary data of 100 households from 50 groups has been collected using multi-stage sampling and Wilcoxon test is used for analysis.	It was found that various income generating activities have been initiated which improved the empowerment status of women.

9.	**V. Nirmala Devi (2017)**	Studied the demographic profile of SHG members in Coimbatore and studied their perception about the benefits of SHG membership.	Primary data from 250 households was collected through structured Interview Schedule.	The study concluded that factors like age, marital status, family type, education, and awareness about SHGs and the nature of savings affect the empowerment status of women, hence these should be considered for policy making.
10.	**Saroj & Singh (2015)**	To study the role of microfinance through SHG in socio-economic empowerment of rural families in Ajmer, Rajasthan.	Data of 75 beneficiaries from 8 SHGs of four villages in 2 blocks has been collected.	SHGs have significant impact on women empowerment.
11.	**Singh (2016)**	To assess the empowerment of women through SHG microfinance in Dholpur district, Rajasthan.	Data of 25 SHG and 25 non-SHG women has been collected on 3-point scale. Paired t test was used for analysis	The decision-making involvement of SHG member is better than non-SHG member and SHG women are more confident.
12.	**Agrawal (2018)**	To study the impact of microfinance on empowerment of women in Banswara district	Primary data was collected using questionnaire from	Microfinance has positive impact on economic empowerment of women in the region. Awareness about various issues has also increased among women.
13.	**Sharma & Jain (2018)**	To study the role of SHG microfinance in empowerment of women in Rajasthan.	Data of 50 beneficiaries has been collected from 3 SHGs	Microfinance has positively affected the empowerment of women both financially and psychologically.

2. Objective

The present study is an attempt to develop an index to measure the financial empowerment of women. The sub-objectives are as follows:

1. To develop an index to measure the financial empowerment.
2. To measure the financial empowerment of women in urban as well as rural area of Jaipur district of Rajasthan.
3. To give suggestion for policy making based on the results.

3. Significance of Study

Gender inequality is one of the social problems faced by the world at present. There is need of great deal of efforts in the direction of reducing gender inequality and empowering women. The SHGs play an important role in empowering women. Thus, the study is significant in terms of policy making point of view as in the present study the authors are attempting assess the financial empowerment of women in Rajasthan and providing the suggestions for further actions.

4. Research Methodology

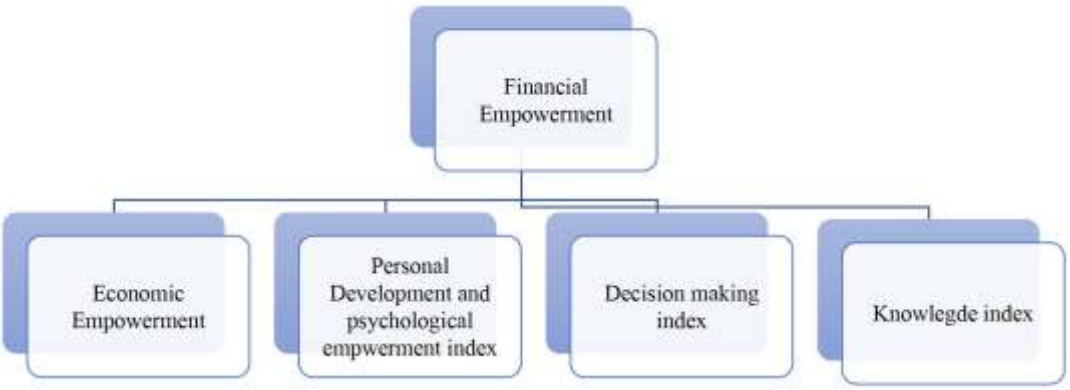
The present study is both exploratory as well analytical in nature. Primary data is collected from fifty-two women associated with the self-help groups using Interview Schedule from Jaipur district of Rajasthan. The respondents belong to Sanganer tehsil of the district. Thirty respondents are belonging to 5 SHGs of Jagatpura (urban) area and 22 respondents belong to 4 SHGs of Jaisinghpura (rural area). Secondary data from past literature and reports is also taken for the present study.

The interview schedule is divided into five parts: Group details, details of the member, financial empowerment, entrepreneurial development, and financial inclusion. During the data collection questions were explained to the respondents and filled by the researcher as the respondents were not literate enough to fill the questionnaire on their own.

4.1 Index Development

To measure the financial empowerment a financial empowerment index is developed. The financial empowerment index is the summation of the values assigned the variables. The values are assigned to the variables on scale of 1-5, with one is equal to very low and 5 is equal to very high. The financial empowerment of women in measured in four parts. A brief description of indices and variables are as follows:

4. *Rajasthan Industrial and Investment Promotion Policy 2010, Government of Rajasthan*
5. www.investrajasthan.com



1. **Economic empowerment**
   a. Individual Income
   b. Family Income
   c. Individual savings in SHG per month
   d. Use of technology in banking and finance
2. **Personal development and psychological empowerment of an individual**
   a. Ability to talk freely with people
   b. Enthusiastic for work
   c. Confident in talking with new people
   d. Open mindedness
   e. Ethics oriented
3. **Decision making index**
   a. Managing personal expenses on your own
   b. Taking part in financial decisions of the family
   c. Spending in development activity
4. **Knowledge index (Knowledge and habits)**
   a. Savings habits development
   b. Knowledge about banking and finance
   c. Knowledge about insurance
   d. Doing banking transaction on your own

The combined FE index is developed as:

FE= EE+ PE+DM+K

Where,

FE- Financial Empowerment index (combined FE index)
EE- Economic Empowerment Index
PE-Personal Development and Psychological Empowerment Index
DE- Decision-making participation index
K-Knowledge Index (Knowledge and habits)

The data of the indices is analyzed using non-parametric Wilcoxon sign rank test and Mann Whitney U test. The analysis is conducted in SPSS software.

5. Analysis and Interpretation

Below are the figures explaining the FE (combined Financial Empowerment) indices. The four different indices are calculated to measure FE. Below mentioned is the table showing the normality test for the data i.e., the calculated indices. The normality is checked for combined index for urban before joining SHG (Com_UB), combined index for urban area after joining SHG (Com_UA), combined index for rural area before joining SHG (Com_RB) and combined index for rural area after joining SHG (Com_RA).

The normality test (both Kolmogorov-Smirnov and Shapiro-Wilk test) show that the data is non- normal. Hence, the non-parametric tests are used for analysing the impact of SHGs membership on the financial empowerment of women.

Table 2 : Normality Tests

	Kolmogorov - Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Com_UB	.267	22	.000	.777	22	.000
Com_UA	.089	22	.200*	.958	22	.459
Com_RB	.168	22	.107	.965	22	.603
Com_RA	.157	22	.171	.851	22	.004

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 3 : Hypothesis Tests Used for Analysis

S. No.	Objective	Research Hypothesis	Test
1.	To check the impact of SHG membership on financial empowerment of urban women. (Before and after financial empowerment indices of urban women are compared)	There is a significant difference between the financial empowerment before joining SHG and after joining SHG of Urban SHG women in Jaipur district of Rajasthan	Wilcoxon sign test
2.	To check the impact of SHG membership on financial empowerment of rural women by comparing their FE indices	There is a significant difference between the financial empowerment before joining SHG and after joining SHG of Rural SHG women in Jaipur district of Rajasthan	Wilcoxon sign test
3.	To check the difference between financial empowerment of Urban SHG women and Rural SHG women	There is a significant difference between financial empowerment of Urban SHG women and Rural SHG women in Jaipur district of Rajasthan	Mann Whitney Test

Figure 1(Annexure 1) explains the FE index of rural Jaipur both before joining SHG and after joining SHG. It is visible from the figure that there is a small positive change in economic empowerment index and decision-making index of the respondents, but the personal development index and knowledge index show a major change.

Figure 2 (Annexure 2) explains the FE of urban Jaipur both before joining SHG and after joining SHG. Critical analysis of figure gives a view that there is a significant change in all the four indices i.e., economic empowerment index, decision making index personal development index and knowledge index.

Figure 3 (Annexure 3) displays a comparison of rural and urban FE indices. It is clearly visible from the Figure 3 that the value of indices of urban Jaipur is more than the indices value of Rural Jaipur. The combined index for the urban Jaipur is significantly higher than the rural one.

Table 4 : Wilcoxon Sign Test: Descriptive Statistics

	N	Mean	Standard Deviation	Minimum	Maximum
Com_UB	30	.383443	.0691299777	.3018	.5668
Com_RB	22	.363700	.0336362958	.2985	.4416
Com_UA	30	.634788	.0691405965	.5061	.8067
Com_RA	22	.462251	.0287355851	.4301	.5539

Table 5 : Wilcoxon Signed Rank Test

		N	Mean Rank	Sum of Rank
Com_UA - Com_UB	Negative Ranks	0	.00	.00
	Positive Ranks	30	15.50	465.00
	Ties			
	Total	30		
Com_RA - Com_RB	Negative Ranks	0	.00	.00
	Positive Ranks	22	11.50	253.00
	Ties	0		
	Total	22		

Table 6 : Test Statistics Wilcoxon Test

	Com_UA - Com_UB	Com_RA - Com_RB
Z	-4.782	-4.110
Asymp. Sig. (2-tailed)	.000[1]	.000

[1]At 5% significance level

Table 4, Table 5, and Table 6 describes the analysis run on combined indices of both rural and urban areas using SPSS. Since the data did not fulfil the assumption of normality, the non-parametric Wilcoxon sign test is used for comparing the indices of both before and after FE indices for rural as well as urban area. Wilcoxon sign test is non-parametric test for paired sample t-test.

Table 4 explains the descriptive statistics for the Wilcoxon test. The mean combined index for urban Jaipur before joining SHG (Com_UB) is .383443 and after joining SHG (Com_UA) is .634788. From Table 6, itis observed that the two sets (Com_UB and Com_UA) differ significantly as Z value is -4.782 (p=.000) at 5% significance level. Thus, we reject the null hypothesis, which means that there is a significant difference between the before and after index score of urban area. Hence, the membership of SHG has improved the Financial Empowerment of the women in urban Jaipur.

Similarly, Table 6 also displays the result for rural FE indices. The mean values for before and after FE indices of rural Jaipur are .363700 and .462251, respectively. Observing the Z value of -4.110 at 5% significance level and p value of .000, the null hypothesis is rejected, and the alternative hypothesis is accepted and hence, there is a significant difference in the index scores of before joining SHG and after joining SHG in rural area. From the above analysis it is visible that the SHG membership has improved the financial empowerment of women in rural Jaipur.

Table 7 : Mann Whitney U Test: Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
fin_emp	52	.561791	.1023077	.4301	.8067
variable_1	52	1.58	.499	1	2

Table 8 : Mann-Whitney Test Ranks

	Variable_1	N	Mean Rank	Sum of Ranks
fin_emp	Rural	22	11.68	257.00
	Urban	30	37.37	1121.00
	Total	52		

Table 9 : Test Statistics[a]

	fin_emp
Mann-Whitney U	4.000
Wilcoxon W	257.000
Z	-6.039
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: variable_1

To test the difference between the financial empowerment of urban SHG women and rural SHG women in Jaipur district, Mann Whitney test is used. Table7, Table8, and Table9 explains the results of Mann Whitney test. The U value is 4.000 and z value is -6.039 (p value .000), thus research hypothesis is accepted, which shows that the difference between the financial empowerment of rural SHG women and urban SHG women is statistically significant. Observing the mean value of indices (Urban-.634788 and Rural- .462251), it is clearly visible that the index value of urban SHG women is more than the mean value of rural SHG women which means the urban SHG women are more financially empowered in comparison to rural SHG women.

6. Finding and Conclusion

It has been observed from the past literature that SHGs have played an important role in overall empowerment of women. The present study also gives a conclusion that SHGs play an important role in the financial empowerment of women. However, the important finding of the present study is that the impact of SHGs on empowerment of women is more in urban area in comparison to rural part. There could be many reasons for the same. Some of the reasons are availability of resources, level of education of the members, availability of employment opportunities, duration of association with the SHG and the promoting organization of the SHGs. Thus, from the present study it can be inferred that there is a need to work in the direction of removing the regional barriers in the empowerment impact of SHG membership.

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ANNEXURES

Figure 1: Financial Empowerment Rural

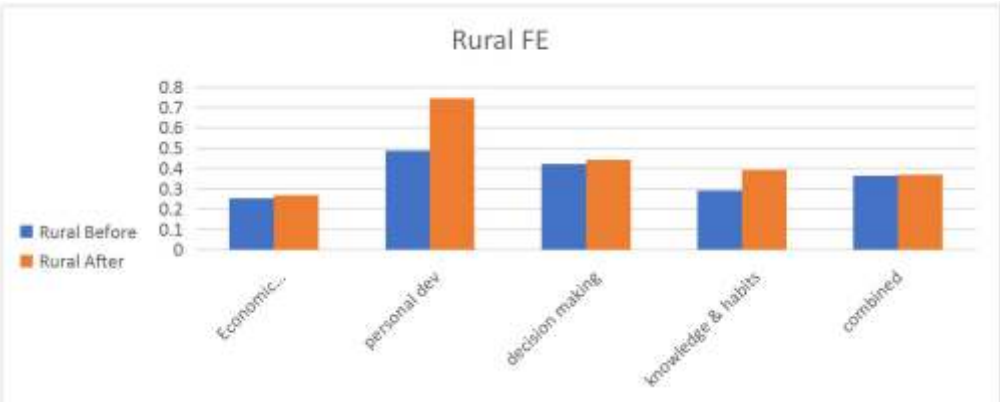


Figure 2 : Financial Empowerment Urban

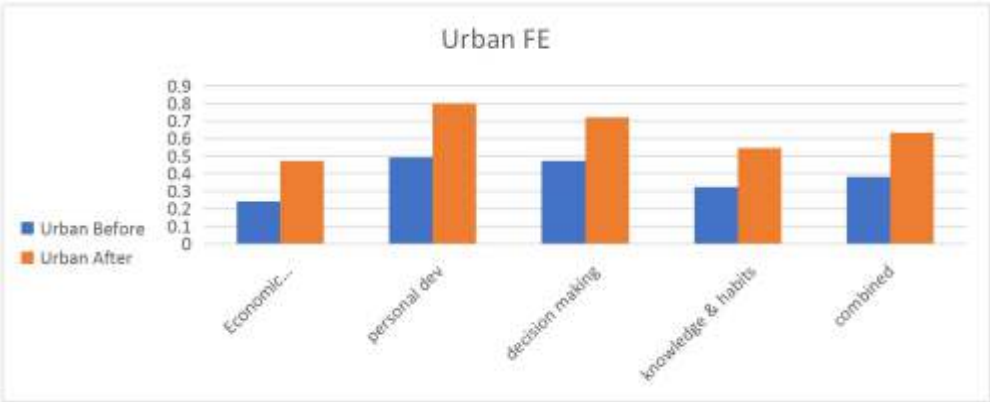
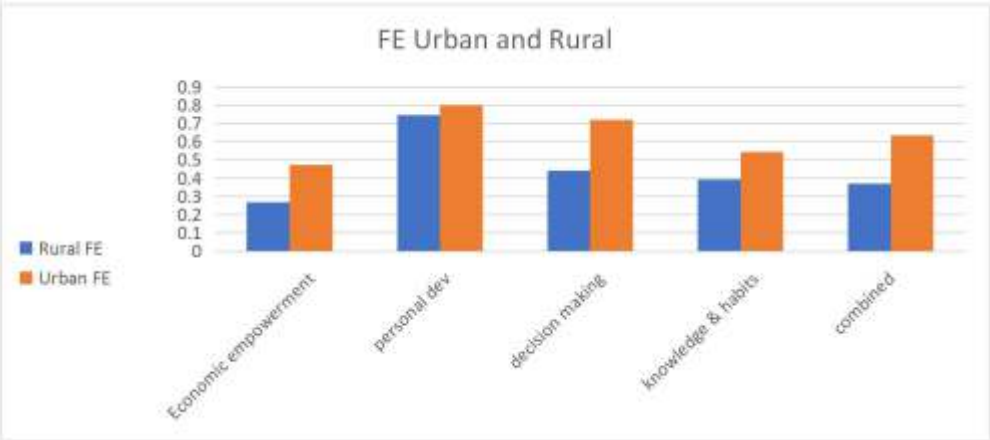


Figure 3 : Urban Rural Comparison



Status of Health Expenditure in India with special reference to Punjab and Rajasthan

Dr. Harvinder Kaur* and Bhavya Mehta**

**Professor of Economics, Dept. of Distance Education, Punjabi University, Patiala.*
Email- harvinder1964@gmail.com, Phone no.-9872413330
***Research Scholar, Department of Economics, Punjabi University, Patiala*
Email- bhavya.mehta603@gmail.com, Phone no. - 8168131802

Abstract

Contemplating health as an indispensable stimulant of human capital formation, expenditure on health is accounted as an important investment by the state, private sector as well as individuals. For better health care, all of these have been playing an important role but due to fiscal constraints, budget for health sector has dwindled in India. The share of government in current public health expenditure has remained very low as compared to private sector. In 2015, the proportion of government expenditure and private expenditure as per cent of current health expenditure was 25.6 per cent and 73.5 per cent, respectively. Current health expenditure as a proportion of GDP has been slumping. In this paper, an attempt has been made to examine the trends of expenditure on health by the non-special category states of India. Other objectives of the paper are to find out the reasons behind decline in the share of public sector expenditure in medicine and public health and its effect on the households and to analyse the trends in life expectancy, death rate and infant mortality rate due to changes in the health policy. It is found that almost all the states are disbursing very low amount of expenditure on medical and public health and expenditure as a share spent on healthcare as ratio to aggregate expenditure is below 6 per cent, which shows the lesser importance assigned to health in all the non-special category states. The paper also focuses on the comparative analysis of the tendency of state expenditure on medical and public health in Punjab and Rajasthan and its effect on the health-related indicators. The expenditure on health care covering expenditure on medical and public health and family welfare as proportion of total expenditure in Rajasthan state was 5.2 per cent in 2001-02 that has plummeted to 4.6 per cent in 2015-16 whereas in the state of Punjab, it has increased slightly from 3.9 per cent in 2001-02 to 4.1 per cent in 2015-16 but even then, it is lower than Rajasthan. Therefore, the paper also tries to explore the reasons for better performance of Punjab as compared to Rajasthan with respect to health indicators despite lesser public spending in the state.

