An Analysis of Solvency Ratios of NSDL & CDSL

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Abstract

There are two depositories in India namely NSDL and CDSL. Depository system was the major financial sector reform which was concentrated on strengthening the functioning and operations of capital market. Depository works as the custodian. The principle function of depository is to dematerialize the securities. This study focuses on the comparative analysis of solvency ratios viz. equity ratio, fixed assets to net worth ratio, current assets to net worth ratio, debt ratio, current liabilities to net worth ratio of Indian depositories (NSDL & CDSL) & is based on secondary data. The period of study is 2008-2018.

Keywords: Depository System, NSDL, CDSL Solvency Ratios, Financial Performance.

I- Introduction

The electronic technological Revolution has brought about a number of changes in the functioning of capital market. The most Revolutionary change was bought in the entire history of the Indian capital market is the depository system. This was the major financial sector reforms which was concentrated on strengthening the functioning and operation of capital market. Depository is an important intermediary in the securities market. The services provided by depositories are the product of secondary market reforms in India. The depository works as the custodian and interlinks investor with primary and secondary market. The principal function of the depository is to dematerialise the securities and enable their transaction in book entry form.

The depository system has paved the way for instituting an infrastructure that's helps in eliminating various risks associated with capital market transactions and increased the efficiency of clearance and settlement system. Prior to the introduction of this system so many operational inefficiencies were breeding into the Indian capital market due to traditional paper-based trading and settlement system. It was a market lacking in transparency and which offered brokerage and Commission that enriched intermediaries.

Depository is an organisation where the securities of an investor are kept in electronic form. There are two depositories in India. NSDL: National Securities Depository Limited and CDSL: Central Depository Services (India) Limited. They were registered by the SEBI on 7th June 1996 and 8th February 1999 respectively. They are promoted by NSE and BSE with the support of some Banks respectively. Both the depositories are doing well, so that this study is trying to find out the performance of both depositories, specially focused on solvency ratios of both depositories.

II- Research Methodology

Statistical tools like mean, standard deviation, coefficient of variance, compounded annual growth rate average, charts, graphs, normality test, t-test, have been used for analysing the data. They have been used to gauge the changes in financial performance over the period of time. This analysis provided an overview of the direction of changes in financial performance and helped to formulate the hypothesis.

The financial data has been collected from secondary data which includes annual reports of respective depository organisation, website of NSDL and CDSL. The collected data was tested for normality then hypothesis testing of non-normal data and normal data was applied, which are Wilcoxon signed rank test and student's t-test respectively. The assumed level of significance is 5%. SPSS and Microsoft Excel have been used to perform trend analysis and prepare various charts and graphs and hypothesis testing. The table value of t-test and Wilcoxon signed rank test are 2.262 and 8 respectively. The period of the study is 2008-2018.

Objective of the study:

1. To analyse the equity ratio of the depositories during the period of study.
2. To analyse the fixed assets to net worth ratio of the depositories during the period of study.
3. To analyse the current assets to net worth ratio of the depositories during the period of study.
4. To analyse the debt ratio of the depositories during the period of study.
5. To analyse the current liabilities to net worth ratio of the depositories during the period of study.

Hypothesis of the Study

(1) **Null Hypothesis (H_{01}):** There is no significant difference between the mean scores of equity ratios of NSDL and CDSL over the period of time.
H_{01}: $\mu_1 = \mu_2$

(2) **Null Hypothesis (H_{02}):** There is no significant difference between the mean scores of fixed assets to net worth ratios of NSDL and CDSL over the period of time.
H_{02}: $\mu_1 = \mu_2$

(3) **Null Hypothesis (H_{03}):** There is no significant difference between the mean scores of current assets to net worth ratios of NSDL and CDSL over the period of time.
H_{03}: $\mu_1 = \mu_2$

(4) **Null Hypothesis (H_{04}):** There is no significant difference between the mean scores of debt ratios of NSDL and CDSL over the period of time.
H_{04}: $\mu_1 = \mu_2$

(5) **Null Hypothesis (H_{05}):** There is no significant difference between the mean scores of current liabilities to net worth ratios of NSDL and CDSL over the period of time.
H_{05}: $\mu_1 = \mu_2$

