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Financial Performance of Indian Depositories: A Comparative Study between NSDL and CDSL

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Abstract: *Dematerialization is the processes by which a client can get physical certificates converted into electronic balances maintained in its account with the participant in the depository system securities held in dematerialization form are fungible, i.e., they do not bear any distinguishing features. Depository system essentially aims at eliminating the voluminous and cumbersome paper work involved in the scrip-based system and offers scope for ‘paperless’ trading through state-of-the-art technology. India has adopted the Depository System for securities trading in which book entry is done electronically and no paper is involved. There are two depositories in India, namely: National Securities Depository Limited (NSDL) and Central Depository Services (India) Limited (CDSL). The paper entitled focuses on financial performance of both the depositories i.e. NSDL and CDSL of India. This study is purely based on secondary data and the period of the study is 2005-06 to 2015-16 i.e. eleven consecutive financial years.*

Keywords: *National Securities Depository Limited (NSDL), Central Depository Services (India) Limited (CDSL), Depositories, Financial Performance.*

I. INTRODUCTION

Dematerialization is the processes by which a client can get physical certificates converted into electronic balances maintained in its account with the participant in the depository system securities held in dematerialization form are fungible, i.e., they do not bear any distinguishing features. The financial market exists to facilitate sale and purchase of financial instruments and comprises of two major markets namely the capital Market and the money market. The capital market mainly deals in medium and long – term investments (maturity more than a year) while the money market deals in short- term investments (maturity up to a year).

The main function of a depository is to dematerialize the securities and enable their transactions in publication application form. As per The Bank for International Settlements (BIS), the depository is “a facility for holding securities which endow securities transactions to be processed by book application. Personal securities may be immobilized by the depository or securities may be dematerialized (so that they live only as electrical device records)”. In easy terms depository is an organization where the securities of an investor are held in the electrical devices form. Depositories in India

There are two depositories in India

1. The National Securities Depository Limited [NSDL]
2. Central Depository for Securities Limited [CDSL]

NSDL was registered by the SEBI on June 7, 1996 as India's first depository to facilitate trading and settlement of securities in the dematerialized form. The NSDL is promoted by IDBI, UTI and NSE to provide electronic depository facilities for securities traded in the equity and debt markets in the country. NSDL has been set up to cater to the demanding needs of the Indian capital markets.

Central Depository Services (India) Limited (CDSL) was set up on 8th February, 1999. CDSL a depository managed by professionals has been promoted by the Stock Exchange, Mumbai (BSE) along with State Bank of India (SBI), Bank of Baroda (BOB) and Bank of India as original sponsors. Several leading private sector banks, viz. HDFC Bank, Standard Chartered Bank, Canara Bank, Union Bank of India, Bank of Maharashtra, Global Trust Bank (now Oriental Bank of Commerce) and Centurion Bank are also its sponsors. CDSL's objective is to provide convenient, dependable and secure alternative depository services to investors in shares and securities. Presently, it is compulsory to settle all trades done on any stock exchange in demat form only. Although investors have an alternative to hold securities and settle trades up to 500 shares in physical form, they need a demat account as, in practice, almost all trades on stock exchanges are now being settled in demat form only. The Bombay Stock Exchange which has contributed the lion's share in the capital of CDSL.

Statement of the Problem

An investor can hold almost all his securities in one account with NSDL or CDSL. Considering current importance of Depositories it is necessary to assess the financial soundness of the depositories in India. So, the statement of the problem would be **“Financial Performance of Indian Depositories - A Comparative study between NSDL and CDSL”**.

II. OBJECTIVES OF THE STUDY

Objectives of the study are

- 1) To know the financial soundness of NSDL and CDSL during the period under study.
- 2) To check Operating Income to Total Income of the depositories during the period under study.
- 3) To analyze Total Expenses to Total Income of the depositories during the period under study.
- 4) To check Return on Investment of the depositories during the period under study.
- 5) To analyze Current Ratio of the depositories during the period under study.
- 6) To check Earnings per Share (EPS) of the depositories during the period under study.
- 7) To analyze Return on Assets (ROA) Ratio of the depositories during the period under study.
- 8) To analyse Return on Shareholder's Equity (ROSE) Ratio of the depositories during the period under study.
- 9) To analyze Equity Multiplier of the depositories during the period under study.