Contemplating health as an important stimulant of human capital formation, expenditure on health is accounted as an important investment. It was since the middle of the twentieth century when the economists started emphasising the importance of investment in education and healthcare. Theodore W. Schultz (1961) regarded investment in human capital to be a long-term investment that acts as a booster of economic growth as it leads to enhancement of capabilities of human beings and opening of new opportunities, increase in their productivity, income, and standard of living. He believed the main reason behind the difference in earnings between people is due to difference in their education and health status. Other studies by economists like Robert W. Fogel (2004), also asserted that improvement in health and nutrition leads to increase in productivity

and income growth. Good health has a positive, sizeable, and statistically significant effect on aggregate output as healthier workers are physically and mentally more energetic and robust, hence more productive than ill worker, especially in developing countries where a higher proportion of workforce is engaged in manual labor than in developed countries (Bloom et. al.,2001). If the citizens of a nation will be healthy, they will be able to work in an efficient way and will contribute towards the growth of the nation. Growth and healthcare have a bi-directional relationship, healthy residents foster the growth of nation and if the nation is having sustained growth rate, residents will have an adequate income to spend upon healthcare and they will be healthy.

1. Health Sector in India

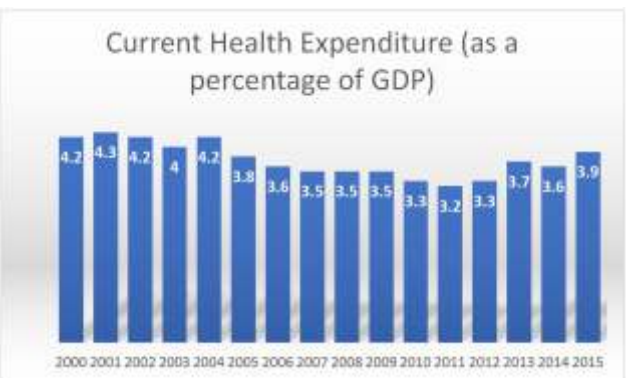
Private sector, public sector and foreign investors do investment in health sector as well. So far as India is concerned healthcare remained mainly the responsibility of the state for long. Article 256 of Indian Constitution reads, health is the prime responsibility of state as it comes under the State list in the 7th schedule, however centre also plays a major role in framing and execution of policies and programs and by providing funds for the smooth working of these programs. Ministry of Health and Family Welfare launched National Health Policy in 1983, with the objective to improve primary healthcare services, to provide equal access to healthcare, control over fatal diseases, raising the nutrition level among women and children, availability of safe drinking water, proper housing facilities and healthy environment. It served well in terms of an improvement in the health indicators, as life expectancy was increased from 54 in 1983 to 64.6 in 2000, Crude Death Rate declined from 12.5 to 8.7 and Infant Mortality Ratio declined from 110 to 70 during this time period (NHP, 2002) and eradication of diseases like Guinea worm, small pox was made possible and a noticeable decline in the case of other diseases like malaria, leprosy and polio was observed, but an increase in 'lifestyle diseases' like Diabetes, Cancer etc. So, another National Health Policy was launched in 2002 with the objective of upliftment of quality and efficiency of the existing public health machinery, increase in basic healthcare facilities, to focus upon secondary and tertiary healthcare, to provide physical infrastructure and trained manpower, to address lifestyle diseases and mental diseases, during the time period of this policy, maternal and child mortality rate reduced sharply, but there was a rapid increase in the transmission of non-communicable diseases and some other infectious diseases and escalation in catastrophic health expenditure. So, National Health Policy was launched in 2017 with the goal of attainment of the highest possible level of health and well-being for all at all ages in a cost-effective way, through a preventive and promotive health care orientation in all developmental policies, and universal access to good quality health care services without anyone having to face financial hardship as a consequence (NHP 2017). A number of other policies and programs have also been launched like National Blood Policy, National AIDS Prevention and Control Policy, Pradhan Mantri Jeevan Jyoti Bima Yojana, Ayushman Bharat Yojana,

Rashtriya Swasthya Bima Yojana (RSBY) etc. to facilitate healthcare and insurance in India. Five Year Plans also focused upon the improvement of healthcare in India by providing provision of free medical services; inter sectoral coordination among public sector, private sector, and self-help groups, assuring equity among households for availability and accessibility of healthcare services and providing health subsidy for people below poverty line. To provide critical healthcare services Private sector has been playing an important role now a days as many bottlenecks in public system have belittle the role of the State. Public sector has now remained for the poor strata of the society.

In recent years, budget for health sector has dwindled, the government spends to maintain the smooth working of existing schemes and programs, as a result, out of pocket expenditure on healthcare has increased due to rising demand for healthcare among the households. Public expenditure on health in India was meagre 17.3 per cent of total spending on health, whereas it was 96.9 per cent and 44 per cent in UK and US respectively (Editorial, EPW, 2002). India's rank was 143 among 190 countries in terms of per capita expenditure on health ($146 PPP in 2011); it had 157th position according to per capita government spending on health, which is just about $44 PPP (Manual on Health Statistics in India, 2015). Status of health infrastructure is degrading in India, moreover inflation has also been observed in medicine sector. Private sector is concerned towards earning more profits, so its focus is not on prevention of diseases but on curing the diseases, so to overcome this problem more injection of resources by government is required in health sector for prevention and controlling of diseases, sanitation, and development of infrastructure.

Current health expenditure (CHE) defines the level of Current Health Expenditure expressed as a percentage of GDP, which indicates the level of resources channelled to health as compared to other uses. It shows the significance of the health sector in the whole economy and indicates the societal priority which health has been given measured in monetary terms. Government, private sector, and external financing sources, incurs current health expenditure all together.

Figure 1: Current Health Expenditure in India as a percentage of GDP



Source: WHO, Health Financing.

The level of resources channelled to health sector has been declining as compared to other sectors of the economy. The CHE as a share of GDP has dropped from 4.2 per cent in 2000 to 3.2 per cent in 2015. After 2004, the expenditure on healthcare has started declining. The disbursement on health care was the lowest in 2011 i.e., 3.2 per cent but after that it has again started escalating and stood at 3.9 per cent in 2015. It shows that less importance is given to health sector in India as compared to other sectors as below 4 per cent expenditure is incurred on it (shown in figure 1).

Current Health Expenditure reveals the picture of public and private spending on health care. It is comprised of Domestic General Government Health Expenditure, Domestic Private Health Expenditure and External Health Expenditure. Domestic General Government Health Expenditure (GGHE-D) as percentage of Current Health Expenditure (CHE) defines the share of current health expenditures funded from general government sources, social health insurance and compulsory prepayment. Domestic Private Health Expenditure (PVT-D) as percentage of Current Health Expenditure (CHE) defines the share of current health expenditures funded from private sources. External Health Expenditure (EXT) as percentage of Current Health Expenditure (CHE) defines share of current health expenditures funded from external sources.

Table 1: Healthcare in India: Pattern of Expenditure

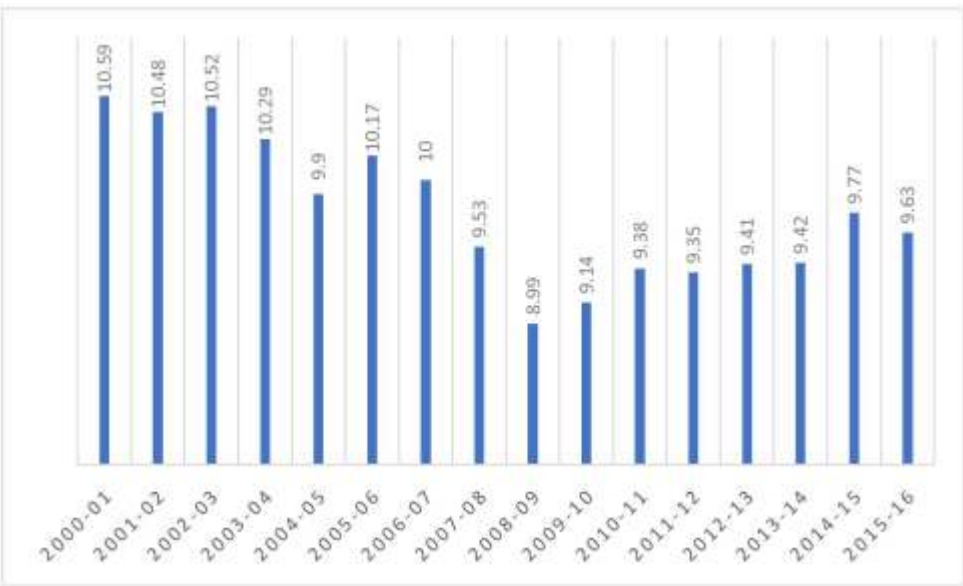
YEAR	Domestic General Government Health Expenditure (as a percentage of CHE)	Domestic Private Health Expenditure (as a percentage of CHE)	External Health Expenditure (as a percentage of CHE)	Total
2000	20.7	76.6	2.7	100
2001	18.9	78.8	2.3	100
2002	18.2	79.4	2.5	100
2003	18.7	79.8	1.5	100
2004	18	79.8	2.2	100
2005	20.1	78.3	1.5	100
2006	20.5	78.1	1.4	100
2007	20.9	77.6	1.5	100
2008	22.6	75.5	1.9	100
2009	25.6	73.4	1	100
2010	26.2	72.8	1	100
2011	28.9	70.3	0.9	100
2012	28	71.1	0.9	100
2013	23.1	76.7	0.3	100
2014	23.7	75.6	0.7	100
2015	25.6	73.5	0.9	100

Source: WHO, Health Financing.

Table 1 reveals that the share of Domestic General Government resources remained less than one fifth of the total CHE until 2005 but thereafter it has shown an increasing trend until 2011 but thereafter it could not maintain the trend. The share of public sector, which includes grants, transfers, subsidies, financing schemes and health insurance, has increased from 20.7 per cent in 2000 to 25.6 per cent in the year 2015. Share of Domestic Private Health has remained very high and hovered between 70 to 80 percent, it was 76.6 per cent in 2000 but has declined to 73.6 per cent in the year 2015, this shows that the contribution from private sector including funds from households, corporations and non-profit organizations has decreased over the period. External health expenditure has declined from 2.7 per cent in 2000 to 0.9 per cent in 2015. It shows that the inflows into national health system from outside the country in the form of direct foreign transfers and foreign transfers distributed by government has decreased over time period as it has remained below 1 per cent after 2010.

Social Sector Expenditure includes the total expenditure incurred on the 'social services' including education, health and family welfare, water supply and sanitation etc. Revenue Expenditure includes the total expenditure incurred by government on day-to-day activities like defence, social services, etc. for the running of the government machinery. Capital Expenditure includes the total expenditure incurred by government on acquiring long -term assets or improving the useful life of existing assets such as property, industrial buildings, equipment etc.

Figure 2: Medical and Public Health Expenditure in Total Social Sector Expenditure in India



Source: RBI State Finances – A Study of Budget (2018)

Revenue expenditure and capital expenditure in India has increased over the period. However, the total medical and public health expenditure as a share of total social sector expenditure has decreased over the time from 10.59 per cent in 2000-01 to 9.63 per cent in 2015-16, which shows that the state has shrinked its hands for the health sector. The share of revenue expenditure as a percentage of total social sector expenditure started declining from 10.11 per cent in 2000-01 until it falls to 7.89 per cent in 2008-09, and afterwards it started rising again and reached 8.36 per cent in 2015-16. The share of Capital expenditure as a percentage of total social sector expenditure has remained very low between 0.4 to 1.5 per cent during the time period from 2000-01 to 2015-16. Revenue expenditure on medical and public health has increased by 12.31 per cent per annum, capital expenditure on medical and public health has increased by 28.43 per cent per annum and total social sector expenditure has been increased by 13.65 per cent from 2000-01 to 2015-16.

2. Status of Healthcare in Punjab and Rajasthan: A Comparative Analysis

Table 2: Expenditure on Medical and Public Health and Family Welfare: Position of Punjab and Rajasthan in non-special category States in India

Ranking	2001-02	2009-10	2015-16
Highest (1-5)	Kerala(5.8), **Rajasthan(5.2)**, West Bengal(5.0), Tamil Nadu(4.9), Jharkhand(4.9), Karnataka(4.9), Bihar(4.9)	Goa(5.3), Uttar Pradesh(5.0), **Rajasthan(4.8),** Tamil Nadu(4.8), West Bengal (4.8), Kerala (4.8), Jharkhand (4.4)	West Bengal (5.6), Gujarat(5.6), Goa (5.5), Kerala (5.2), Chhattisgarh (5.1)
Medium (5-10)	Andhra Pradesh(4.4), Maharashtra (4.3),Chhattisgarh(4.3), Madhya Pradesh(4.1), **Punjab(3.9)**, Goa(3.8)	Andhra Pradesh(3.9), Gujarat(3.8), Odisha(3.8), Chhattisgarh(3.7), Karnataka(3.6), Bihar(3.5)	Tamil Nadu(4.9), Odisha(4.7), **Rajasthan(4.6),** Andhra Pradesh(4.5), Maharashtra(4.5), Uttar Pradesh(4.5), Madhya Pradesh(4.4)
Lowest (10-15)	Odisha6(3.7), Uttar Pradesh(3.6), Haryana(3.0), **Gujarat(2.8)**	Haryana(3.4), Madhya Pradesh(3.3), Maharashtra(3.3), **Punjab(3.2)**	Karnataka(4.1), Bihar (4.1), **Punjab(4.1),** Jharkhand(4.0), Haryana(3.1)

Source: RBI State Finances: A Study of Budgets (2018)

The table shows expenditure on medical and public health and family Welfare. According to the table, almost all the non–special category states are disbursing a very low amount of expenditure on Public Health and Family Welfare. Expenditure incurred by these states on healthcare is below 6 per cent as ratio to aggregate expenditure in India, this shows the lesser importance assigned to health in all the non–special category states. In a country like India where there are regional disparities, different economic and political scenario of different states, different viewpoints of people, different customs, caste, religions, and so every state needs a separate strategy for healthcare. If we look at Punjab, in the year

2001-02 only 3.9 per cent of total aggregate expenditure was spent upon healthcare and family welfare, which shows the poor status of healthcare in Punjab as it stood at rank 8, in the year 2009-10, Punjab's spending on healthcare further declined to 3.2 per cent of total aggregate expenditure this shows the deteriorating condition of healthcare in Punjab and the state's rank declined to 12th rank. In the recent years for example in 2015-16, it has increased to 4.1 per cent but still it is very less and state occupied 10th position which also falls under the lowest category. Rajasthan stood at 2nd rank in the year 2001-02 with 5.2 per cent of expenditure incurred on Medical and Public Health and Family Welfare as a ratio to aggregate expenditure, in the year 2009-10, it fell to 3rd rank with 4.8 per cent spending on healthcare, but in the year 2015-16 it's rank further fell to 8th with decline in expenditure which was 4.6 per cent.

