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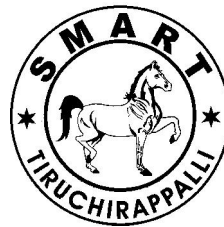
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# DEPOSITS AND ADVANCES OF DISTRICT CENTRAL CO-OPERATIVE BANKS: A COMPARATIVE ANALYSIS WITH SPEARMAN'S RANK CORRELATION

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## Abstract

*District Central Co-operative Banks (DCCBs) are very common and well recognized institutions among co-operative credit institutions. This paper seeks to compare the deposits and advances of the Rohtak Central Co-operative Bank Ltd. and the Jhajjar Central Co-operative Bank Ltd by using Spearman's Rank Correlation Method. The banks under study are from Haryana State. It is found that the Jhajjar Central Co-operative Bank (JCCB) is showing increasing trend towards mobilizing deposits and advancing credit. The business of the JCCB Ltd. is showing more variability compared to the Rohtak Central Coop. Bank (RCCB) Ltd. during the study period. The study reveals that there was a high positive relationship between the deposits of the banks under study while there was moderate positive relationship between the direction of advances granted by the two banks during the study period and there was a low moderate positive correlation between the direction of C-D Ratio.*

**Key Words:** District Central Co-operative Banks, Spearman's Rank Correlation, Jhajjar Central Co-operative Bank, Rohtak Central Co-operative Bank.

## 1. Introduction

Co-operative Sector in India occupies a very important place in the Indian Economy. Majority of the co-operatives cater to the weaker section of the society. Co-Operative Banks in India started functioning about 100 years ago. They have contributed substantially to the National Economy. They have very extensive network of rural outlets as compared to that of regional rural banks and commercial banks. Every person can access the banking facilities of Co-Operative Banks. The Rural Short-Term Co-operative Credit Structure comprises of State Co-operative Banks (StCBs) at the state level (apex), District Central Co-operative Banks (DCCBs) at the district level and Primary Agricultural Credit Societies (PACS) at the village level. *As on March 2009, there were 31 StCBs (with 992 branches), 373 DCCBs (with 13233 branches) and a total of 95633 PACS<sup>1</sup>.*

Although the share of agriculture in GDP has declined from half at Independence to less than one-fifth currently, agriculture remains the predominant sector in terms of employment and livelihood, with more than half of India's workforce engaged in it as the principal occupation<sup>2</sup>. But adequate credit is the prerequisite for development in agriculture sector. Cooperative Credit Institutions have always been engaged in agriculture and allied activities since their inception. District Central Co-operative Banks (DCCBs) are very common and well recognized institutions among co-operative credit institutions. They are vital organizations not only for ensuring smooth flow of agricultural credit but also for the overall development of Rural Economy. They mobilize deposits through various types of accounts. There are nineteen DCCBs in the Haryana State. In the present paper, two banks, named, The Rohtak Central Co-operative Bank and the

<sup>1</sup> These figures were taken from NAFSCOB publications

<sup>2</sup> See Eleventh Five Year Plan, Vol. 3, Planning Commission, Govt. of India, p.3

Jhajjar Central Co-operative Bank from Haryana have been taken for study. The Rohtak Central Co-operative Bank Ltd. (RCCB), Rohtak was established on 14<sup>th</sup> January 1914 with the Registrar of Co-op. Societies, Haryana, under the Punjab Co-Operative Societies Act 1912, which is also applicable to Haryana. The area of operation of the bank covers the whole District of Rohtak. The Jhajjar Central Cooperative Bank (JCCB) was established on 29<sup>th</sup> March, 2001 with the Registrar of Co-Op. Societies, under the Haryana Co-Operative Societies Act 1912. These banks have been providing short-term and medium term loans for agriculture and non-agriculture purposes.