III. RESEARCH METHODOLOGY

3.1 Data Collection and Period of the Study

The main source of data used for the study is secondary, derived from the published Annual Reports of both NSDL and CDSL. Present study covers the financial performance of selected Depositories for **eleven** consecutive years. The period of the study will be 2005-06 to 2015-16. The base year was selected as 2004-05, this year is normal for the purpose of analysis and evaluation.

3.2 Hypotheses of the Study

- (i) There is no significance difference in the mean values of Operating Income to Total Income of depositories during the study period (**T-Test**)
- (ii) There is no significance difference in the Operating Income to Total Income of Depositories during the study period (**one-way ANOVA Test**)
- (iii) There is no significance difference in the mean values of Total Expenses to Total Income of depositories during the study period (**T-Test**)
- (iv) There is no significance difference in the Total Expenses to Total Income of Depositories during the study period (**one-way ANOVA Test**)
- (v) There is no significance difference in the mean values of Return on Investment of depositories during the study period (**T-Test**)
- (vi) There is no significance difference in the Return on Investment of Depositories during the study period.
(**one-way ANOVA Test**)
- (vii) There is no significance difference in the mean values of Current Ratio of depositories during the study period.
(**T-Test**)
- (viii) There is no significance difference in the Current Ratio of Depositories during the study period.
(**one-way ANOVA Test**)
- (ix) There is no significance difference in the mean values of Earnings per Share (EPS) of depositories during the study period. (**T-Test**)
- (x) There is no significance difference in the Earnings per Share (EPS) of Depositories during the study period.
(**one-way ANOVA Test**)
- (xi) There is no significance difference in the mean values of Return on Assets (ROA) Ratio of depositories during the study period. (**T-Test**)
- (xii) There is no significance difference in the Return on Assets (ROA) Ratio of Depositories during the study period.
(**one-way ANOVA Test**)
- (xiii) There is no significance difference in the mean values of Return on Shareholders' Equity (ROSE) Ratio of depositories during the study period. (**T-Test**)
- (xiv) There is no significance difference in the Return on Shareholders' Equity (ROSE) Ratio of Depositories during the study period. (**one-way ANOVA Test**)
- (xv) There is no significance difference in the mean values of Equity Multiplier of depositories during the study period.
(**T-Test**)
- (xvi) There is no significance difference in the Equity Multiplier of Depositories during the study period.
(**one-way ANOVA Test**)

3.3 Tools and Techniques of Analysis

- (i) **Accounting Ratios:** Various accounting ratios for eleven financial years have been calculated for the purpose of analysis and evaluation.

- (ii) **Statistical Tools and Techniques:** Some of the statistical techniques such as Mean, Standard Deviation, Coefficient of Variation, T-Test and one-way ANOVA have been used.

IV. FINANCIAL PERFORMANCE OF NSDL AND CDSL

1. Operating Income to Total Income

This ratio shows the Operating Income to Total Income of selected depositories during the study period. This ratio helps to assess the operational efficiency of the unit compare to total income of the depositories. The higher the ratio the better will be the profitability and affects positively to operational efficiency of the organization. The formula of the ratio is as under.

$$\text{Operating Income to Total Income} = \frac{\text{Operating Income}}{\text{Total Income}} \times 100$$

Table – I Operating Income to Total Income of NSDL and CDSL
(Figures in %)

Year	NSDL	CDSL
2005-06	90.87	80.32
2006-07	92.74	77.95
2007-08	91.91	82.93
2008-09	91.55	77.58
2009-10	91.64	80.1
2010-11	93.03	83.64
2011-12	94.05	76.54
2012-13	81.08	72.12
2013-14	80.58	71.54
2014-15	81.08	81.41
2015-16	81.81	87.64
Average	88.21	79.25
Standard Deviation	5.68	4.82
Co-efficient of Variance	6.44	6.08

Source: Calculated from the Published Annual Reports of the Depositories.

The above table shows Operating Income to Total Income ratio of NSDL and CDSL during the period under review. This ratio shows the operational efficiency of the depositories. It reveals from the above table that both NSDL's and CDSL's ratios represent fluctuating trend during the study period. NSDL has reached highest level at 94.05% in 2011-12 and lowest at 80.58% in 2013-14. The average ratio was 88.21%. CDSL has reached highest level at 87.64% in 2015-16 and lowest at 71.54% in 2013-14. The average ratio was 79.25%. Comparing the Co-efficient of Variance (CV) of NSDL and CDSL, the NSDL has registered with higher Co-efficient of Variance (CV) than CDSL which shows high fluctuations in the ratio whereas CDSL has low ratio which affects positively to its stability.