Total medical and public health expenditure comprises of revenue expenditure and capital expenditure on medical and public health. The expenditure on medical and public health has increased in both the states of Punjab and Rajasthan from 2001-02 to 2015-16.

Figure 3: Expenditure on Medical and Public Health: A comparison of Punjab and Rajasthan (in lakhs)

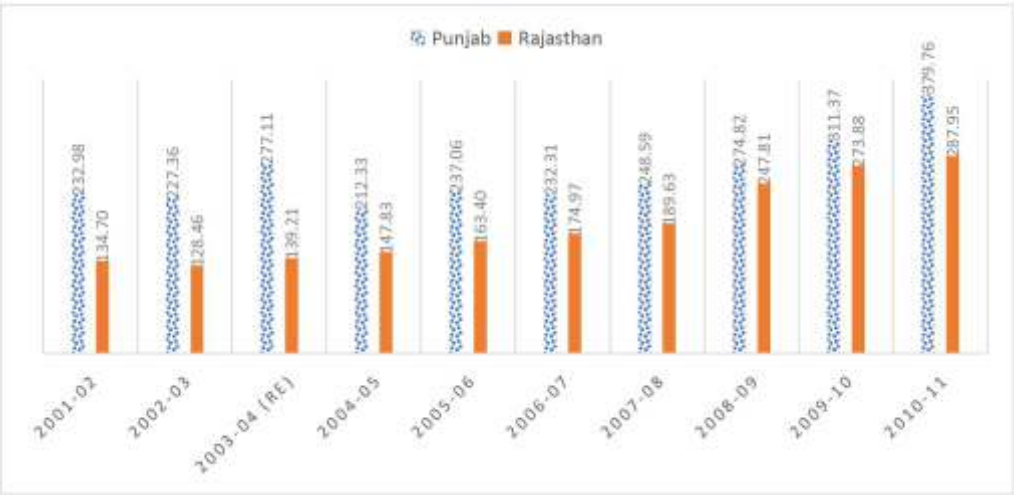
*Data for the year 2003-04 consists of revised estimates not actual estimates.

Initially in the year 2001-02, total expenditure on medical and public health was Rs. 57,801 lakh and Rs. 78,032 lakhs while it has increased to Rs. 240,962 lakh and Rs. 531,528 in the year 2015-16 in Punjab and Rajasthan, respectively. Both the states have witnessed an increase in expenditure on the medical and public health over the period of time but in Punjab, the amount has remained almost half as compared to Rajasthan. It shows that government of Rajasthan was more inclined towards providing healthcare facilities to the residents as compared to Punjab.

Per capita expenditure on medical and public health by the state is the sum of revenue expenditure and capital expenditure incurred by the state as a ratio to total

population of the state. Per capita expenditure by state on medical and public health is increasing in both the states.

Figure 4: Per Capita Expenditure by State on Medical and Public Health of Punjab and Rajasthan (in rupees)



Source: 1. RBI State Finances: A Study of Budgets and 2. Statistical Abstract of Punjab (2010)
*Data for the year 2003-04 consists of revised estimates not actual estimates.

Per capita expenditure by the state on medical and public health was Rs 232.98 and Rs 134.70 in the year 2001-02 and it rose to Rs. 379.76 and Rs. 287.95 in the year 2010-11 in Punjab and Rajasthan, respectively. It has remained high in Punjab as compared to Rajasthan during the study period.

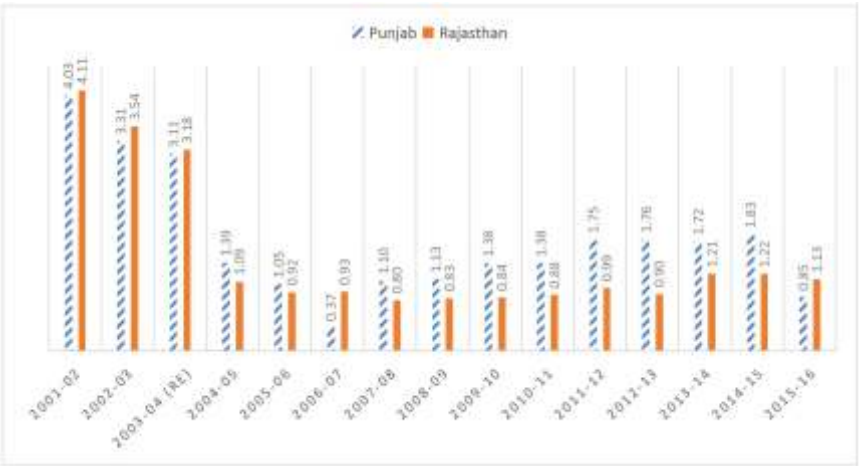
Total expenditure incurred on medical and public health is higher is the state of Rajasthan as compared to Punjab, but population of Rajasthan is more than double of that of Punjab, which leads to low per capita expenditure by state on medical and public health. It indicates that there is more availability of health facilities for people in Punjab as compared to Rajasthan.

3. Health Outcomes in Punjab and Rajasthan

Important health indicators viz. Death Rate, IMR and Life Expectancy of both the states have been analysed in the foregoing analysis.

Total state expenditure includes revenue expenditure and capital expenditure. Medical and public health expenditure comprises of revenue expenditure and capital expenditure incurred on medical and public health.

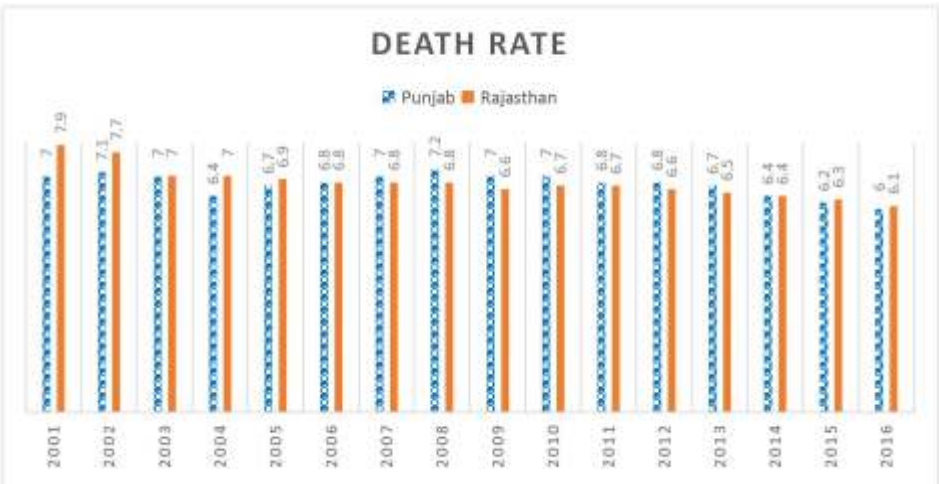
Figure 5: Percentage of Expenditure spent on Medical and Public Health out of total State Expenditure



Source: RBI State Finances: A Study of Budgets

The data in figure 5 shows that the percentage of expenditure spent on Medical and Public Expenditure out of total expenditure has decreased in both the states. In the year 2001-02 both the states were disbursing around 4 per cent expenditure on medical and public health but it has started declining afterwards. There has been a sharp deterioration in healthcare expenditure as per cent of total expenditure in both the states after the financial year 2004-05. The percentage of expenditure spent on medical and public health out of total state expenditure has slumped from 4.03 per cent in 2001-02 to 0.85 per cent in 2015-16 in the state of Punjab whereas in Rajasthan, it has also reduced from 4.11 per cent to 1.13 per cent. This shows that the spending on health has declined in both the states.

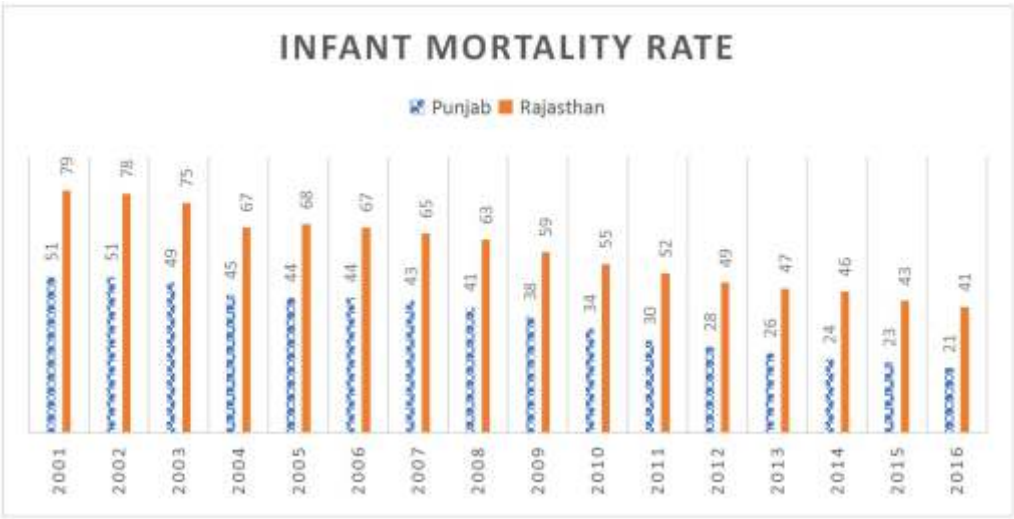
Figure 6 : Comparison of Death Rate in Punjab and Rajasthan (per thousand)



Source: RBI Handbook of Statistics on Indian States (2017)

Main aim of the public health policy is to reduce the death rate. Death Rate refers to the ratio of deaths to the population of a particular area or during a particular period of time, it is calculated as the number of deaths per one thousand people per year. Figure 3 reveals that the Death Rate in both the states of Punjab and Rajasthan has decreased over the period of time but not by a great extent, which shows that the healthcare facilities have not been improved much. Death rate is also affected by various other factors like heredity, nutrition levels, standard of living, clean drinking water, hygiene, levels of infectious diseases and other factors such as conflicts, violence, and crime. Both the states have almost similar type of position in this respect

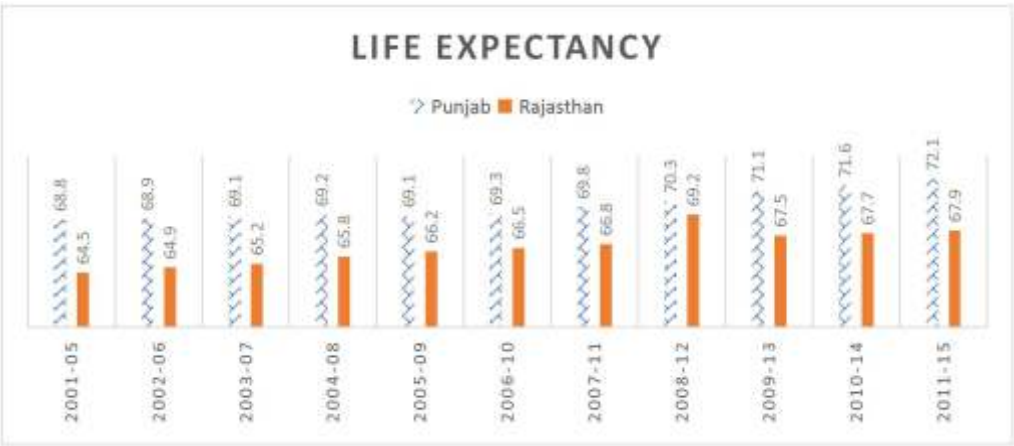
Figure 7: Infant Mortality Rate in Punjab and Rajasthan (per thousand)



Source: RBI Handbook of Statistics on Indian States (2017)

Another important aim of the public health policy is to reduce the IMR. Infant mortality rate is the number of deaths of children under one year of age occurring per 1,000 live births occurring in the given geographical area during the same year. According to figure 4, IMR in Punjab has remained less than that in Rajasthan during the study period, this shows that the Punjab has been having better targeting this indicator as compared to Rajasthan. However, IMR has decreased in both the states up to a large extent during the period of time. This shows the number of deaths of children below one year has declined because of better medical and healthcare facilities.

Figure 8 : Life Expectancy in Punjab and Rajasthan



RBI Handbook of Statistics on Indian States (2017)

The provision of health services increases the life expectancy. The term life expectancy refers to the number of years a person is expected to live. Life expectancy in Punjab is higher almost by 4 to 5 years than that of Rajasthan. The data in figure 5 reveals that, during the period 2001-05, life expectancy in Punjab was greater than that of Rajasthan, a same trend has been observed during the study period. Life expectancy in Rajasthan has remained very low as compared to Punjab, which shows better status of health in Punjab as compared to Rajasthan.

4. Conclusion

Expenditure on healthcare plays an important role in improving status of healthcare. Current health expenditure has remained below 4 per cent after 2004, it shows that less importance is given to health sector in India as compared to other sectors. Revenue expenditure, capital expenditure of states has increased over the period but total medical and public health expenditure as a share of total social sector expenditure has decreased over the time. Major contribution is done by private sector in healthcare around three-fourth part of expenditure is incurred by domestic private sector, one-fourth part is contributed by government, share of external sector has remained almost negligible. Almost all the non–special category states are disbursing a very low amount of expenditure on Public Health and Family Welfare i.e., below 6 per cent. Total expenditure incurred on medical and public health is higher is the state of Rajasthan as compared to Punjab, but population of Rajasthan is more than double of that of Punjab, which leads to low per capita expenditure by state on medical and public health in Rajasthan. It indicates that there is more availability of health facilities for people in Punjab as compared to Rajasthan, which shows its effects upon the healthcare indicators. Death rate and infant mortality rate are low in Punjab as compared to Rajasthan. Life expectancy is greater in Punjab than Rajasthan by 4 to 5 years. This shows that the per capita expenditure by state on medical and public health has a direct relationship with the health indicators.

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Goods and Services Tax in India and Other Countries: A Comparative Study

Kritika Tekwani[1] **Dr. Rinku Raghuvanshi**[2]

[1] *Research Scholar, Management, Bhartiya Skill Development University, Jaipur*

[2] *Associate Professor, Management Bhartiya Skill Development University, Jaipur*

Abstract

Taxation is the major source of development of any economy. France was the first country who implemented GST with four tax rate slabs in 1954 in the world. At present, there are 160 countries in the world that have implemented GST/VAT. GST is a single unique tax structure which reduces the cascading effect. As per the World Bank Report, India's GST top slab of 28% is the second highest of the 115 countries. In India Goods and Services Tax was implemented on 1stJuly 2017. GST model of India is based on a dual structure like Canada and Brazil. This study highlights the system of GST, threshold limit, and GST rates around the world. This paper compares the structure of GST in India to some other countries of the world. This study is based on the secondary data taken from various sources such as Government websites, articles, research papers, etc.