## 2. Review of Some Selected Studies

Comprehensive literature and research studies are available regarding Cooperative Banking Institutions, especially for DCCBs. Cooperative Banking Institutions have always been the thrust area for the researchers and academicians. **Rao and Dakshinamurthy (1986)** analyzed the overdues and recovery performance of Guntur District Central Cooperative Bank Ltd. of A.P. They found that the bank had never maintained its overdues above controlled limit. **Raja(2005)** evaluated the performance of MDCCB Ltd.. He analyzed the income and expenditure components along with spread and burden concepts. He found that interest received ranged from 98 per cent to 99 per cent of total income and interest paid varied from 74 percent to 84 percent of total income during five years taken into consideration. **Shah((2007)** evaluated the credit delivery through cooperative credit institutions in Maharashtra State in the light of Banking Sector Reforms. He found that cooperatives credit recorded a slow pace of growth during the decade of reforms ( 1908-2003) as compared to the pre-reform period(1980-1990). The author also highlighted the major problems faced by cooperative credit system in that State like high

transaction cost, poor repayment performance, mounting NPAs and moderate number of SC/ST members. **Chellani(2008)** analyzed the deposits of Baroda Central Cooperative Bank. He found that the share of fixed deposits with the bank was around 4/5 of the total deposits. He also observed that the percentage of deposits from individuals in total deposits increased continuously. **Amunathan(2010)** studied the performance of Cuddalore District Central Cooperative Bank in Tamil Nadu with various financial ratios . He found the total assets to be not sufficient to satisfy the total liabilities of the bank throughout the period under study. **Gawade and Bhosale (2010)** examined the Inflow Deposits Management of Kolhapur District Central Cooperative bank. They found that the KDCC bank could not maintain proper Inflow Deposit Management and the bank had to pay high interest on deposits which adversely impacted bank profitability. Besides the studies mentioned here, various studies have also been reviewed. But no attempt has been undertaken to compare the growth pattern and association between two cooperative banking institutions of the same level by applying any sophisticated statistical technique. Against this backdrop, this paper is an attempt to bridge this gap in literature.

## 3. Objective of the Paper

The main objective of this paper is to compare the deposits and advances of the Rohtak Central Co-operative Bank and the Jhajjar Central Co-operative Bank by using Spearman's Rank Correlation Method.

## 4. Research Methodology

**4.1. Nature of Research :** This paper is exploratory-cum-analytical in nature. This study describes the role of cooperative banks in agriculture and hence it is explorative and the main text of this study is analytical .

**4.2. Sample Size :** Two banks, named, the Rohtak Central Co-operative Bank and the Jhajjar Central Co-operative Bank from the

nineteen DCCBs in Haryana have been taken for the study.

**4.3 Hypotheses:** In this paper, the following three null hypotheses were framed:

*H<sub>1</sub>:* There is no relationship between the Direction of Deposits of Rohtak and Jhajjar Central Co-operative Banks during the study period.

*H<sub>2</sub>:* There is no relationship between the Direction of Advances of Rohtak and Jhajjar Central Co-operative Banks during the study period.

*H<sub>3</sub>:* There is no relationship between the Direction of C-D Ratio of Rohtak and Jhajjar Central Co-operative Banks during the study period.

#### **4.4 Conceptualization of Spearman's Rank Correlation Method:**

Spearman's Rank Correlation was developed by the British Psychologist, C.E. Spearman. This is a crude method of computing relationship between two characteristics. In this method, various items are assigned ranks according to two characteristics and a correlation is computed between these ranks. This correlation is denoted by  $\rho$ . It lies between 1 and -1. Besides this, Spearman's Rank Correlation Formula can be used even if we have variables which are measured quantitatively, i.e., when the actual data, but not the ranks relating to two variables, are given. In such a case, we shall have to convert the data into ranks. Spearman's Rank Correlation is a technique used to test the direction and strength of the relationship between two variables.

**4.5 Variables Studied:** Deposits, Advances and Credit-Deposit Ratio of these two banks were considered for the study.

**4.6 Nature and Collection of Data:** Secondary data were used. The required data were collected from the Annual Financial Statements of the banks under study.

**4.7 Reference Period:** Seven years (2002-03 to 2008-09) were taken for the purpose of the study.

**4.8 Limitation of the study:** This paper has considered only two variables to compare these two banks. On the basis of only few variables, we cannot judge the actual extent of performance comparatively and cannot generalize the findings.