T-Test

H₀: There is no significance difference in the mean values of Operating Income to Total Income of depositories during the study period

H₁: There is some significance difference in the mean values of Operating Income to Total Income of depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
NSDL	88.21	11	5.68	1.71198
CDSL	79.25	11	4.82	1.45178

Paired Samples Correlations		
NSDL & CDSL	N	Correlation
	11	0.197

Paired Samples Test								
NSDL-CDSL	Paired Differences				t Cal Value	df	t Table Value	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
	8.96091	6.68293	2.01498	4.47125	13.45056	4.447	10	2.228

Inference: $|t_{cal}|$ value is greater than $t_{table\ value}$. So we reject H_0 . Hence we conclude that there is some significance difference in the mean values of Operating Income to Total Income of depositories of NSDL and CDSL.

One-way ANOVA

H₀: There is no significance difference in the Operating Income to Total Income of Depositories during the study period.

H₁: There is some significance difference in the Operating Income to Total Income of Depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%.

One-way ANOVA of Operating Income to Total Income

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (Df)	Mean Square (MS)	F Calculated Value	F Table Value
Between Depositories	441.638	1	441.638	15.937	4.3512
Within Depositories	554.239	20	27.712		
Total	995.878	21			

Inference

The above table reflects one way analysis of variance of Operating Income to Total Income of Depositories. Here, the hypothesis is tested at 5% level of significance. Here, calculated value is considerably higher than tabulated value. So, the null hypothesis is rejected. It can be concluded that there is some significance difference in NSDL's and CDSL's Operating Income to Total Income during the study period.

2. Total Expenses to Total Income

This ratio shows the Total Expenses to Total Income of selected depositories during the study period. This ratio helps to assess depositories' profitability from the view point of expenses. Higher ratio affects negatively to the profitability of depositories' income earning capacity. The formula of the ratio is as under.

$$\text{Total Expenses to Total Income} = \frac{\text{Total Expenses}}{\text{Total Income}} \times 100$$

Table – 2 Total Expenses to Total Income of NSDL and CDSL
(Figures in %)

Year	NSDL	CDSL
2005-06	68.76	43.38
2006-07	73.18	45.59
2007-08	60.98	33.9
2008-09	81.21	38.26
2009-10	66.35	33.5
2010-11	71.25	32.86
2011-12	71.8	32.46
2012-13	71.45	48.52
2013-14	60.2	51.84
2014-15	60.29	54.66
2015-16	48.44	47.82
Average	66.72	42.07
Standard	8.81	8.21

Deviation		
Co-efficient of Variance	13.20	19.52

Source: Calculated from the Published Annual Reports of the Depositories.

The above table shows Total Expenses to Total Income ratio of NSDL and CDSL during the period under review. This ratio shows expenses accrued by depositories during study period. Total expenses include administration, and other expenses of the organization. It reveals from the above table that both NSDL's and CDSL's ratios represent fluctuating trend during the study period. NSDL has reached highest level at 73.18% in 2006-07 and lowest at 48.44% in 2015-16. The average ratio was 66.72%. CDSL has reached highest level at 54.66% in 2014-15 and lowest at 32.46% in 2011-12. The average ratio was 42.07%. Comparing the Co-efficient of Variance (CV) of NSDL and CDSL, the CDSL has registered with higher Co-efficient of Variance (CV) than NSDL which shows high fluctuations in the ratio whereas NSDL has low ratio which affects positively to its stability.

T-Test

H₀: There is no significance difference in the mean values of Total Expenses to Total Income of depositories during the study period.

H₁: There is some significance difference in the mean values of Total Expenses to Total Income of depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
NSDL	66.72	11	8.81	2.65544
CDSL	42.07	11	8.21	2.47647

Paired Samples Correlations		
NSDL & CDSL	N	Correlation
	11	-0.400

Paired Samples Test								
NSDL-CDSL	Paired Differences					t Cal Value	df	t Table Value
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
	2.46473	14.24542	4.29515	15.07707	34.21747	5.738	10	2.228

Inference: $|t_{cal}|$ value is greater than t_{table} value. So we reject H_0 . Hence we conclude that there is some significance difference in the mean values of Total Expenses to Total Income of depositories of NSDL and CDSL.