***Keywords*:** Goods and Services Tax, Tax rates, Economy, World

1. Introduction

In the world economy, there are various taxes which are broadly classified in two heads, direct taxes, and indirect taxes. Taxation is one of the most important sources of generation of revenue for the development of any economy in the world. According to the most recent estimates from the International Centre for Tax and Development, total tax revenues account for more than 80% of total government revenue in about half of the countries in the world and more than 50% in almost every country.[1] For the smooth functioning of every economy, Government changes its policies and tax structure consistently. Taxation started growing sufficiently after the first world war in 1919. Tax structure has undergone significant changes during the last 20 years in the world. Goods and Services Tax is the result of these changes in the tax system. Many of the emerging economies are introducing new indirect tax systems. Over the last 12 months, India carries out landmark economic reform by introducing the GST, replacing several different taxes at a state or national level.[2]

1.1 Goods and Services Tax

Goods and Services Tax is a harmonized sales tax, was first designed by German economist in the 18th century. France is the first country who implemented Goods and Services Tax in 1954. Currently, there are 160 countries in the world that have

implemented GST/VAT in the world. The VAT is taken as a substitute of GST in most of the countries. After the implementation of GST in France various counties implemented GST like New Zealand, Singapore, Indonesia, China, etc. In India, GST was implemented in 2017. Some countries have a dual GST model including India, Brazil, and Canada. European Countries have only one single rate of GST. Goods and Services Tax is a destination-based tax or consumption based tax. It eliminates the cascading tax effect which means tax on tax. Earlier tax system did not reduce the cascading tax effect, which result into the increase of final prices of goods and services. It avoids the problem of double taxation. The main reason behind implementing GST was to amalgamate all indirect taxes into a single tax and creating efficiencies in tax administration. Tax rate of GST around the world ranges between 0-28 percent.

2. Review of Literature

Agogo Mawuli (2014)[3] studied, **"Goods and Service Tax-An Appraisal"**. In this paper, the Researcher discussed the impact of GST on the economy of Papua New Guinea (PNG). The researcher suggested that low-income countries require a low rated- GST. The Researcher observed that many developing countries have a higher GST rate as compared to underdeveloped countries. This paper concluded that GST is not good for underdeveloped countries like PNG and GST is also not provided any broad-based growth. If low-income countries want to implement it then its rate should be less.

Chabot Jean-Hugueset al. (2017)[4], **"The Evolution of Indirect Taxes"** studied Canadian indirect tax history and evolution of GST in Canada. Researchers found in their studies that European Countries are increasing the standard rates of indirect taxes above the threshold limit. This study noticed that some of the EU countries including France, Greece, Italy, Norway, Poland, Portugal, and the Czech Republic, increased their reduced tax rates.

Gupta Saurabh et al. (2017)[5], studied **"Good and Service Tax: An International Comparative Analysis"** and compared India's GST with other countries on the basis of model, structure, collection of tax and valuation. Researchers presumed that the GST would be significant reform in the indirect tax system in India by merging of Central and State taxes into a single tax system. This study concluded that GST removes the effect of double taxation and lead to easier administration and enforcement. Researchers further found that Denmark and Sweden have a high GST/VAT rate which is 25 %.

John Breen et al. (2002)[6] in their research paper, **"The Impact of the Introduction of the GST on Small Business in Australia"** observed that after the implementation of GST additional cost and compliances are increased. This

study concluded that GST put a negative impact on the small business and found that GST compliance cost ranged between $3331 to $30140 per business however most of the business reported that with the implementation of GST, report keeping of the firms is improved.

Khurana Akansha et al. (2016)[7] in their study named, **"Goods and Services Tax in India - A positive reform for indirect tax System"** studied the GST in foreign countries like Singapore, New Zealand, Australia, France, Canada, etc. The objective of this study is to examine the benefits, opportunities of GST and its impact on the economy. This study concluded that GST have positive impact on FMCG, Infrastructure, Small Enterprises and Food Industry.

Pope Jeff (2001)[8] in their research paper, "Estimating and Alleviating the Goods and Services Tax Compliance Cost Burden upon Small Business" studied ways to alleviate GST compliance cost of small business in Australia. This study revealed that in other countries the threshold limit is high so small businesses does not come in that limit, but in Australia threshold limit for registration under GST is too low so small businesses including micro enterprises must get registered under GST. This study concluded that the GST put a negative impact on small business and also suggested that GST requires careful consideration of small businesses while modifying its policies.

3. Objectives

1. To know about GST in global perspective.
2. To find out the system of GST, threshold limit, and GST rates around the world.
3. To compare GST in India with some other countries across the world.

4. Methodology

This paper is based on secondary data taken from books, websites, reports, journals, conference papers, magazines, and other published data from government and non-government institutions.

This study compares India's GST with OECD and ASEAN countries' s GST. For the comparison, Canada, Australia, New Zealand, and France are taken from OECD countries and Singapore & Malaysia are taken from ASEAN countries.

5. Comparison of GST in India with Other Countries Across the World

5.1 GST in India

GST came into effect from July1, 2017 through the implementation of 101st amendment of the Constitution of India. The structure of indirect taxes in India (as existing up to 30-6-2017), which includes taxes like VAT, entertainment tax, luxury tax, service tax, surcharge etc. merged into GST.

Figure 1 : GST Slab Structure

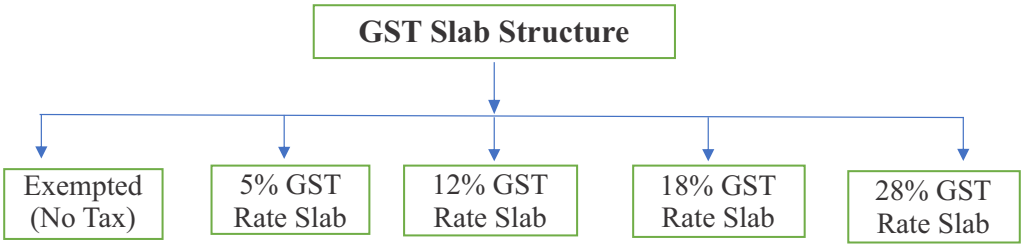

Figure 1 shows the slab Structure of GST, which includes 4 tax rates.The GST structure of India is based on the dual system which includes: CGST and SGST/UTGST. GST law includes unique principles, inspired by VAT/GST legislation of EU, Australia, and Malaysia etc., along with International VAT/GST guidelines of the OECD. Some of the changes during past few years include reduction in excise duties in post global financial & economic crisis, alignment of custom tariffs to the levels prevailing in ASEAN countries, introduction of Service tax in 1994-95 besides introduction of the Constitution (115th Amendment) Bill in the Lok Sabha in March 2011 to operationalize 'Goods & Services Tax'(GST).

5.2 GST in Other Countries

France was the first country to implement the Goods and Services Tax in 1954. After the implementation of GST in France various countries adopted GST including China, Canada, Singapore, New Zealand, Australia. China implemented it in 1994 while Russia adopted in 1991.

Figure: 2 GST around the World[10]

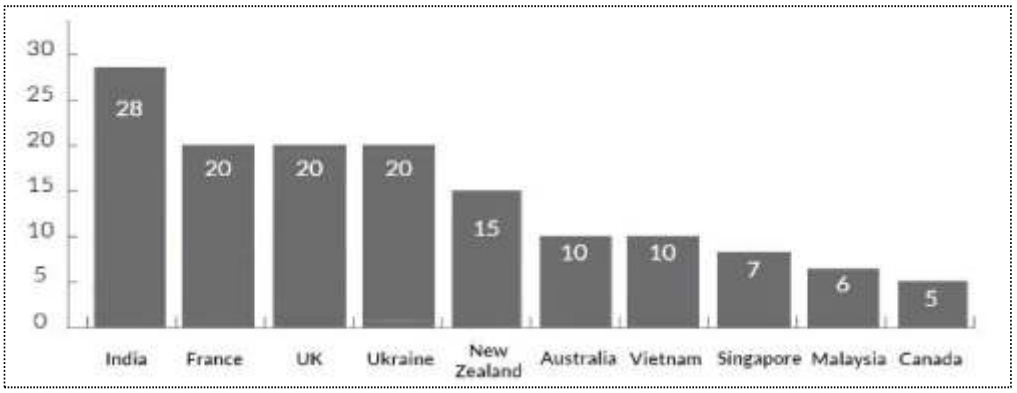

Figure 2 shows the GST rates around the world. India has the 28 % GST rate and Canada has the lowest rate which is 5% in their respective GST structure.

5.3 Comparative Analysis of GST in India with OECD Countries

The comparative analysis of GST in India with four OECD Countries which include Canada, Australia, New Zealand, and France. The comparison is taken based on various basis including return, credit, tax rates etc.

Table 1: Indian GST Model Compares with GST in OECD Countries

Basis	India	Canada	Australia	New Zealand	France
Nomenclature for GST	GST	Federal GST & Harmonized Sales Tax	GST	GST	VAT/ GST
Introduced in	2017	1991	2000	1986	1954
Threshold limit	20 Lac/ 10 Lac (North-Eastern States)	30,000 (Canadian $)	75000/ 150000(NPO's) (Australian $)	$60,000	€35,000
Return	GSTR	GST34	BAS (Business Activity Statement)	GST101, GST103 (Provisional Tax Return)	VAT Return
Credit	ITC (Input Tax Credit)	ITC (Input Tax Credit)	ITC (Input Tax Credit)	ITC (Input Tax Credit)	Input VAT
Tax Slab	Four	One	Two	One	Four
Tax Rates	0%, 5%, 12%, 18%, 28%	0%, 5%	5.5%, 10%	0%, 15%	2.1%, 5.5%, 10%, 20%
Exempts	Curd, Milk, Fruits, Butter Milk, etc.	Financial services, rent-residence, health, education, etc.	Exports, some medicines, education, charity, etc.	Donated goods and services sold by NPO's financial services, etc.	Health and welfare services, postal services, etc.

Table 1 shows that India has the highest GST rate which is 28% as compared to four OECD Countries. Threshold limit to get register under GST in India is 20 Lac, but in Canada it is 16 Lac (app.), in Australia it is 38 Lac (app.), in New Zealand, it is 29 Lac (app.), and in France this limit, is 28 Lac (app.)

5.4 Comparative Analysis of GST in India with ASEAN Countries

The comparative analysis of GST in India with two ASEAN Countries which include Singapore and Malaysia. The comparison is taken based on various basis including return, credit, tax rates, etc.

Table 2: Indian GST Model Compares with GST in ASEAN Countries

Basis	India	Singapore	Malaysia
Nomenclature for GST	GST	GST	GST
Introduced in	2017	1994	2015
Threshold limit	₹ 20 Lac/10 Lac (North-Eastern States)	$1 million	MYR 500,000
Return	GSTR	GST F5	GST-03 and GST-04
Credit	ITC (Input Tax Credit)	ITC (Input Tax Credit)	ITC (Input Tax Credit)
Tax Slab	Four	One	One
Tax Rates	0%, 5%, 12%, 18%, 28%	0%, 7%	0%, 6%
Exempts	Curd,Milk, Fruits, Butter, Milk,etc.	Transfer of business, private transactions, third country sales, financial services, etc.	Agricultural products, essential items, exports, financial services, cremation services, etc.

Table 2 shows the comparison of India 's GST with two ASEAN Countries. Threshold limit to get register under GST was 87 Lac in Malaysia and 5 Cr. in Singapore. Singapore has the highest threshold limit as compared to India and Malaysia. GST has been taken back in Malaysia in 2018.

6. Findings

India and Canada

After comparing India's GST with Canada, it has been found that GST is known in Canada as a Federal GST & Harmonized Sales Tax (HST). It has been implemented in Canada earlier than India. Threshold limit to get register under GST in Canada is low as compared to India. GST34 is the return, which is filed by the taxpayer in Canada, but this return in India is known as GSTR. India has four slabs of tax, but Canada has the single slab of tax.

India and Australia

GST has been implemented in Australia earlier than India. Threshold limit in Australia is higher as compared to India.Instead of GSTR which is filed in India,

Australian taxpayers file BAS (Business Activity Statement). India has four slabs of tax, but Australia has the two slabs of tax. Maximum rate of GST in Australia is 10% and in India this rate is 28%.

India and New Zealand

New Zealand implemented GST 31 years ago than India. Threshold limit of GST in India is lower as compared to New Zealand. GST101and GST103 is filed in New Zealand but in India GSTR is filed. New Zealand has only one single rate of tax, but India has four slabs of taxes. India's maximum rate of GST is 28% and this rate in New Zealand is 15%.

India and France

After comparing India's GST with France, it has been found that GST is known in France as a GST/VAT. It has been implemented in France earlier than India. Threshold limit to get register under GST in France is higher as compared to India. VAT return is filed by the taxpayer in France, but this return in India is known as GSTR. India has four slabs of tax similarly France has also the four slabs of tax, but the maximum rate of GST is 20% in France which is lower than India.

India and Singapore

Singapore implemented GST 23 years ago than India. Threshold limit of GST in India is lower as compared to Singapore. GST F5 is filed in Singapore but in India GSTR is filed. New Zealand Singapore has only one single rate of tax, but India has four slabs of taxes. India's maximum rate of GST is 28% and this rate in Singapore is 7%.

India and Malaysia

GST has been implemented in Malaysia earlier than India. India is the first country who implemented GST after Malaysia. Threshold limit in Malaysia is higher as compared to India.Instead of GSTR which is filed in India, Malaysian taxpayers file GST-03 and GST-04. India has four slabs of tax, but Malaysia has only one slab of tax. Maximum rate of GST in Malaysia is 6% and in India this rate is 28%.

7. Conclusion & Suggestions

GST replaces all the indirect taxes which were levied on the goods and services. The GST structure around the world is an advancement of the VAT system. The idea behind the implementation of GST is to reduce the cascading effect of taxes. This study compares India's GST with four OECD and two ASEAN countries and found that these countries have the highest threshold limit except Canada. Singapore has the highest threshold limit to get register under GST. These countries implemented GST earlier than India. This study also found that in Canada GST is known as Federal GST and Harmonized Sales Tax. In Australia, GST return is known as Business Activity Statement. This study also found that India tax slab is divided in four parts, low rates for essential items and higher rates

for luxurious things. India and France are the only countries which have four slab tax structure and remaining countries have one and two slab tax structure. This study suggested that Government of India should reduce the 28 % tax slab which is highest as compared to other countries and also increase the existing threshold limit, if this limit increases then micro, small, and medium enterprises of India will not come under the GST regime, and they need not to pay any taxes.

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Expenditure on Education and Economic Growth in Indian States: Panel Causality Analysis

Chandan Kumari Dubey

Teacher, Central Academy Senior Secondary School, Jaipur

Abstract

The purpose of t study is to investigate the causal relationship between expenditure on education and gross state domestic product in India for the period 2010-2015. Various statistical tools such as Levin Lin Chu (LLC) panel unit root test for Stationarity, Pedroni and Kao Panel Cointegration test and Panel Granger Causality test have been used for the analysis. The results shows that there is a long run relationship between expenditure on education and economic growth having a unidirectional causality running from Expenditure on Education to Economic Growth. Further it is found that economic growth does not cause educational expenditure during the study period. This result implies that implies that if expenditure on education increase the economic growth also tend to increase but it is not important that the state which has high growth or say high GSDP will invest more on education. So, it is important that state government should increase their expenditure on education to attain the desirable growth.

Keywords : Gross State Domestic Product, Expenditure on Education, Panel Unit Root Panel Cointegration Test.

1. Introduction

Education is a necessary component for the development and growth of any economy. India is a developing country having a large number of population. To increase the prosperity of the nation the labour force should be educated which contributes positively towards the growth. If we recall the previous era of Indian education system was not good as compared to the present situation. The problem of access of education and the inadequacy is the component of poverty, unemployment and other macroeconomic issues from which India is suffering from. To remove these macroeconomic problems human capital formation is important and for that education is the vital component which leads to provide knowledge, skills, and experience for the growth of nation as well as individual.To become a sustainable developed economy in the vision of 2022 India needs a quality of human capital which is conditioned with efficient human capital framework. This pattern of efficiency is based on some internal factors such as political instruments, policy modelling, sustainable growth, optimal socio-economicpatterns, and proper saving –investment dynamics (mallick and Dash, 2015).