### **5. Data Analysis and Discussion**

**Table -1** reveals the description about the deposits mobilized and credit advanced by the banks under study. The average amount of deposits were Rs. 17114.43 lakhs for RCCB Ltd. and Rs. 15961.57 lakhs for JCCB Ltd. while average amount of advances were Rs. 18483.29 lakhs for RCCB Ltd. and Rs. 18694.57 lakhs for JCCB Ltd. The business of the JCCB Ltd. was showing more variability as compared to the RCCB Ltd. during the study period. The growth rate of deposits of the JCCB Ltd. was very high ( 170.46) compared to the RCCB Ltd ( 48.90) whereas in the case of advancing loans, the growth rate of the RCCB Ltd. was higher than the JCCB Ltd. The JCCB Ltd recorded increasing trend in mobilizing deposits and advancing credit while there was no such trend in deposits and advances of the RCCB Ltd. during the study period. **Figure 1** and **2** depict the trends in deposits and advances comparatively.

**Figure -1** displays that till 2006, JCCB Ltd, in the case of deposits, remained below as compared to RCCB Ltd. But, in 2006, the amount of deposits of both banks were almost close to each other. In 2007, the deposits of JCCB Ltd. crossed the RCCB Ltd. But again in 2008, deposits of RCCB Ltd. were more than that of JCCB Ltd. In 2009, deposits of JCCB Ltd. were again more than that of RCCB Ltd. If we see the **Figure-2**, it is found that advances of RCCB Ltd. were more than JCCB Ltd. in 2003 and 2004. But in 2005, the advances of both banks

were almost the same. Thereafter, advances of JCCB Ltd were always more than of RCCB since 2005 to 2009. Next part of the paper relates to the test of hypotheses.

$H_1$ : There is no relationship between the direction of deposits of Rohtak and Jhajjar Central Co-operative Banks during the study period.

$$p = 1 - \frac{6\sum d^2}{n(n^2 - 1)} = 1 - \frac{6 \times 14}{7(7^2 - 1)} = 0.75$$

**Table- 2** displays the association between deposits of RCCB Ltd. and JCCB Ltd. during 2003-2009. To find out the correlation between these two, Spearman's Rank Correlation was used. Assigned Ranks show that deposits of RCCB Ltd. increased with significant fluctuations throughout the study period while the deposits of JCCB Ltd. increased with an increasing trend. Coefficient of Correlation between the deposits of the RCCB Ltd. and JCCB Ltd. was 0.75 and it means that there was highly positive relationship between these two banks under consideration.

$H_2$ : There is no relationship between the Direction of Advances of Rohtak and Jhajjar Central Co-operative Banks during the study period.

$$p = 1 - \frac{6\sum d^2}{n(n^2 - 1)} = 1 - \frac{6 \times 23}{7(7^2 - 1)} = 0.59$$

**Table- 3** reveals that advances of JCCB Ltd increased consistently year to year but advances of RCCB Ltd. recorded a fluctuating trend. The advances of JCCB Ltd. were less than that of RCCB Ltd. in 2003 but more in 2009. Spearman's Rank Correlation(0.59) shows that there was moderate positive correlation between the growth of advances of RCCB Ltd. and JCCB Ltd. during the study period.

$H_3$ : There is no relationship between the Direction of C-D Ratio of Rohtak and Jhajjar

Central Co-operative Banks during the study period.

$$p = 1 - \frac{6\sum d^2}{n(n^2 - 1)} = 1 - \frac{6 \times 38}{7(7^2 - 1)} = 0.32$$

Credit-Deposit Ratio reflects the business policy of any banking institution. **Table -4** reveals that this ratio for both banks was not consistent during the study period. There was no trend of Credit-Deposit Ratios of both banks. That is why, as per the Coefficient Correlation (0.32), there was low moderate positive association between the Credit-Deposit Ratios of RCCB Ltd and JCCB Ltd.

The results of Spearman's Rank Method for the above calculated variables are given in **Table-5**.