One way ANOVA

H₀: There is no significance difference in the Total Expenses to Total Income of Depositories during the study period.

H₁: There is some significance difference in the Total Expenses to Total Income of Depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%.

One way ANOVA of Total Expenses to Total Income

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (Df)	Mean Square (MS)	F Calculated Value	F Table Value
Between Depositories	3341.184	1	3341.184	46.077	4.3512
Within Depositories	1450.270	20	72.514		

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (Df)	Mean Square (MS)	F Calculated Value	F Table Value
Between Depositories	3341.184	1	3341.184	46.077	4.3512
Within Depositories	1450.270	20	72.514		
Total	4791.455	21			

Inference

The above table reflects one way analysis of variance of Total Expenses to Total Income of Depositories. Here, the hypothesis is tested at 5% level of significance. Here, calculated value is considerably higher than tabulated value. So, the null hypothesis is rejected. It can be concluded that there is some significance difference in NSDL's and CDSL's Total Expenses to Total Income during the study period.

3. Return on Investment

This shows the percentage return received by depositories on their total share holder's fund during the study period. This helps to assess depositories' profitability from the view point of share holder's fund. Higher the percentage affects positively to the profitability of depositories' income earning capacity. Total share holder fund includes share capital and reserve & surplus during the year. The formula is as under.

$$\text{Return on Investment} = \frac{\text{Net Profit After Taxes}}{\text{Share Holder's Funds}} \times 100$$

Table – 3 Return on Investment of NSDL and CDSL
(Figures in %)

Year	NSDL	CDSL
2005-06	14.68	10.73
2006-07	12.86	12.33
2007-08	20.38	20.86
2008-09	9.57	17.18
2009-10	22.03	20.58
2010-11	19.53	18.17
2011-12	20.52	16.16
2012-13	7.15	13.25
2013-14	12.68	12.65
2014-15	12.67	10.39
2015-16	19.66	17.31
Average	15.61	15.42
Standard Deviation	5.04	3.74
Co-efficient of Variance	32.29	24.25

Source: Calculated from the Published Annual Reports of the Depositories.

The above table shows Return on Investment as percentage of NSDL and CDSL during the period under review. This shows Profit earned by depositories during study period. The profit which is taken as Net Profit after Taxes. It reveals from the above table that both NSDL's and CDSL's ROI represent fluctuating trend during the study period. But CDSL's percentages are decreased continuously from 2010-11 to 2014-15. NSDL has reached highest level at 22.03% in 2009-10 and lowest at 7.15% in 2012-13. The average ratio was 15.61%. CDSL has reached highest level at 20.86% in 2007-08 and lowest at 10.39% in 2014-15. The average percentage was 15.42%. Comparing the Co-efficient of Variance (CV) of NSDL and CDSL, the NSDL has registered with higher Co-efficient of Variance (CV) than CDSL which shows high fluctuations in the ratio whereas CDSL has low ratio which affects positively to its stability.

T-Test

H₀: There is no significance difference in the mean values of Return on Investment of depositories during the study period.

H₁: There is some significance difference in the mean values of Return on Investment of depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
NSDL	15.61	11	5.04	1.51824
CDSL	15.42	11	3.74	1.12906

Paired Samples Correlations		
NSDL & CDSL	N	Correlation
	11	0.661

Paired Samples Test								
NSDL-CDSL	Paired Differences					t Cal Value	df	t Table Value
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
	0.19273	3.80146	1.14618	-2.36113	2.74658	0.168	10	2.228

Inference: $|t_{\text{cal}}|$ value is less than $t_{\text{table value}}$. So we accept H_0 . Hence we conclude that there is no significance difference in the mean values of Return on Investment of depositories of NSDL and CDSL.

One Way ANOVA

H₀: There is no significance difference in the Return on Investment of Depositories during the study period.

H₁: There is some significance difference in the Return on Investment of Depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%.

One way ANOVA of Return on Investment

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (Df)	Mean Square (MS)	F Calculated Value	F Table Value
Between Depositories	0.204	1	.204	0.010	4.3512
Within Depositories	393.781	20	19.689		
Total	393.986	21			

Inference

The above table reflects one way analysis of variance of Return on Investment of Depositories. Here, the hypothesis is tested at 5% level of significance. Here, calculated value is considerably lesser than tabulated value. So, the null hypothesis is accepted. It can be concluded that there is no significance difference in NSDL's and CDSL's Return on Investment during the study period.