Education helps in creativity and productivity of people. It also leads to technological advances and entrepreneurial behaviour another role is reduction in distribution of income inequality and attaining social progress(Ozturk, 2001). According to Schumpeter the more the individuals are educated the more they perform creative destruction. They try to innovate things (Taneja, M.L & Myer,

Dr R.M.(2012-2013). Economics of Development & Planning(with special reference to India). Education is the important element for the growth of any economy, and it gives the increasing returns to scale as per the endogenous growth model. Growth can be derived from the investment in technology. The stock of human capital contributes to economic growth not the large population. The labour saving innovation has positive spill over effect on the production and when there is an aggregate rate of discovery then it is endogenous (Romer, 1994; 1990). The human capital theory emphasises that investment in human capital leads to the long run economic growth. Rich countries invest their time and money in education and health which leads to produce large stock of human capital as compared to the developing countries. The answer to the question that why rates of return to physical capital are not high in poor countries is explained by human capital. In rich countries there is abundance of skilled labour which push the rate of return, but the unskilled labour tends to lower the rate of return on Physical capital. There is a conditional convergence if countries invest in human capital. (Taneja, M.L & Myer, Dr R.M. (2012-2013). Economics of Development & Planning(with special reference to India). "AK" model substitutes the diminishing marginal productivity of capital to the non-diminishing marginal productivity of factor to achieve the steady state growth rate in the economy (Rebelo, 1991). Education contributes to economic growth in two ways directly by making individual worker more productive and secondly by creating knowledge, ideas, technologies, innovation which helps in growth. (Zivengwa, Hazvina et al. 2013). Education helps to bring different ideas and culture together to connect and understand. It also brings foreign income as fees structure, living expenses and other daily expenses. In India, the government schools failed to provide quality education that is why one third of the children move towards the private schools. The government realized its failure and taken a step to reserve some seats for poor in all private schools and the fees of those children are subsidized by the government. (Sreenivasulu, 2013). There are many more literatures which support the importance of education for the economic growth and development

Public Expenditure on Education:

- For the enhancement of economic growth and development of economy government allocate some share of resources in the field of education.
- According to (MHRD) government provide free and compulsory elementary education under the act 2009 to the children between the ages 6-14 years.
- According to NEP of India 2016 the NEP of 1968&86/92 both recommend 6% of GDP as norm for national outlay on education but the actual expenditure on education has remained below. In recent years it was around 3.5% only.
- According to MHRD there is statement indicating the public expenditure on education which shows that in the year of 1977-78 the expenditure on education as a percentage of GDP was only 2.83 but after that it start

increasing. In 1999-00 to 2000-01 it was at its peak 4.19& 4.28 which was quite high.

- In 2010-11 it increases to 4.05 after that it declines to 3.82 in 2011-12 & 2013-14 it is 4.13.

So, in order to grow government should invest more on education.

2. Review of Literature

Breton (2013), in his study stated the evidence that education has direct and indirect effects on national output. The spill over effect of education in highly educated countries is less as compared to less educated countries. The secondary education has some positive effects, but the result showed that investment in post-secondary education does not provide any additional effect on national income. The high macro marginal return to education makes it possible for poor countries to grow faster if they make commitment to raise the average level of schooling of the masses. Pegkas (2014),explored the link between education and economic growth in Greece and the study also estimate that how different level of education impact the economic growth. The results from the study explained the negative impact of primary education on economic growth in short run because of the elasticity of primary education is -2.81 but in long run it has positive effect. And the elasticity of secondary and higher education is 0.55 , 0.52 which explains that there is unidirectional long run causality running from primary level to economic growth and bi-directional long run causality between secondary education level and economic growth and long run & short run causality running from higher education to economic growth. Liu & Armer (1993), stated about the effect of education on the economic growth of Taiwan. They found that the primary education has positive effect with capital input but for labour input it is lost due to the collinearity. Junior high education has positive effect on the economic both growth with the capital and labour input both. But neither senior high education nor tertiary education contributes to the economic growth because the Taiwan government did not make any efforts to expand this level because economy don't want large number of technically trained and skilled labour. They focus on the vocational schools. They suggested that the economic effect of educational expansion is affected by the interaction among the political, economic, and educational system. Brempong et al. (2006) showed the effect of higher education on the economic growth of Africa they found in their study that there is a positive relationship between the higher education and economic growth. The government of African countries spend large number of national resources for higher education to produce large stock of graduates. But the due to emigration the large partition of educated human capital is lost in African countries. So African countries should take some steps to reduce this massive brain drain they continue to suffer. Barro (2000),explained the effect by analysing 100 countries from 1960 to 1995. And the analyses revealed that with respect to education, growth has positive relationship with the starting level of average year of school

attainment of adult males at secondary and higher levels because they will be able to handle the new technology effectively and has negative effect related to year of school attainment of females at secondary and higher levels . The result also suggest that primary level of women education stimulates economic growth indirectly through lower fertility rate. Abdullah (2013),identified in his study of Malaysia by using the augmented Solow model with school enrolment rates in primary, secondary, and tertiary education. That there is a negative relation between education and economic growth, but capital has positive impact on the economic growth of Malaysia.

3. Conclusion

From the above literatures it can be conclude that education and economic growth has a positive relationship. It includes some Indian studies also which contributes to this direction. But beside this there are some studies which are shows the insignificant result between these two variables. Self & Grabowski (2003) does not have direct effect of vocational education on economic growth. Abdullah (2013) also found a negative relation between the variables. Pegkas (2014) shows that primary education has a negative impact on economic growth in short run. So, the main reason for the literature review is to draw an overview for this particular study.

4. Method and Procedure

Secondary data is used for the analysis. The data on expenditure on education is extracted from the ministry of human resource and development (MHRD). The sample period for the analysis is from 2010-11 to 2014-15. For the calculation of economic growth of the different states Gross State Domestic Product (GSDP) is used. The panel data analysis consists of 28 states of the country India. **Variables:** The variables which are taken for the analysis are:

- Gross State Domestic Product (GSDP) as a dependent variable.
- Expenditure on education by education department as independent variable.

5. Econometric Method

Panel data: panel data is a data set on which same cross-sectional unit is surveyed overtime. These are multidimensional data. panel data are also known as pooled data , combination of time series & cross sectional , micro panel data, longitudinal data (a study over time of a variable or group of subjects) etc.

For the analysis of the study the panel data regression model is used which can be elucidate as follows.

$$y_{it}=\alpha+X'_{it}\beta+u_{it} \qquad (1)$$

Where i= 1, 2, 3, 4……N which represent the cross-sections.

t = 1, 2, 3, 4…..T which represent the different time period.

α = it shows the number of observations, quantity of data. β Elucidate K x 1 & the

it^{th} observation is X^{it} on K explanatory variables. The components of the error term is one - way component model which can be depicted as follows: -

$$u_{it} = \mu_{it} + v_{it} \qquad (2)$$

Here, μ_i represent the unobservable individual specific effect and v_{it} represent the remainder disturbance. Which means that μ_i shows individual effects like skills, abilities which are different in one another cross-sections and it is time invariant. Where as v_{it} is supposed to vary according to both time and section. It is a stochastic error term.

6. Estimation Technique

For the estimation of the given data various methodology are used.

Panel Unit Root Test: The unit root test is used to check the stationarity and non-stationarity of the data to avoid the spurious regression among the variables. Before the analysis of any data, it is necessary to check the unit root. Panel unit root testing emerged from the time series unit root testing. In panel unit root testing the consideration is on the asymptotic behaviour of time series dimension T and cross section dimension N. It is critical the way inwhich N and T converge to infinity. To determine the asymptotic behaviour of estimators and test used for non-stationery panels. (Baltagi, Badi H. 2005).

In order to test the panel unit root the Levin Lin Chu test is applied in the analysis. This test commonly known as first generation test. The model of LLC as follows:

$$y^{it} = \delta_i y_i, t\text{-}1 + \alpha_i + \varepsilon_{it} \qquad (3)$$

$i = 1, 2, 3 \ldots N$

$t = 1, 2, 3 \ldots .T$

Here, the error term is denoted by ε_{it}, the deterministic component is α_i. Levin Lin Chu (2002) given that the $\delta_i = \delta, \forall_i$ which shows that the persistence parameters are common across all cross sections. Giving this assumption.

$$\Delta y_{it} = \rho Y_{it-1} + \alpha_i + \varepsilon_{it} \qquad (4)$$

Where $\rho = \delta - 1$. the null hypothesis of $\delta = 1$ which is equivalent to $\rho = 0$ and the primary difference operator is Δ. So, LLC 2002 can be represented as

$$\Delta y_{it} = \rho y_{it-1} + \alpha_i + \sum_{j=1}^{p} \rho_{ij} \ \Delta y_{it-j} + \varepsilon_{it} \qquad (5)$$

Here p represents the maximum lag. The LLC test is based on testing the null hypothesis which is $H_0 : \rho = 0$, and the alternate hypothesis is $H_1 : \rho < 0$.

Panel Cointegration test: panel cointegration test used to check whether long run relationship exist between the variables or not. In this study the two methods are used to test the panel cointegration that is Pedroni test and Kao test. Pedroni test consist of seven statistics i.e., Panel v-statistic, Panel rho statistic, Panel PP statistic, Panel ADF statistic, Group rho statistic, Group PP statistic, Group ADF

statistic. And Kao test consist of ADF. Pedroni introduces different test for panel data cointegration model that allows heterogeneity. (2000, 2004) (Baltagi, Badi H. (2005). *Econometric analysis of panel data*, Third edition.)

The cointegration test is applied on economic growth and expenditure on education by education department to investigate long run association between the variables.

Panel Causality test: In order to find the causation between the two or more variables panel granger causality test is used. This method is used to check the direction of the causation between the variables. In this study panel granger causality test is applied to check the direction of cause. Whether expenditure on education by education department granger causes economic growth or economic growth granger cause expenditure on education by education department. For estimating the causality between these two variables the following equation are:

$$lnEXEDU_{it} = \alpha_i + \sum^{n}_{P=1} \beta_{ip}\, lnEXEDU_{i,t-p} + \sum^{n}_{q=1} \delta_{iq}\, lnGSDP_{i,t-q} + \varepsilon_{it} \quad (6)$$

$$lnGSDP_{it} = \alpha_i + \sum^{n}_{p=1} \beta_{ip}\, lnGSDP_{i,t-q} + \sum^{n}_{q=1} \delta_{iq}\, \text{lnEXEDU}_{i,t-q} + \varepsilon_{it} \quad (7)$$

Where $i = 1 \ldots N$, $t = 1 \ldots\ldots T$. here the (p) and (q) represent the lag orders. While calculating the causality two approaches are commonly used to obtain the parameters. And these are:

Stacked causality test (common coefficient)

Dumitrescu and Hurlin 2012 test (Individual coefficient)

In order to test the causality stacked causality (common coefficient) test is used to check the pair wise granger causality.

Definition of variables:

lnGSDP indicates log of gross state domestic product /economic growth

lnEXEDU indicates log of total expenditure on education by education department.

u_{it} Indicates the error term.

Variables	Explanation
lnGSDP	Economic growth
lnEXEDU	Expenditure on education by education department

Using the log of the variables the model signifies that growth of gross state domestic product is a function of expenditure on education by education department.

Based on these the collected data and the estimation technique the study is carried out

7. Descriptive Analysis Result

Expenditure on Education as a Percent of GDP

This figure shows the public expenditure on education as a percentage of GDP/ GSDP state wise and year wise from 2000-01 to 2014-15. The data that are shown here is based on table no.1. In this figure the percentage share of centre shows an increasing trend over a period in 2000-01 it was 0.51% but it rises to 0.99% in 2014-15. But the share of state declined from 3.63% to 3.06% in 2000-01 to 2014-15. The total expenditure on education as a percentage of GDP in 2000-01 was 4.14% which was highest but after that it starts declining and in 2004-05 it becomes 3.26%. After that it again started rising but with slow rate.

Average Expenditure on Education and Training by Education Department and Other department (Rs. in crore)

The average expenditure on education and training by education and other departments. It is based on the table 2 which indicates the state wise expenditure on education and training by education department and other departments. It can be seen here that Maharashtra has high average expenditure on education and training by education department and other department which is (Rs37812.21 cr.) With (Rs31378.24 cr.) Uttar Pradesh also has a high average expenditure on education and training by education and other department. But there is a huge decline in the other state average expenditure on education and training by education and other department. If we see the Punjab, Himachal Pradesh, Goa, Sikkim, Manipur, and others. These are showing very low averages on the expenditure on education and training by education and other department. By the graph we can see that which state is spending more as compared to the other state on the education. From the graph we can see that the north eastern regions are having very low average expenditure on education and training by education and other department. In case of north eastern regions Tripura , Nagaland , Meghalaya, Manipur , Arunachal Pradesh, and Mizoram are showing increasing expenditure on education & training by education &other department over a time period, but Sikkim shows that in 2010-11 the expenditure was Rs499.47 cr. In 2011-12 it declines to Rs486.11cr. And again, there is a fall in the expenditure 2012-13 to Rs345.63 cr. After that it starts increasing and in 2014-15 it comes to Rs771.92 cr.

Average Expenditure on Education by Education Department (Rs. in crore)

The expenditure on education by the education department shows that an average expenditure on education by education department in Maharashtra is very high with (Rs32232.564 cr.) as compared to the other states. Table 3 shows that in 2010-11 Maharashtra education department spends more on education that is (Rs26163.55 cr.) as compared to the other states. In 2014-15 also this state has a high rate of spending on education (Rs38736.42 cr.) By their education department after Maharashtra, the other states like Uttar Pradesh, west Bengal,

and Tamil Nadu etc. are also spending on the education but less than the Maharashtra which can be seen in the table - 3. Some of the state increases their education expenditure year after year but some does not like Andhra Pradesh the expenditure on education increase till 2013-14 (Rs19360.07 cr.) but in 2014-15 it declines to (Rs13845.92cr.) Maharashtra, west Bengal, and Bihar etc. Which shows an increasing trend in the expenditure on education by education department from 2010-11 to 2014-15. Not only Andhra Pradesh there are other states also which decrease their spending like Haryana and others are shown in the table. Nagaland, goa, Mizoram Sikkim etc. are having very low average expenditure on education by education department. The north eastern regions devote less expenditure on education as compared to the other states.

Average Percent of Education & Training Budget & Other Department to Total GSDP

The average percentage of education and training budget and other department to total GSDP is very high in Mizoram, Manipur , Tripura that are mainly all the north eastern states as compared to the other states. From the table-4 we can see that how much percentage the states are contributing towards education and training. If we compare the table -2 and table -4 data, we will be able to know that those states which have very high average expenditure on education and training by education and other department are now showing very less average percentage of education and training budget and other department to total GSDP. It means that from their GSDP these states are devoting very less percentage to the expenditure & training like Maharashtra, Uttar Pradesh, Tamil Nadu etc. but those states who are showing less spending are having large average percentage of education & training budget & other department to total GSDP. Some states are showing a decline in trend like Uttar Pradesh, Orissa, Madhya Pradesh, Jharkhand etc. in case of Uttar Pradesh in 2010-11the percentage of education & training budget of education and other department to total GSDP was 3.54% which increases in 2011-12 but there is again a fall till 2014-15 to 3.54%. Same as the case with Odisha in 2010-11 it has 3.49% then there is decline in the percentage in 2011-12 after that it increase but again in 2014-15 it declines to 3.58%.

Average Percent of Education Budget of Education Department to GSDP

The state wise average percentage of education budget of education department in terms of GSDP. This fig shows that the north eastern regions and Bihar are showing high average percentage of education budget of education department in terms of GSDP but the major states like Kerala, Maharashtra, Madhya Pradesh , West Bengal, Goa, Haryana etc. are showing low averages. It can be observed from the graph that the average percentage of education budget of education department to total GSDP is very low in major states as compared to the north eastern regions. Here we can see that that on an average Mizoram is having

7.534% but west Bengal has only 2.778%. If we compare Chhattisgarh and Punjab there is a large gap between both the state averages. Chhattisgarh has 3.666% of average but Punjab has only1.984%. So, there is a huge difference among the state's average percentage of education budget of education department to GSDP which can be compared and seen in table -5.

Average Total Expenditure on Education and Training by Education and Other Department & Average Expenditure on Education by Education Department in India.