It is inferred from the **Table -5** that the calculated value p(0.75) implies that there was high positive relationship between the deposits of the banks under study. In the case of advances, calculated value p (0.59) implies that there was moderate positive relationship between the Direction of Advances experienced by the two banks under the study. p value of C-D ratio was .32. It means that there was low moderate positive correlation between the Direction of C-D Ratio of these two banks under study. Hence all the three set Hypotheses are not accepted for the years under consideration.

## 6. Conclusion

In India, cooperatives are the most suitable agencies for socio-economic development of rural population. Among Cooperative Credit Institutions, DCCBs are very common and most popular banking institutions. The present paper considered two DCCBs from Haryana State to compare their deposits and advances and to understand the relationship between these two banks by using Spearman's Rank Method. The study concludes that all the three set Hypotheses are not accepted. There was positive relationship

in the direction of business organised by the Rohtak and the Jhajjar Central Co-operative Banks. In the case of deposits, these were highly correlated while in the case of advances, relationship between these two banks was moderate but in the case of C-D Ratio, it was low and moderately correlated. It is also found that the Jhajjar Central Co-operative Bank recorded increasing trend in mobilizing deposits and advancing credit. But the C-D Ratio of this bank recorded fluctuating trend. There was no trend in deposits, advances and C-D Ratio of the Rohtak Central Co-operative Bank during the study period and it recorded fluctuating trend in all the three variables considered for the study.

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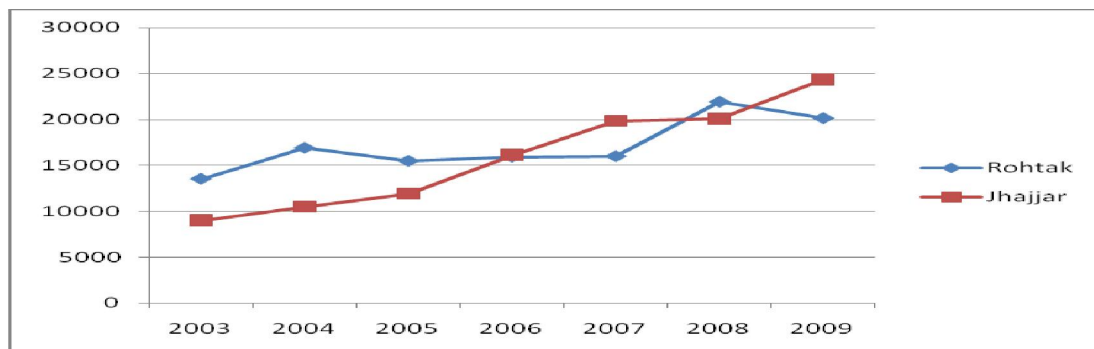
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**Table-1 Deposits and Advances (Loans Outstanding) of the Rohtak and Jhajjar Central Co-operative Banks:2003-2009 (Rs. in lakhs)**

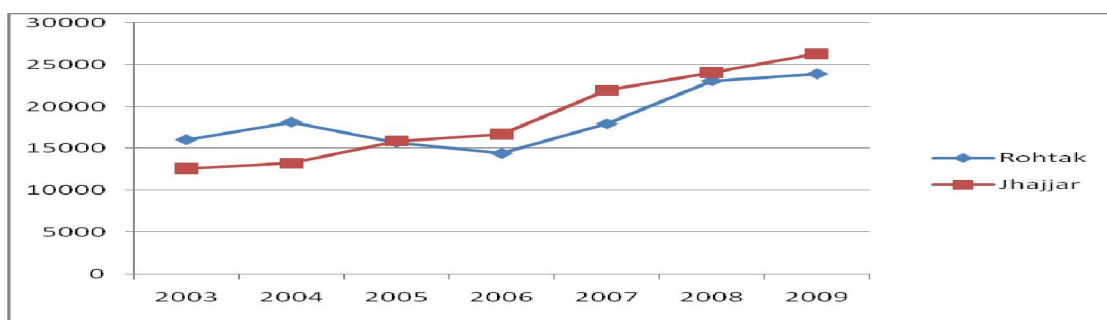
Years	Rohtak		Jhajjar	
	Deposits	Advances	Deposits	Advances
2002-03	13515	16076	9000	12617
2003-04	16886	18168	10468	13260
2004-05	15474	15737	11907	15920
2005-06	15925	14448	16115	16734
2006-07	15974	17970	19843	21941
2007-08	21903	23078	20057	24059
2008-09	20124	23906	24341	26331
<b>Growth Rate</b>	<b>48.90</b>	<b>48.71</b>	<b>170.46</b>	<b>29.44</b>
<b>Mean</b>	<b>17114.43</b>	<b>18483.29</b>	<b>15961.57</b>	<b>18694.57</b>
<b>S.D.</b>	<b>2898.342</b>	<b>3662.894</b>	<b>5732.346</b>	<b>5410.56</b>