4. Current Ratio

This ratio shows Current Assets to Current Liabilities of selected depositories during the study period. This ratio helps to measure a company's ability to pay short-term and long-term obligations. To gauge this ability, the current ratio considers the current total assets of a company (both liquid and illiquid) relative to that company's current total liabilities. The formula of the ratio is as under.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Table – 4 Current Ratio of NSDL and CDSL

Year	NSDL	CDSL
2005-06	1.05	7.39
2006-07	1.5	2.79
2007-08	1.81	1.27
2008-09	1.84	2.9
2009-10	1.49	0.84
2010-11	1.51	2.13
2011-12	1.31	8.55
2012-13	1.57	6.88
2013-14	1.08	5.79
2014-15	1.32	2.99
2015-16	1.93	3.54
Average	1.49	4.10
Standard Deviation	0.29	2.62
Co-efficient of Variance	19.46	63.90

Source: Calculated from the Published Annual Reports of the Depositories.

The above table shows Current Ratio of NSDL and CDSL during the period under review. It reveals from the above table that both NSDL's and CDSL's ratios represent fluctuating trend during the study period. NSDL has reached highest level at 1.93 times in 2015-16 and lowest at 1.05 times in 2005-06. The average ratio was 1.49 times. CDSL has reached highest level at 8.55 times in 2011-12 and lowest at 0.84 times in 2009-10. The average ratio was 4.10 times. Comparing the Co-efficient of Variance (CV) of NSDL and CDSL, the CDSL has registered with higher Co-efficient of Variance (CV) than NSDL which shows high fluctuations in the ratio whereas NSDL has low ratio which affects positively to its stability.

T-Test

H₀: There is no significance difference in the mean values of Current Ratio of depositories during the study period.

H₁: There is some significance difference in the mean values of Current Ratio of depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
NSDL	1.49	11	0.29	0.08782
CDSL	4.10	11	2.62	0.78873

Paired Samples Correlations		
NSDL & CDSL	N	Correlation
	11	-0.545

Paired Samples Test								
NSDL-CDSL	Paired Differences					t Cal Value	df	t Table Value
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
	-2.60545	2.78547	0.83985	-4.47676	-0.73415	-3.102	10	2.228

Inference: $|t_{\text{cal}}|$ value is greater than $t_{\text{table value}}$. So we reject H_0 . Hence we conclude that there is some significance difference in the mean values of Current Ratio of depositories of NSDL and CDSL.

One Way ANOVA

H₀: There is no significance difference in the Current Ratio of Depositories during the study period.

H₁: There is some significance difference in the Current Ratio of Depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%.

One way ANOVA of Current Ratio

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (Df)	Mean Square (MS)	F Calculated Value	F Table Value
Between Depositories	37.336	1	37.336	10.779	4.3512
Within Depositories	69.279	20	3.464		
Total	106.615	21			

Inference

The above table reflects one way analysis of variance of Current Ratio of Depositories. Here, the hypothesis is tested at 5% level of significance. Here, calculated value is considerably higher than tabulated value. So, the null hypothesis is rejected. It can be concluded that there is some significance difference in NSDL's and CDSL's Current Ratio during the study period.

5. Earnings per Share (EPS)

This ratio shows Net Income Available to Shareholders to No. of Shares Outstanding of selected depositories during the study period. It measures the amount of net income earned per share of stock outstanding. In other words, this is the amount of money each share of stock would receive if all of the profits were distributed to the outstanding shares at the end of the year. The formula of the ratio is as under.

$$\text{Earnings per Share} = \frac{\text{Net Profit After Taxes}}{\text{No. of Shares Outstanding}}$$

Table – 5 Earnings per Share (EPS) of NSDL and CDSL
(in Rs.)

Year	NSDL	CDSL
2005-06	3.71	1.45
2006-07	3.55	1.8
2007-08	6.71	3.52
2008-09	3.34	3.26
2009-10	9.18	4.55
2010-11	9.41	4.6
2011-12	11.24	4.54
2012-13	5.13	3.93
2013-14	9.99	3.96
2014-15	11	3.32
2015-16	20.50	6.07
Average	8.52	3.73
Standard Deviation	5.00	1.30
Co-efficient of Variance	58.69	34.85

Source: Calculated from the Published Annual Reports of the Depositories.