The India's overall average of total expenditure on education & training by education & other department & average expenditure on education by education department. The figure is based on table :6. which indicates that the overall total expenditure on education & training by education and other department tend to increase over a period of time. In 2010-11 it was(Rs 272137.4cr) which increased to (Rs 502929.3cr) in 2014-15. The average of this expenditure is (Rs 398365.2Cr). the expenditure on education by education department in India was (Rs 225054.5cr) in 2010 which declines to Rs 208600.8cr in 2011-12. But after that it starts increasing. And in 2014-15 it becomes (Rs 404591.3cr) the average expenditure on education by education department in India is (Rs 305612.4Cr). Which is less than the average total expenditure on education & training by education &education & another department.

Average Percentage of Education &Training Budget of Other Department to Total GSDP & Average Percentage of Education Budget of Education Department to GSDP in India

The average of percentage of education & training budget of education and other department and the average percentage of education budget of education department with GSDP. These graphs are drawn based on table- 7. It describes the percentage of education & training budget of education and other department in India to total GSDP in 2010-11 is 3.8 which increases till 2012-13 to 4.29 but after that it starts declining and in 2014-15 it becomes 4.04. The average of the percentage of education &training budget of education and other department in India to total GSDP is 4.086 which is more than average of percentage of education budget of education department to total GSDP which is 3.29. The graph shows that the percentage of education budget of education department to GSDP initially rises from 2010-11 till2012-13 but after that it starts declining till 2014-15.

8. Empirical Result

Table 8.1 : Results for panel unit root test (at level) on gross state domestic product (economic growth) **(lnGSDP)**

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-124.877	0.0000	28	81
Null: Unit root (assumes individual unit root process)				
ADF - Fisher Chi-square	149.005*	0.0000	28	84
PP - Fisher Chi-square	158.172	0.0000	28	84

Level of significance *1% **5 % ***10%

Table 8.2 :Results for panel unit root test (at first difference)gross state domestic product D **(ln GSDP)**

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.36462	0.0000	28	112
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	1.88577	0.9703	28	112
ADF - Fisher Chi-square	25.7658	0.9998	28	112
PP - Fisher Chi-square	56.9813	0.5618	28	112

Level of significance *1% **5 % ***10%

Table 8.1 & 8.2 represent the unit root test at level for the variable lnGSDP which shows that only Levin, Lin Chu test is showing a significant result because the probability value is 0.00 which is less than 5% and fulfilling the condition of stationarity. So, in case of Levin, Lin Chu test we reject the null hypothesis and accept the alternate hypothesis. But the other test that is ADF are showing probability value which is more than 5%. So, in this case data is non-stationery and we will accept the null hypothesis and reject the alternate hypothesis.To avoid spurious result again unit root test is applied at first difference to make the data series stationery. Now the results shows that the probability value of other test are less than 5% that is 0.00. It means that D lnGSDP is stationery at [I(1)] level.

Table 9.1: Results for panel unit root test (at level)expenditure on education by education department (lnEXEDU)

Method	Statistic	Prob.**	Cross-Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-1.68533	0.0460	28	112
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	1.10798	0.8661	28	112
ADF - Fisher Chi-square	43.3673	0.8912	28	112
PP - Fisher Chi-square	74.4848	0.0499	28	112

Table 9.2 : Results for panel unit root test (at first difference)expenditure on education by education department D (lnEXEDU)

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] root process)				
[illegible]	[illegible]45.3695	0.0000	28	84
[illegible]				
[illegible] - Fisher Chi-square	109.802	0.0000	28	84
[illegible] - Fisher Chi-square	120.637	0.0000	28	84

Table 9.1& 9.2 shows that the results for panel unit root test at level on the expenditure on education by the education department. The Levin, Lin & Chu test has probability value 0.04 which is less than 5% which states that data are stationery at level only in case of Levin Lin Chu test, but ADF has a probability value0.89 which is greater than the 5% so we accept the null hypothesis that is data series is non-stationery. Now to make them stationery the primary difference is applied. the probability value of the tests is now less than 5% that is 0.00 so we accept the alternate hypothesis and reject the null hypothesis.

Conclusion of unit root test tables:

[illegible]	[illegible]		[illegible] values	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[I(0)]
	[illegible]	[illegible]	[illegible]	[*I(1)*]
	[illegible]	[illegible]	[illegible]	[*I(1)*]
[illegible]	[illegible]	[illegible]	[illegible]	[*I(0)*]
	[illegible]	[illegible]	[illegible]	[*I*(1)]
	[illegible]	[illegible]	[illegible]	[*I*(0)]

On the basis of above analysis, the results of panel unit root testing we can conclude that all the variables are stationery after first difference that is [I(1)]

Panel Cointegration Test:

After checking the stationery and non- stationery of the data series. We find that the variables are stationery at first difference. Now we need to find whether there is a long run relationship between lnGSDP & lnEXEDU. the panel cointegration test is applied to estimate the long run relationship between these variables .methods which are applied to check the cointegration are Pedroni residual cointegration test which includes seven statistics these are panel v-statistic, panel rho statistic, panel PP statistic, panel ADF statistic, group rho-statistic, group PP-statistic, group ADF statistic. And Kao residual cointegration test which includes ADF. The lag selection is based on Schwarz information criterion (SIC). Hypothesis followed by these two tests are:

H_0= no cointegration between expenditure on education & economic growth

H_A= cointegration between expenditure on education and economic growth

Table 10 : Results for panel cointegration test between lnGSDP and lnEXEDU

Results of Pedroni cointegration test:

Alternative hypothesis: common AR coefs. (within-dimension)

	Statistic	Prob.**	Weighted Statistic	Prob.**
Panel v-Statistic	0.356625	0.3607	1.151188	0.1248
Panel rho-Statistic	0.796609	0.7872	-0.372420	0.3548
Panel PP-Statistic	-4.712535	0.0000	-7.118864	0.0000
Panel ADF-Statistic	-4.886571	0.0000	-6.908718	0.0000

Alternative hypothesis: individual AR coefs. (between-dimension)

	Statistic	Prob.**
Group rho-Statistic	2.237442	0.9874
Group PP-Statistic	-10.57765	0.0000
Group ADF-Statistic	-7.725613	0.0000

Results of Kao cointegration test:

	Ċ-Statistic	t ’r▪L’ɩ
! 5C	5.737804	0.0000
wśℓ-ǂ ĵ Ă▄ō Ăn Ă▪l’ś	0.017621	
I ! / ōĂnĂ▪l’ś	0.017302	

*Level of significance 5%***

According to the results of Pedroni cointegration test the panel rho statistic, panel V-statistic and group rho statistic is more than 5% so we accept the null hypothesis which there is no cointegration between the variables. But the Panel PP, Panel ADF ,group PP and group ADF statistic the probability value is less than 5% so we reject the null hypothesis which is there is no cointegration and accept the alternate hypothesis that there is long run relationship between variables GSDP and EXEDU . the Kao test is also used to check that whether the cointegration exist between the variables or not, so we applied the Kao test also to investigate the long run relationship the results shows that the probability value of ADF is 0.00 which is less than 5% so we reject the null hypothesis and accept the alternate that the cointegration exist. So, both the test shows that there is a long run relationship between the GSDP and EXEDU.

Conclusion of the Pedroni and Kao test of cointegration:

To find the long run association between the gross state domestic product and expenditure on education by education department the result of Pedroni and Kao cointegration test shows that there exists a long run relationship between these two variables because the probability value is less than 5% in majority of the statistic. So, it can be stated that the variable expenditure on education by education department shows a long run relationship with gross state domestic product.

Panel Granger Causality Test:

Panel granger causality test is used to identify the direction of causal relationship between the variables. It shows the direction of influence. In this study the causality test is used to test firstly, whether expenditure on education by education department granger cause economic growth or economic growth granger cause expenditure on education by education department. Lag 1 is taken for the analysis. To test the causality between the variables the hypothesis is as follows:

Table 11: Results for Panel Granger Causality of expenditure on education by education department and economic growth

Pairwise Granger Causality Tests			
Sample: 2011 2015 Lags: 1			
Null Hypothesis:	Obs	F-Statistic	Prob.
LNEXEDU does not Granger Cause LNGSDP	112	4.57545	0.0347
LNGSDP does not Granger Cause LNEXEDU		3.05054	0.0835

Results shows that expenditure on education by education department granger cause economic growth because we are rejecting the null hypothesis because p-value is less than 5%. But economic growth does not granger cause expenditure on education by education department because p- value is more than 5% that is 0.00835 so we cannot reject the null hypothesis. So, the table shows that there is a

unidirectional causality running from expenditure on education by education department to economic growth.

9. Conclusion

The objective of the study was to analyse the relationship between expenditure on education and economic growth for India: state wise analysis over a period 2010-2015. For the investigation firstly the descriptive analysis is employed to examine that how investment in education is made by central and state government over a period of time.

The results shows that the public expenditure on education as a percentage of GDP/GSDP by centre shows an increasing trend over a period of time but the state contribution in expenditure on education after 2000-01 starts declining from 3.63% in 2000-01 to 3.06% in 2014-15. And the total expenditure on education as a percentage of GDP/GSDP was at highest, 4.14% in 2000-01. Which comes to 3.26% in 2004-05. After that it starts increasing but at slow rate. It is also analysed that average expenditure on education and training by education and other department and average expenditure on education by education department shows that Maharashtra has a high rate of investment in education and education and training as compared to the other states. The north eastern regions show a very low average. but if we see the average percentage of education and training budget of education and other department to total GSDP and average percentage of education budget of education department to total GSDP the north eastern regions have high investment in education to their total GSDP as compared the other states.

To find the relationship between expenditure on education and economic growth the Panel unit root test and panel cointegration test is applied and the result of the empirical analysis illustrates that all the variables are integrated of order [I (1)] .

As the variables become stationery, panel cointegration test is employed to identify the long run relationship between the variables. For this Pedroni and Kao cointegration test is used. The results shows that there exists a long run relationship between expenditure on education and economic growth which shows that in long run expenditure on education and economic growth will converge.

According to the panel granger causality test expenditure on education and economic growth shows that expenditure on education by education department causes economic growth because of having significant p- value but economic growth does not cause economic growth because of having insignificant result at 5% level of significance. Which states that there is a unidirectional causality running from expenditure on education by education department to economic growth. The study concludes that expenditure on education by education department and economic growth influence each other certainly. Nonetheless, the impact of expenditure on education by education department is greater on economic growth as compared to the economic growth on expenditure on

education by education department. This can be explained in a manner such that if expenditure on education increases the economic growth also tend to increase but it is not important that the state which has high growth or say GSDP will invest more on education. So, it is important that state government should increase their expenditure on education to attain the desirable growth.

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Appendix

Table 1: Statement indicating the public expenditure on education as percentage of GDP

S.no	Year	GDP at current price(FC) (Rs . in crore)	Total Expenditure on Education by Education Department (Rs. in crore)						Total Expenditure on Education by Education & Other Department (Rs. in crore)					
			State	centre	State + centre	State as %Of GDP	Centre as% of GDP	(State + centre) as % of GDP	state	Centre	State + centre	State as% of GDP	Centre as% of GDP	state+ centre as% of GDP
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	2000-01	1991982.00	54572.84	7925.25	62498.09	2.74	0.40	3.14	72290.53	10195.95	82486.48	3.63	0.51	4.14
3	2001-02	2167745.00	56810.73	8036.98	64847.71	2.62	0.37	2.99	65746.19	14119.52	79865.71	3.03	0.65	3.68
4	2002-03	2338200.00	59472.29	9089.25	68561.54	2.54	0.39	2.93	69350.70	16156.63	85507.33	2.97	0.69	3.66
5	2003-04	2622216.00	62867.46	10177.47	73044.93	2.40	0.39	2.79	71978.28	17100.97	89079.25	2.74	0.65	3.40
6	2004-05	2971464.00	68169.62	13111.23	81280.85	2.29	0.44	2.73	78668.14	18025.96	96694.10	2.65	0.61	3.26
7	2005-06	3390503.00	76660.54	17823.16	94483.70	2.26	0.53	2.79	90018.94	23209.77	113228.71	2.66	0.68	3.34
8	2006-07	3953276.00	86466.89	23873.47	110340.36	2.19	0.60	2.79	103147.47	34236.52	137383.99	2.61	0.87	3.48
9	2007-08	4582086.00	98609.88	26769.75	125379.63	2.15	0.58	2.74	115877.90	39919.37	155797.27	2.53	0.87	3.40
10	2008-09	5303567.00	118386.73	34435.67	152822.40	2.23	0.65	2.88	141091.25	47977.59	189068.84	2.66	0.90	3.56
11	2009-10	6108903.00	150194.39	39941.69	190136.08	2.46	0.65	3.11	177232.79	64023.23	241256.02	2.90	1.05	3.95
12	2010-11	7248860.00	181604.73	51905.38	233510.11	2.51	0.72	3.22	212817.50	80660.73	293478.23	2.94	1.11	4.05
13	2011-12	8736039.00	209830.99	60260.79	270091.78	2.40	0.69	3.09	247855.86	86074.52	333930.38	2.84	0.99	3.82
14	2012-13	9946636.00	233124.92	66087.62	299212.54	2.34	0.66	3.01	278375.27	89757.60	368132.87	2.80	0.90	3.70
15	2013-14	11236635.00	276737.78	74666.30	351404.08	2.46	0.66	3.13	332046.33	101594.26	433640.59	2.96	0.90	3.86
16	2014-15	12433749.00	321820.20	82771.10	404591.30	2.59	0.67	3.25	380440.01	122489.34	502929.34	3.06	0.99	4.04

Table 3: Expenditure on education by education department

State	2010-11	2011-12	2012-13	2013-14	2014-15	average expenditure on education
						by education department (Rs)
Maharashtra	26163.55	29299.19	31211.72	35751.94	38736.42	32232.564
Uttar Pradesh	17758.92	24835.86	29053.08	32679.5	32145.02	27294.476
West Bengal	12922.31	15308.44	16967.26	18619.63	21004.37	16964.402
Tamil Nadu	11708.37	15090.74	16890.66	19153.13	21791.48	16926.876
Andhra Pradesh	11433.76	16150.33	18040.61	19360.07	13845.92	15766.138
Karnataka	10033.83	11743.33	14490.37	18154.07	20251.23	14934.566
Bihar	8232.35	10048.96	12415.49	16363.55	23913.84	14194.838
Rajasthan	10121.47	11169.82	13687.18	15814.93	19267.42	14012.164
Gujarat	8692.18	10718.79	11994.8	13939.02	16153.16	12299.59
Madhya Pradesh	6748.25	9696.04	10209.73	13520.48	13423.36	10719.572
Kerala	6649.97	9652.63	10012.67	11373.71	13416.01	10220.998
Assam	4371.55	5895.46	8557.2	9167.1	13292.81	8256.824
Haryana	5666.13	6813.55	8428.34	10233.37	9965.61	8221.4
Odisha	6066.34	6421.01	7715.51	8881.65	10236.69	7864.24
Chhattisgarh	4486.62	5606.56	5157.51	7355.59	7980.52	6117.36
Punjab	4246.92	4772.9	6158.8	6704.89	7648.2	5906.342
Jharkhand	2875.4	4003.18	5623.56	5319.72	5739.06	4712.184
Uttaranchal	2767.23	3268.22	4048.7	4421.32	4946.82	3890.458
Himachal Pradesh	2407.75	2947.51	3354.2	3512.92	4141.57	3272.79
Jammu and Kashmir	2417.66	2932.12	3457.7	3261.32	3995.14	3212.788
Tripura	775.19	883.12	999.73	1627.78	1306.54	1118.472
Goa	779.04	900.2	1033.76	1069.57	1116.17	979.748
Nagaland	543.14	558.1	700.25	1238.64	1075.82	823.19
Meghalaya	502.15	663.21	747.94	839.59	1051.87	760.952
Manipur	558.93	585.89	667.29	775.93	776.45	672.898
Arunachal Pradesh	374.22	446.13	493.76	610.49	1281.29	641.178
Mizoram	442.39	517.92	671.27	687.19	883.02	640.358
Sikkim	454.39	413.43	273.98	340.55	701.24	436.718

Table 4: Percentage of education and training budget of education and other department to total GSDP