Source : Annual Reports of The Rohtak and Jhajjar Central Co-operative Banks

**Figure-1  
Deposits of the Rohtak and Jhajjar Central Co-operative Banks: 2003-2009**



**Figure-2  
Advances ( Loans Outstanding ) of the Rohtak and Jhajjar Central Co-operative Banks: 2003-2009**



**Table-2**  
**Deposits of the Rohtak and Jhajjar Central Co-operative Banks: Spearman's Rank Correlation (Rs. in Lakhs)**

Year	Rohtak (Amount)	Rank (x)	Jhajjar (Amount)	Rank (y)	d (x-y)	d <sup>2</sup>
2002-03	13515	1	9000	1	0	0
2003-04	16886	5	10468	2	3	9
2004-05	15474	2	11907	3	-1	1
2005-06	15925	3	16115	4	-1	1
2006-07	15974	4	19843	5	-1	1
2007-08	21903	7	20057	6	1	1
2008-09	20124	6	24341	7	-1	1
<b>Total</b>					<b><math>\Sigma d^2 = 14</math></b>	

Source: Annual Reports of The Rohtak and Jhajjar Central Co-operative Banks.

**Table- 3**  
**Advances (Loans outstanding) of the Rohtak and Jhajjar Central Co- operative Banks: Spearman's Rank Correlation (Rs. in Lakhs)**

Year	Rohtak (Amount)	Rank (x)	Jhajjar (Amount)	Rank (y)	d (x-y)	d <sup>2</sup>
2002-03	16076	3	12617	1	2	4
2003-04	18168	5	13260	2	3	9
2004-05	15737	2	15920	3	-1	0
2005-06	14448	1	16734	4	-3	9
2006-07	17970	4	21941	5	-1	1
2007-08	23078	6	24059	6	0	0
2008-09	23906	7	26331	7	0	0
<b>Total</b>					<b><math>\Sigma d^2 = 23</math></b>	

Source: Annual Reports of The Rohtak and Jhajjar Central Co-operative Banks.



**Table - 4**  
**Credit-Deposit Ratios of the Rohtak and Jhajjar Central Co-operative Banks:**  
**Spearman's Rank Correlation**

Year	Rohtak	Rank (x)	Jhajjar	Rank (y)	d (x-y)	d <sup>2</sup>
2002-03	118.95	7	140.19	7	0	0
2003-04	107.59	4	126.67	5	-1	1
2004-05	101.70	2	133.70	6	-4	16
2005-06	90.73	1	103.84	1	0	0
2006-07	112.50	5	110.57	3	2	4
2007-08	105.37	3	119.95	4	-1	1
2008-09	118.79	6	108.18	2	4	14
<b>Total</b>					<b><math>\Sigma d^2=38</math></b>	

Source: Compiled from Table A-1 and A-2

**Table - 5**  
**Brief summary of Deposits, Advances and C-D Ratios-**  
**Spearman's Rank Correlation (p)**

Variables	Coefficients	Relationship
Deposits	0.75	High Positive Correlation
Advances	0.59	Moderate Positive Correlation
C-D Ratio	0.32	Low Moderate Positive Correlation

Notes : Details about calculations of p are shown in tables.