The above table shows Earnings per Share (EPS) of NSDL and CDSL during the period under review. It reveals from the above table that both NSDL's and CDSL's EPS represent fluctuating trend during the study period. NSDL has reached highest level at Rs. 20.50 in 2015-16 and lowest at Rs. 3.34 in 2008-09. The average EPS was Rs. 8.52. CDSL has reached highest level at Rs. 6.07 in 2015-16 and lowest at Rs. 1.45 in 2005-06. The average ratio was Rs. 3.73. Comparing the Co-efficient of Variance (CV) of NSDL and CDSL, the NSDL has registered with higher Co-efficient of Variance (CV) than CDSL which shows high fluctuations in the ratio whereas CDSL has low ratio which affects positively to its stability.

T-Test

H₀: There is no significance difference in the mean values of Earnings per Share (EPS) of depositories during the study period.

H₁: There is some significance difference in the mean values of Earnings per Share (EPS) of depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
NSDL	8.52	11	5.00	1.50724
CDSL	3.73	11	1.30	0.39324

Paired Samples Correlations		
NSDL & CDSL	N	Correlation
	11	0.822

Paired Samples Test								
NSDL-CDSL	Paired Differences					t Cal Value	df	t Table Value
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
4.79636	3.99709	1.20517	2.11108	7.48165	3.980	10	2.228	

Inference: |t_{cal}| value is greater than t_{table value}. So we reject H₀. Hence we conclude that there is some significance difference in the mean values of Earnings per Share (EPS) of depositories of NSDL and CDSL.

One Way ANOVA

H₀: There is no significance difference in the Earnings per Share (EPS) of Depositories during the study period.

H₁: There is some significance difference in the Earnings per Share (EPS) of Depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%.

One way ANOVA of Earnings per Share (EPS)

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (Df)	Mean Square (MS)	F Calculated Value	F Table Value
Between Depositories	126.528	1	126.528	9.481	4.3512
Within Depositories	266.905	20	13.345		
Total	393.434	21			

Inference

The above table reflects one way analysis of variance of Earnings per Share (EPS) of Depositories. Here, the hypothesis is tested at 5% level of significance. Here, calculated value is considerably higher than tabulated value. So, the null hypothesis is rejected. It can be concluded that there is some significance difference in NSDL's and CDSL's Earnings per Share (EPS) during the study period.

6. Return on Assets (ROA)

This shows Net Income to Total Assets of selected depositories during the study period. It measures how efficiently a company can manage its assets to produce profits during a period. The formula is as under.

$$\text{Return on Assets (ROA)} = \frac{\text{Net Income}}{\text{Total Assets}} \times 100$$

Table – 6 Return on Assets (ROA) of NSDL and CDSL
(Figures in %)

Year	NSDL	CDSL
2005-06	8.54	9.82
2006-07	10.04	10.8
2007-08	16.03	17.75
2008-09	7.52	14.7

2009-10	17.46	17.65
2010-11	15.02	15.49
2011-12	15.6	12.87
2012-13	5.71	9.89
2013-14	9.67	9.04
2014-15	9.5	7.07
2015-16	16.12	14.05
Average	11.93	12.65
Standard Deviation	4.15	3.58
Co-efficient of Variance	34.79	28.30

Source: Calculated from the Published Annual Reports of the Depositories.

The above table shows Return on Assets of NSDL and CDSL during the period under review. It reveals from the above table that both NSDL's and CDSL's ROA represent fluctuating trend during the study period. But CDSL's return has been decreasing continuously from 2010-11 to 2014-15. NSDL has reached highest level at 17.46% in 2009-10 and lowest at 5.71% in 2012-13. The average ROA was 11.93%. CDSL has reached highest level at 17.75% in 2007-08 and lowest at 7.07% in 2014-15. The average ROA was 12.65%. Comparing the Co-efficient of Variance (CV) of NSDL and CDSL, the NSDL has registered with higher Co-efficient of Variance (CV) than CDSL which shows high fluctuations in the ratio whereas CDSL has low ratio which affects positively to its stability.

T-Test

H₀: There is no significance difference in the mean values of Return on Assets Ratio (ROA) of depositories during the study period.