State	2010-11	2011-12	2012-13	2013-14	2014-15	average % of education & training budget & other department to total GSDP
Mizoram	8.15	9.37	9.21	7.5	8.53	8.552
Manipur	6.97	7.16	6.94	7.42	5.18	6.734
Nagaland	5.65	5.61	5.7	8.52	6.64	6.424
Assam	4.9	5.36	7.17	5.98	7.37	6.156
Tripura	5.03	5.66	4.82	7.04	5.02	5.514
Arunachal Pradesh	4.83	4.45	4.59	4.83	8.78	5.496
Jammu and Kashmir	5.25	6.44	5.63	4.18	5.52	5.404
Sikkim	8.84	5.79	3.47	3.43	5.08	5.322
Bihar	4.07	4.43	4.51	5.77	7.48	5.252
Himachal Pradesh	4.91	5.35	5.05	4.28	4.48	4.814
Uttaranchal	8.01	4.09	4.11	3.41	3.54	4.632
Meghalaya	4.05	4.76	5.06	4.17	5	4.608
Chhattisgarh	4.85	5.07	3.75	4.21	3.66	4.308
Uttar Pradesh	3.54	4.11	4.3	3.98	3.54	3.894
Odisha	3.49	3.41	3.42	3.94	3.58	3.568
Goa	2.76	3.74	4.14	3.58	3.56	3.556
Jharkhand	3.41	3.65	4.01	3.34	3.07	3.496
Madhya Pradesh	3.06	3.61	3.17	4.27	3.28	3.478
Kerala	2.84	3.51	3.43	3.06	3.12	3.192
Rajasthan	3.31	2.85	3.15	3.08	3.38	3.154
Andhra Pradesh	2.41	3.24	3.3	3.03	3.65	3.126
West Bengal	2.87	3.07	3.02	2.8	3.31	3.014
Karnataka	2.92	3.04	3.33	2.72	2.67	2.936
Haryana	2.51	2.69	2.85	3.01	2.72	2.756
Maharashtra	2.88	2.78	2.69	2.53	2.56	2.688
Tamil Nadu	2.55	2.67	2.68	2.27	2.4	2.514
Punjab	2.2	2.14	2.46	2.35	2.45	2.32
Gujarat	2.02	2.13	2.24	2.13	2.24	2.152

Table 5: Percentage of education budget of education department to GSDP

State	2010-11	2011-12	2012-13	2013-14	2014-15	average % of education budget of education department to GSDP
Mizoram	7.3	7.41	8.34	6.98	7.64	7.534
Nagaland	4.88	4.55	4.72	7.71	5.84	5.54
Assam	4.2	4.66	6.04	5.24	6.71	5.37
Manipur	6.08	5.63	5.57	5.03	4.3	5.322
Arunachal Pradesh	4.55	4.01	4.08	4.21	7.64	4.898
Tripura	4.46	4.44	4.19	6.07	4.4	4.712
Bihar	3.78	4.08	3.95	4.97	6.4	4.636
Sikkim	8.04	4.92	2.75	2.75	4.61	4.614
Himachal Pradesh	4.4	4.62	4.55	3.79	3.97	4.266
Jammu and Kashmir	4.42	4.44	4.58	3.35	3.98	4.154
Meghalaya	3.32	4.1	4.12	3.54	4.31	3.878
Chhattisgarh	3.82	4.02	3.36	3.73	3.4	3.666
Uttar Pradesh	2.98	3.63	3.78	3.45	3.08	3.384
Uttaranchal	3.67	3.51	3.55	2.99	3.05	3.354
Odisha	3.11	2.97	3.02	3.2	3.18	3.096
Rajasthan	3.13	2.68	2.98	2.88	3.15	2.964
Madhya Pradesh	2.6	3.13	2.74	3.37	2.79	2.926
Jharkhand	2.69	3.07	3.14	2.74	2.64	2.856
West Bengal	2.73	2.81	2.74	2.64	2.97	2.778
Kerala	2.4	3.06	2.87	2.46	2.55	2.668
Goa	2.17	2.51	2.96	2.53	2.75	2.584
Karnataka	2.48	2.54	2.76	2.28	2.2	2.452
Haryana	2.15	2.22	2.44	2.59	2.28	2.336
Andhra Pradesh	1.94	2.47	2.39	2.08	2.63	2.302
Maharashtra	2.54	2.35	2.27	2.17	2.16	2.298
Tamil Nadu	2.14	2.36	2.27	1.94	1.99	2.14
Punjab	1.85	1.84	2.15	2	2.08	1.984
Gujarat	1.69	1.75	1.79	1.73	1.8	1.752

Table 6: Average of total expenditure on education & training by education and other department & average expenditure on education by education department in India

India	total expenditure on education & training by education and other department	expenditure on education by education department
2010-11	272137.4	225054.5
2011-12	348380.1	208600.8
2012-13	403236.5	323850
2013-14	465142.8	365965.2
2014-15	502929.3	404591.3
average	398365.2	305612.4

Table 7: Average percentage of education & training budget of education & other department to total GSDP & average percentage of education budget of education department to total GSDP in India

India	Education & Training Budget of Education & other department to total GSDP	Education Budget of education department to GSDP
2010-11	3.8	3.14
2011-12	4.17	3.36
2012-13	4.29	3.45
2013-14	4.13	3.25
2014-15	4.04	3.25
average	4.086	3.29

Price Volatility of Oilseeds under Trade Liberalization in India: Analysis of Rapeseed & Mustard

Monica Bhati

Research Associate, Institute of Development Studies, Jaipur

Abstract

Trade liberalization has induced volatility in the prices of oilseeds. International and Domestic prices of rapeseed and mustard have been analysed with the objective to assess the fluctuations. International pries of rapeseed and mustard oil fluctuate more than the domestic prices while in case of rapeseed and mustard seed fluctuations are less in international prices .Pattern of change in area and production of rapeseed and mustard in India are analysed to find their impact on pattern of variation in area and production in Rajasthan. Therefore, a study was carried out to analyse the fluctuations in international and domestic prices of rapeseed & mustard crop after trade liberalization and its impact on completeness of a crop.

Keywords: Price volatility, Trade liberalization, oil seeds crops, International trade

1. Introduction

The crop production sector plays a significant role in Indian economy as it provides employment to almost half of the working population in India and about 70% of workers in rural India depend on the agricultural sector for their livelihood. It is observed in the recent past that the relative contribution of agriculture and allied sector in Gross Domestic Product of India (17.4 %) has been on the decline while the share of its dependent population has remained stagnant. Ever since the introduction of neoliberal economic policies in 1991 and subsequent signing on WTO in 1994, domestic market protection to the sector has significantly been withdrawn, exposing the large chunk of the petty commodity producers to the vagaries of the market. As part of the trade liberalization, both tariff and non-tariff measures have been axed to the extent that farmers in India have been forced to the peripheries of the world market where large farmers operating on market based production possibility frontier with unparallel supportive mechanism from their state has been operating. Agricultural commodities, particularly cash crops, are of different types and broadly those crops can be classed under annuals and perennials. Perennials are mostly cultivated in south and north east (Natural rubber, coffee, tea, cardamon etc) while central and northern part of India cultivates primarily annuals. Oilseeds are an annual crop. Important oilseeds produced in India are groundnut, mustard, sesame, linseed, castor seed and palm oil. Area under oilseeds was 26.17 million hectare with a production of 26.3 million hectare in 2015-16. The area and production of oilseeds in India has been sluggish as the annual area expansion during the last 16 years has been only 4 million hectares while production has

increase by 5 million tonnes. Another characteristic feature of oilseeds production is its regional concentration as Gujarat, Rajasthan, Madhya Pradesh, Haryana, Tamil Nadu, and Karnataka accounted for a major share of area and production of oilseeds in India.

India has increasingly become import-dependent on oilseeds production as annual rate of growth in oilseeds demand is 6% as compared to its production growth of 2% over the last one and a half decade (Government of India, 2018). The demand-supply gap is met through imports and there also exists a huge productivity gap between India and other major oil seeds exporting countries in the world. On introduction of trade liberalization in 1991 and the subsequent reduction in tariff rate, import of oilseeds has increased and it has worsened the production scenario of oilseeds in the country.

In this context, it is pertinent to ask the question whether rate of protection has affected the domestic market of rapeseed and mustard and if so, how the price volatility is affected by the trade liberalization. If the present scenario is continued, what would be the impact of trade liberalization on production and productivity of oilseeds in India? Price volatility of agricultural commodities, particularly after the trade liberalization has given birth to voluminous literature (Mohana Kumar S, 1996; C.S.Sekhar, 2004; Fafchamps, 1992; Kwansoo Kim and Jean Paul, 2002; S J. Grain and Jal Hal Lee, 1996). Given the background the study has been carried out with following objectives:

1. To know the global and domestic scenario of rapeseed and mustard.
2. To analyse the area, production and productivity of rapeseed and mustard in India and Rajasthan.
3. To measure the volatility in the domestic and international prices of rapeseed and mustard oilseed and oil.
4. To measure the competitiveness of rapeseed and mustard in India.

The study is divided into four sections. Section 1 of the study deals with the global and domestic scenario of rapeseed & mustard crop. Section 2 shows the trends in area, production & productivity of rapeseed & mustard oilseed in India and Rajasthan while the Section 3 of the study deals with the international & domestic price volatility of rapeseed & mustard crop. The last Section of the paper is related to the competitiveness in rapeseed & mustard crop in India.

2. Methodology and Data Source

The study is based on Secondary data. The secondary data on area, production, yield is taken from the publications of Ministry of Agriculture and international statistics is culled out from the official sites of FAO. The period of the study is limited. The statistical technique that is adopted for the study are run test and NPC's (Nominal Protection Coefficients) ,compound annual growth rate and

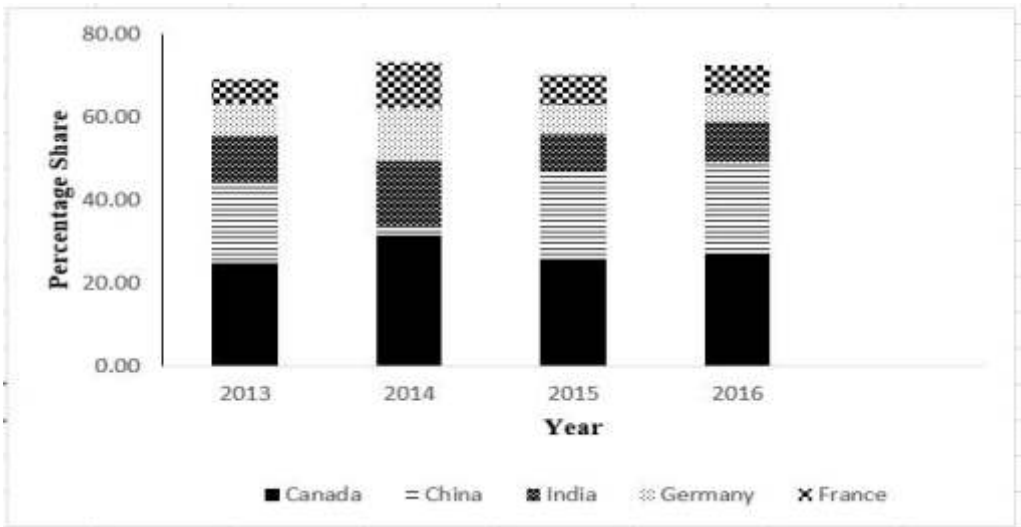
coefficient of variation(CV).The study uses run test to find the fluctuation in the domestic and international prices of rapeseed& mustard crop. Coefficient of variation (CV) is used to find out the volatility in the prices and NPC is used to know the competitiveness of rapeseed and mustard.

3. Global and Domestic Scenario of Rapeseed & Mustard Crop

3.1 Global Scenario

Global output of rapeseed & mustard production has been increasing in the last 15 years. The output has increased from 5083 tonne in 2001-02 to 7917 tonne in 2016-17. Production from Canada and China has risen steadily and reached 26.76% & 22.19% respectively of total world production (Appendix table1).On the other hand, output from India has remained 6797000 tonne in 2016-17 & consequently its share has increased a little to 9.87% from 8.83% in 2015-16 (FAOSTAT).

Figure 1: Relative Share in Rapeseed & Mustard production by major producing countries during 2013 to 2016



Source: Author's Compilation from data from FAOSTAT

Figure 1 shows the relative share of rapeseed and mustard production by major producing countries during the period from 2013 to 2016. The figure shows the largest produer of rapeseed & mustard oilseed is Canada during the 4 years from 2013 to 2016.The share of China in total production during the year 2014 declined to around 2% out of the world production of rapeseed & mustard.In the same year a significant change in its share in the world production is seen in all major rapeseed & mustard producing countries of the world.The share of India has increased to 15.86% in 2014 as compared to 2013 which was 10.76%.In 2015,its share decrease to 8.83% while in 2015 it shows a slight increase by 9.87%.

3.2 Domestic Scenario

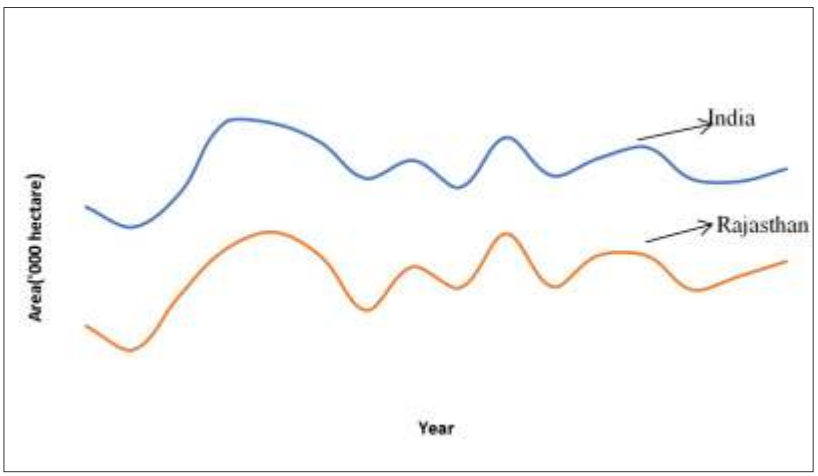
India is the third largest producer of rapeseed & mustard seed in the world with 8.5% of the global production in 2017 grown domestically (USDA). The rapeseed & mustard seed produced in India is used for domestic consumption. After extracting oil from the seed, the remaining part of the seed is used to produce rapeseed & mustard meal. Rapeseed & Mustard meal is an important source of cattle and poultry feed. India is the exporter of rapeseed and mustard seed while its imports are nil (Ministry of Agriculture & Farmers Welfare, GoI). There was an increase in production quantity from 5083 thousand tonne to 7917 thousand tonne during the period from 2001-02 to 2016-17(Appendix Table 3).The jump in production is primarily due to sharp rise in area by 1.13% rather than yield i.e., 0.78%.

State wise Production: Rajasthan occupies the first place both in terms of cultivated area & production accounting to over 45% followed by Madhya Pradesh with 13%.The third place is occupied by Haryana and Uttar Pradesh with 11% of the total production each. West Bengal & Gujarat occupy the 5th and 6th position with 6% and 5% respectively(Commodities Control).During the period from 2001-02 to 2016-17,the annual growth rate in area and production is 4.01% while the annual growth rate is just 1.88%.

4. Trends in Area, Production & Productivity of Rapeseed & Mustard Oil Seed In India and Rajasthan

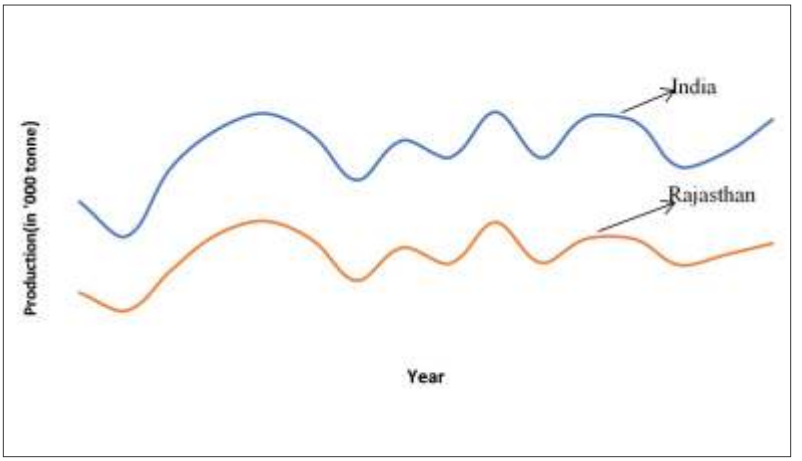
Trends depicts the pattern of change. Change in area and production of a crop affects its productivity.Here,trend in area and production of rapeseed and mustard oilseed is analysed to see the impact of its change in productivity. Trend in area and production of rapeseed and mustard oilseed in Rajasthan is analysed to see its impact on the area and production of rapeseed and mustard oilseed in India.