H₁: There is some significance difference in the mean values of Return on Assets (ROA) of depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
NSDL	11.93	11	4.15	1.25110
CDSL	12.65	11	3.58	1.08084

Paired Samples Correlations		
NSDL & CDSL	N	Correlation
		11

Paired Samples Test								
NSDL-CDSL	Paired Differences					t Cal Value	df	t Table Value
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
	-0.72000	2.94607	0.88827	-2.69920	1.25920	-0.811	10	2.228

Inference: $|t_{cal}|$ value is less than $t_{table\ value}$. So we accept H_0 . Hence we conclude that there is no significance difference in the mean values of Return on Assets (ROA) of depositories of NSDL and CDSL.

One Way ANOVA

H₀: There is no significance difference in the Return on Assets (ROA) Ratio of Depositories during the study period.

H₁: There is some significance difference in the Return on Assets (ROA) Ratio of Depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%.

One way ANOVA of Return on Assets (ROA) Ratio

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (Df)	Mean Square (MS)	F Calculated Value	F Table Value
Between Depositories	2.851	1	2.851	0.190	4.3512
Within Depositories	300.681	20	15.034		
Total	303.532	21			

Inference

The above table reflects one way analysis of variance of Return on Assets (ROA) Ratio of Depositories. Here, the hypothesis is tested at 5% level of significance. Here, calculated value considerably lesser than tabulated value. So, the null hypothesis is accepted. It can be concluded that there is no significance difference in NSDL's and CDSL's Return on Assets (ROA) Ratio during the study period.

7. Return on Shareholder's Equity (ROSE)

This ROSE shows the Net Profit after Tax to Shareholder's Equity of selected depositories during the study period. It measures the profitability of a firm to generate profits to its shareholders investments in the company. The formula is as under.

$$\text{Return on Shareholder's Equity (ROSE)} = \frac{\text{Net Profit After Taxes}}{\text{Shareholder's Equity}} \times 100$$

Table – 7 Return on Shareholder's Equity (ROSE) of NSDL and CDSL
(Figures in %)

Year	NSDL	CDSL
2005-06	37.13	14.49
2006-07	35.54	18.00
2007-08	67.09	35.17
2008-09	33.36	32.56
2009-10	91.84	45.47
2010-11	94.12	45.97
2011-12	112.4	45.41
2012-13	51.32	39.33
2013-14	99.89	39.62
2014-15	109.96	33.24
2015-16	204.98	60.67
Average	85.24	37.27
Standard Deviation	49.98	13.04
Co-efficient of Variance	58.63	34.99

Source: Calculated from the Published Annual Reports of the Depositories.

The above table shows Return on Shareholder's Equity (ROSE) Ratio of NSDL and CDSL during the period under review. It reveals from the above table that both NSDL's and CDSL's ratios represent fluctuating trend during the study period. NSDL has reached highest level at 204.98% in 2015-16 and lowest at 33.36% in 2008-09. The average ratio was 85.24%. CDSL has reached highest level at 60.67% in 2015-16 and lowest at 14.49% in year 2005-06. The average ratio was 37.27%. Comparing the Co-efficient of Variance (CV) of NSDL and CDSL, the NSDL has registered with higher Co-efficient of Variance (CV) than CDSL which shows high fluctuations in the ratio whereas CDSL has low ratio which affects positively to its stability.

T-Test

H₀: There is no significance difference in the mean values of Return on Shareholder's Equity (ROSE) of depositories during the study period.

H₁: There is some significance difference in the mean values of Return on Shareholder's Equity (ROSE) of depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
NSDL	85.24	11	49.98	15.06943
CDSL	37.27	11	13.04	3.93078

Paired Samples Correlations		
NSDL & CDSL	N	Correlation
	11	0.822

Paired Samples Test								
NSDL-CDSL	Paired Differences					t Cal Value	df	t Table Value
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
	4.79727	39.96044	12.04853	21.12694	74.81852	3.982	10	2.228

Inference: $|t_{\text{cal}}|$ value is greater than $t_{\text{table value}}$. So we reject H_0 . Hence we conclude that there is some significance difference in the mean values of Return on Shareholder's Shareholder's Equity (ROSE) of depositories of NSDL and CDSL.

One Way ANOVA

H₀: There is no significance difference in the Return on Shareholder's Equity (ROSE) Ratio of Depositories during the study period.

H₁: There is some significance difference in the Return on Shareholder's Equity (ROSE) Ratio of Depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%.