Figure 2: Area ('000 Hectare) of Rapeseed & Mustard oil seed in India & Rajasthan during 2001-02 to 2016-17



Source: Author's Compilation based on data from MAFW, GOI

Figure 3: Production('000 Tonne) of Rapeseed& Mustard oilseed in India & Rajasthan during 2001-02 to 2016-17



Source: Author's Compilation based on data from MAFW, GOI

The above figure 2 and figure 3 depicts that a pattern of change in area and production in Rajasthan reflects the same pattern of change in area and production in India. This is so as the state of Rajasthan is the largest producer of rapeseed and mustard oilseed in India. The above charts also show that with increase in its production under rapeseed & mustard oilseed the area under cultivation of it also increase in both Rajasthan and India. The chart shows that the total area of rapeseed & mustard in India has increased from 2073 to 6074 thousand hectare in 2001-02 to 2016-17,while production has increased from 5083 to 7917 thousand tonnes in the same year (details in Annex table 3). In Rajasthan, the area under rapeseed & mustard oilseed increased from 1840.8 to2563.6 hundred hectare ,while production has increased from 1943 to 3645.44 thousand tonnes.But there is a slight increase in productivity of rapseed and mustard (i.e.366kg/hectare) with 1056kg/hectare in 2001-02 to 1422 kg/hectare in 2016-17(details in Annex table3).

5. Volatility in International & Domestic Prices of Rapeseed& Mustard crop

Indian rapeseed/mustard seed and oil prices have witnessed a high volatility in its prices. This has not only affected the revenues of the government and farm sector but also the farmers producing these crops. The Random test is employed for calculating the price volatility. Run test is used to analyse the number of times the prices fluctuatein each period (S.Lekshmi,S.Mohana Kumar and Georage K,1996).The test statistic employed to check the randomness in the prices was:

$$Z = \frac{R - E(R)}{SE(R)}$$ Where, E® = N/2+1, SE(R) =√N-1/2, R = number of runs, N = number of observations

Price	Value of Z	
	Rapeseed & Mustard Oilseed	Rapeseed & Mustard Oil
Domestic Price	(-0.28)	(-0.28)
International Price	(-0.49)	(-0.18)

The null hypothesis is that there is no randomness in the price movement or there exists a discernibletrend. The run test indicates that there is no long run discernible trend in the overall movement of the price for seeds and oil or in other words, the null hypothesis was rejected. Itamounts to saying that the fluctuation in price is randomly distributed and it is a characteristic feature of agricultural commodities, particularly annuals.

5.1 Price Volatility of Rapeseed & Mustard seed

The wholesale prices of rapeseed& mustard seed fluctuate more than the international prices of it. During the period 2012 to 2017,the domestic prices fluctuate 5 times while the fluctuations in the international prices were just 3 times.

5.2 Price Volatility of Rapeseed & Mustard oil

The international prices of rapeseed& mustard oil fluctuate more than the domestic prices of it. During the period 2012 to 2017,the domestic prices fluctuate 4 times while the fluctuations in the international prices where 6 times.

6. Competitiveness in Production of Rapeseed & Mustard crop in India

Competitiveness of a crop depends on its domestic &international prices, cost of cultivation, subsidy etc. Therefore, the study uses both domestic and international prices to find the competitiveness of rapeseed and mustard crop. The statistical method used for measuring the competitiveness of rapeseed and mustard in the world market is NPC (Nominal Protection Coefficient).NPC is the ratio of the domestic price to the international price of rapeseed and mustard under consideration. The NPC helps in measuring the divergence of the domestic price from the international price and thus determines the degree of domestic protection/unprotection of the commodity in question(Rakotoarisa and Gulati 2006).It is defined as:

$$NPC_j = \frac{P_j^d}{P_j^i}$$

where:

NPC – Nominal Protection Coefficient

P_j^d - Domestic Price of Rapeseed & Mustard Oilseeds or Oil

P_j^i – International Price of Rapeseed & Mustard Oilseeds or Oil

Table 1: Competitiveness of Rapeseed & Mustard :India

Year	NPC(Rapeseed& Mustard oilseed)	NPC(Rapeseed& Mustard oil)
2012	1.08	1.26
2013	0.90	1.11
2014	1.03	1.23
2015	1.16	1.66
2016	1.18	1.51

Source: Author's calculation

Table 1 shows the competitiveness of rapeseed & mustard in India for the years 2012 to2016.The value of NPC is greater than 1 for rapeseed& mustard oilseed during the period of 2012 to 2017 except in the year 2013, while the NPC for rapeseed& mustard oil is also greater than 1.This shows that rapeseed and mustard oilseed is competitive as domestic market is protected with government support.

7. Conclusion

Trade liberalization has been characterized by its huge impact on Agriculture. Volatility in the prices of oilseeds is one such result of trade liberalization. The present study is restricted to one crop i.e. oilseed crop (rapeseed& mustard),as India is a major exporter of rapeseed & mustard oilseed and major importer of Rapeseed & mustard oil(Ministry of Agriculture and farmers welfare, GOI).The study also shows that the international prices of rapeseed& mustard oil fluctuate more than the domestic prices, while the fluctuation in international prices of rapeseed& mustard oilseed is less than its wholesale prices. The study concludes that the rapeseed& mustard is one of the competitive crops in the economy as it is protected with government support.

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Appendices

Table 1: Relative share in Rapeseed and Mustard production by major producing countries during 2013-2016.

Country	Year			
	2013	**2014**	**2015**	**2016**
Canada	24.67	31.32	25.82	26.76
China	19.89	2.34	20.98	22.19
India	**10.76**	**15.86**	**8.83**	**9.87**
Germany	7.96	12.58	7.05	6.65
France	6.01	11.12	7.50	6.87
Australia	5.70	7.72	4.88	4.28
Poland	3.68	6.60	3.79	3.22
U.K	2.93	4.95	3.57	2.58
USA	0.00	0.00	0.18	2.04
Ukraine	3.23	4.43	2.44	0.00
Czech Republic	1.99	3.10	0.00	1.97
Other Countries	13.19	0.00	0.00	0.00
World	100.00	100.00	100.00	100.00

Source: Authors calculation

Table 2: Production (in Tonne) of Rapeseed& Mustard in the world

Country	**2013**	**2014**	**2015**	**2016**
Canada	17935000	15555100	18376500	18423600
China	14458029	1160015	14930677	15281624
India	7820000	7877000	6282000	6797000
Germany	5784300	6247400	5016800	4579600
France	4370075	5522980	5334404	4727961
Australia	4141731	3832000	3470000	2944000
Poland	2677665	3275806	2700776	2219270
U.K	2128000	2460000	2542000	1775000
USA	NA	NA	130600	1403650
Ukraine	2351730	2198020	1737600	NA
Czech Republic	1443210	1537320	NA	1359125
Other Countries	9589868	NA	NA	NA
World	**72699608**	**49665641**	**71171010**	**68855446**

Note:NA*-Not Available

Source:FoodandAgricultural Organisation(FAO)

Table 3: Area, Production& Production of Rapeseed & Mustard oilseed during 2001-02 to 2016-17

Year	Area(in '000 Hectare)		Production(in '000 Tonne)		Productivity(in Kg/Hectare)	
	India	Rajasthan	India	Rajasthan	India	Rajasthan
2001-02	5073	1943	5083	1943	1002	1056
2002-03	4544	1318.2	3880	1318.2	854	868
2003-04	5428	2740.2	6291	2740.2	1159	1279
2004-05	7316	3970.7	7593	3970.7	1038	1078
2005-06	7276	4416.9	8131	4416.9	1117	1205
2006-07	6790	3805.6	7438	3805.6	1095	1185
2007-08	5826	2362.2	5834	2362.2	1001	946
2008-09	6298	3502.5	7201	3502.5	1143	1234
2009-10	5588	2948.2	6608	2948.2	1183	1276
2010-11	6901	4369.7	8179	4369.7	1185	1188
2011-12	5894	2976.3	6604	2976.3	1121	1189
2012-13	6363	3814.6	8029	3814.6	1262	1346
2013-14	6646	3797.1	7877	3797.1	1185	1233
2014-15	5799	2895.7	6282	2895.7	1083	1170
2015-16	5746	3258	6797	3258	1183	1287
2016-17	6074	3645.44	7917	3645.44	1134	1422

Source:-Ministry of Agriculture and Farmers Welfare, Government of India

Table 4: Relative share of Rajasthan in Area, Production& Productivity of Rapeseed & Mustard in India during 2001-02 to 2016-17

Year	Area(in '000 Hectare)	Production (in '000 Tonne)	Productivity(in Kg/Hectare)
2001-02	38.30	38.23	105.39
2002-03	29.01	33.97	101.64
2003-04	50.48	43.56	110.35
2004-05	54.27	52.29	103.85
2005-06	60.71	54.32	107.88
2006-07	56.05	51.16	108.22
2007-08	40.55	40.49	94.51
2008-09	55.61	48.64	107.96
2009-10	52.76	44.62	107.86
2010-11	63.32	53.43	100.25
2011-12	50.50	45.07	106.07
2012-13	59.95	47.51	106.66
2013-14	57.13	48.20	104.05
2014-15	49.93	46.10	108.03
2015-16	56.70	47.93	108.79
2016-17	60.02	46.05	125.40

Source:Author's Calculation

Table 5: MSP, Domestic & International Prices of Rapeseed& Mustard Oilseed, 2012-2017 Rs/Qtl)

Year	Quarter	MSP	WholesalePrice	InternationalPrice
2012	Q1	1850	3285	3083
2012	Q2	2500	3435	3379
2012	Q3	2500	3918	3489
2012	Q4	2500	3792	3364
2013	Q1	2500	3444	3408
2013	Q2	3000	3131	3202
2013	Q3	3000	3157	3050
2013	Q4	3000	3348	3173
2014	Q1	3000	3207	3332
2014	Q2	3050	3121	3242
2014	Q3	3050	3367	2575
2014	Q4	3050	3572	2597
2015	Q1	3050	3493	2529
2015	Q2	3100	3854	2713
2015	Q3	3100	4137	2692
2015	Q4	3100	4492	2735
2016	Q1	3100	3875	2669
2016	Q2	3350	4032	2798
2016	Q3	3350	4208	2761
2016	Q4	3350	4072	2924

Source: DES,Ministry of Agriculture & FarmersWelfare for domesticprices and World Bank for International Prices.

Table 6: Domestic and International Prices of Rapeseed& Mustard Oil 2012-2017 (Rs./Qtl.)

Year	Quarter	Wholesale Price	International Price
2012	Q1	7687	6442
2012	Q2	7822	6718
2012	Q3	8423	6838
2012	Q4	7990	5489
2013	Q1	7369	6502
2013	Q2	6654	6208
2013	Q3	6756	6231
2013	Q4	7152	6305
2014	Q1	6833	6069
2014	Q2	6546	5776
2014	Q3	6872	5276
2014	Q4	7089	5023
2015	Q1	7090	4716
2015	Q2	7873	4897
2015	Q3	8493	4996
2015	Q4	9577	5296
2016	Q1	7902	5234
2016	Q2	8355	5391
2016	Q3	8884	5432
2016	Q4	8377	6098
2017	Q1	7573	5911
2017	Q2	7115	5315

Source: Solvent Extractors Association of India (SEAI) for Domestic Prices and World Bank for International Prices

Table 7: Trend in International and Domestic Prices of Rapeseed & Mustard Oilseed

Year	Quarter	Wholesale Price		Runs	International Price		Runs
2012	Q1	3285	0		3083	1	
2012	Q2	3435	0	1	3379	1	
2012	Q3	3918	1		3489	1	
2012	Q4	3792	1	2	3364	1	
2013	Q1	3444	0		3408	1	
2013	Q2	3131	0		3202	1	
2013	Q3	3157	0		3050	1	
2013	Q4	3348	0		3173	1	
2014	Q1	3207	0		3332	1	
2014	Q2	3121	0		3242	1	1
2014	Q3	3367	0		2575	0	
2014	Q4	3572	0		2597	0	
2015	Q1	3493	0	3	2529	0	
2015	Q2	3854	1		2713	0	
2015	Q3	4137	1		2692	0	
2015	Q4	4492	1		2735	0	
2016	Q1	3875	1		2669	0	
2016	Q2	4032	1		2798	0	
2016	Q3	4208	1		2761	0	
2016	Q4	4072	1		2924	0	2
2017	Q1	3667	1	4	2980	1	
2017	Q2	3396	0	5	2780	1	3

Source: Author's Calculation

Table 8: Relative position of Rapeseed& Mustard by major producing countries during the period 2013 to 2016

Country	Year			
	2013	**2014**	**2015**	**2016**
Canada	1	1	1	1
China	2	10	2	2
India	**3**	**2**	**3**	**3**
Germany	4	3	5	5
France	5	4	4	1
Australia	6	5	6	6
Poland	7	6	7	7
U.K	9	7	8	8
USA			10	9
Ukraine	8	8	9	
Czech Republic	10	9		10

Source: Food and Agricultural Organisation(FAO)

Table 9: Trend in International and Domestic Prices of Rapeseed& Mustard Oilseed

Year	Quarter	Wholesale Price		Runs	International Price		Runs
2012	Q1	3285	0		3083	1	
2012	Q2	3435	0	1	3379	1	
2012	Q3	3918	1		3489	1	
2012	Q4	3792	1	2	3364	1	
2013	Q1	3444	0		3408	1	
2013	Q2	3131	0		3202	1	
2013	Q3	3157	0		3050	1	
2013	Q4	3348	0		3173	1	
2014	Q1	3207	0		3332	1	
2014	Q2	3121	0		3242	1	1
2014	Q3	3367	0		2575	0	
2014	Q4	3572	0		2597	0	
2015	Q1	3493	0	3	2529	0	
2015	Q2	3854	1		2713	0	
2015	Q3	4137	1		2692	0	
2015	Q4	4492	1		2735	0	
2016	Q1	3875	1		2669	0	
2016	Q2	4032	1		2798	0	
2016	Q3	4208	1		2761	0	
2016	Q4	4072	1	4	2924	0	2

Source: Author's Calculation

Table 10: Trend in International and Domestic Prices of Rapeseed & Mustard Oil

Year	Quarter	Wholesale Price		Runs	International Price		Runs
2012	Q1	7687	0	1	6442	1	
2012	Q2	7822	1		6718	1	
2012	Q3	8423	1		6838	1	1
2012	Q4	7990	1	2	5489	0	2
2013	Q1	7369	0		6502	1	
2013	Q2	6654	0		6208	1	
2013	Q3	6756	0		6231	1	
2013	Q4	7152	0		6305	1	
2014	Q1	6833	0		6069	1	
2014	Q2	6546	0		5776	1	3
2014	Q3	6872	0		5276	0	
2014	Q4	7089	0		5023	0	
2015	Q1	7090	0		4716	0	
2015	Q2	7873	0	3	4897	0	
2015	Q3	8493	1		4996	0	
2015	Q4	9577	1		5296	0	
2016	Q1	7902	1		5234	0	
2016	Q2	8355	1		5391	0	
2016	Q3	8884	1		5432	0	4
2016	Q4	8377	1	4	6098	1	5

Source: Author's Calculation

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Address for Communication:

Prof. V.V. Singh

Department of Economics

University of Rajasthan, Jaipur – 302004.

Email: rajeconomicjournal@gmail.com

FORM IV

(See Rule – 8)

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