One way ANOVA of Return on Shareholder's Equity (ROSE) Ratio

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (Df)	Mean Square (MS)	F Calculated Value	F Table Value
Between Depositories	12657.604	1	12657.604	9.489	4.3512
Within Depositories	26679.246	20	1333.962		
Total	39336.850	21			

Inference

The above table reflects one way analysis of variance of Return on Shareholder's Equity (ROSE) Ratio of Depositories. Here, the hypothesis is tested at 5% level of significance. Here, calculated value is considerably higher than tabulated value. So, the null hypothesis is rejected. It can be concluded that there is some significance difference in NSDL's and CDSL's Return on Shareholder's Equity Ratio during the study period.

8. Equity Multiplier

This ratio shows Total Assets to Shareholder's Equity of selected depositories during the study period. It measures the amount of a firm's assets that are financed by its shareholders by comparing total assets with total shareholder's equity. The formula of the ratio is as under.

$$\text{Equity Multiplier} = \frac{\text{Total Assets}}{\text{Shareholder's Equity}}$$

Table – 8 Equity Multiplier of NSDL and CDSL

Year	NSDL	CDSL
2005-06	1.72	1.09
2006-07	1.28	1.14
2007-08	1.27	1.18
2008-09	1.27	1.17
2009-10	1.26	1.17
2010-11	1.3	1.17
2011-12	1.31	1.26
2012-13	1.25	1.34
2013-14	1.31	1.39
2014-15	1.33	1.47
2015-16	1.22	1.23
Average	1.32	1.24
Standard Deviation	0.14	0.12
Co-efficient of Variance	10.61	9.68

Source: Calculated from the Published Annual Reports of the Depositories.

The above table shows Equity Multiplier of NSDL and CDSL during the period under review. It reveals from the above table that NSDL's ratios represent fluctuating trend during the study period. But CDSL's ratios are increased continuously from the financial year 2005-06 to 2014-15. NSDL has reached highest level at 1.72 in the financial year 2005-06 and lowest at 1.22 in the financial year 2015-16. The average ratio was 1.32. CDSL has reached highest level at 1.47 in the financial year 2014-15 and lowest at 1.09 in the financial year 2005-06. The average ratio was 1.24. Comparing the Co-efficient of Variance (CV) of NSDL and CDSL, the NSDL has registered with higher Co-efficient of Variance (CV) than CDSL which shows high fluctuations in the ratio whereas CDSL has low ratio which affects positively to its stability.

T-Test

H₀: There is no significance difference in the mean values of Equity Multiplier of depositories during the study period.

H₁: There is some significance difference in the mean values of Equity Multiplier of depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
NSDL	1.32	11	0.14	0.04110
CDSL	1.24	11	0.12	0.03524

Paired Samples Correlations		
NSDL & CDSL	N	Correlation
	11	-0.309

Paired Samples Test								
NSDL-CDSL	Paired Differences					t Cal Value	df	t Table Value
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
	0.08273	0.20519	0.06187	-0.05512	0.22057	1.337	10	2.228

Inference: $|t_{cal}|$ value is less than $t_{table\ value}$. So we accept H_0 . Hence we conclude that there is no significance difference in the mean values of Equity Multiplier of depositories of NSDL and CDSL.

One Way ANOVA

H₀: There is no significance difference in the Equity Multiplier of Depositories during the study period.

H₁: There is some significance difference in the Equity Multiplier of Depositories during the study period.

Level of Significance: Appropriate Level of Significance is 5%.

One way ANOVA of Equity Multiplier

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (Df)	Mean Square (MS)	F Calculated Value	F Table Value
Between Depositories	0.038	1	0.038	2.335	4.3512
Within Depositories	0.322	20	0.016		
Total	0.360	21			

Inference

The above table reflects one way analysis of variance of Equity Multiplier of Depositories. Here, the hypothesis is tested at 5% level of significance. Here, calculated value is considerably lesser than tabulated value. So, the null hypothesis is accepted. It can be concluded that there is no significance difference in NSDL's and CDSL's Equity Multiplier during the study period.

V. CONCLUSION

To sum up, there is a sizable increase in terms of annual average for Operating income to Total Income, Total Expenses to Total Income, Return on Investment (ROI), Current Ratio, Earnings per Share (EPS), Return on Assets (ROA) Ratio, Return on Shareholder's Equity (ROSE) Ratio and Equity Multiplier of depositories (NSDL & CDSL) during the period under study.

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