III- An Overview of Solvency Ratios

Solvency Ratio

A solvency ratio is a key metric used to measure a firm's ability to meet its long-term debt obligations and is used often by prospective business lenders. A solvency ratio indicates whether a firm's cash flow is enough to meet its long-term liabilities and thus is a measure of its financial health. An unfavorable ratio can indicate some likelihood that a company will default on its debt obligations. It examines a firm's ability to meet its long-term debts and obligations. The major solvency ratios include equity ratio, fixed assets to net worth ratio, current assets to net worth ratio, debt ratio, current liabilities to net worth ratio. Solvency ratios are often used by potential lenders & potential bond investors when assessing a firm's creditworthiness.

A solvency ratio is one of many metrics used to determine whether a firm can stay solvent in the long term or not, it measures a firm's actual cash flow, rather than net income, by adding back depreciation and other non-cash expenses to assess a firm's capacity to stay afloat. It measures this cash flow capacity versus all liabilities, rather than only short-term debt. These ratios vary from industry to industry. A firm's solvency ratio should, therefore, be compared with its competitors in the same industry rather than viewed in isolation.

Types of Solvency Ratios

(1) Equity Ratio

The equity ratio is an investment leverage or solvency ratio that gauges the amount of assets that are financed by owners' investments by comparing the net worth of the firm to the total assets. This ratio highlights two significant financial concepts of a solvent and sustainable business. The first factor shows how much of the total firm assets are owned outright by the investors. In other words, after all of the liabilities are paid off, the investors will end up with the outstanding assets. The second component inversely shows how leveraged the firm is with debt. The equity ratio measures how ample of a firm's assets were financed by investors. In other words, this is the investors' stake in the firm. The inverse of this calculation shows the amount of assets that were financed by debt. Concerns with higher equity ratios show new investors and creditors that investors believe in the firm and are willing to finance it with their investments.

Formula

Equity ratio is calculated using the following formula:

$$Equity\ Ratio = \frac{Net\ Worth}{Total\ Assets}\ X\ 100$$

The equity ratio is calculated by dividing net worth by total assets. Both of these numbers truly include all of the accounts in that category. In other words, all of the assets and equity reported on the balance sheet are included in the equity ratio calculation.

Analysis

In general, higher equity ratios are typically favourable the for companies. Higher investment levels by shareholders shows possible shareholders that the firm is worth investing in since, so several stockholders are eager to finance the firm. A higher ratio also displays possible creditors that the firm is more sustainable and less risky to borrow future loans.

(2) Fixed Assets to Net worth

Fixed assets to net worth ratio indicates the extent to which the owners' cash is frozen in the form of fixed assets, such as property, plant, and equipment, and the extent to which funds are available for the firm's operations (i.e. for working capital). Fixed assets to net worth ratio is a ratio which gauges the solvency of a firm. It specifies the percentage of the firm's fixed assets which are presently frozen or can't be used for meeting its debt obligations. Using this ratio, one can simply find out the extent to which the firm's assets are illiquid.

Formula

Fixed Assets to Net worth ratio is calculated using the following formula:

$$Fixed\ Assets\ to\ Networth\ Ratio = \frac{Total\ Fixed\ Assets}{Total\ Networth}\ X\ 100$$

Analysis

A low fixed asset to net worth ratio is suggestive of greater solvency because the lower the ratio becomes; the more funds are available to meet current obligations. The higher the ratio becomes, the lower your solvency, since more funds are tied up with fixed assets. A ratio 0.75 or higher is typically uninvited since it indicates that the firm is susceptible to solvency problems. High ratios can be interpreted as liquidity problems, because it means the firm does not have instant

access to cash. Having a lower ratio is favourable as this shows that the firm does not rely too heavily on its fixed assets to meet its current debt obligations. Conversely, a higher ratio may be a red flag as it stipulates that the firm's solvency becomes lower since more funds are tied up with non-current and less-liquid assets. A ratio higher than 0.75 signifies that the firm in investing enormously in non-liquid assets. It might mean that there is too little cash left for day-to-day operations of the firm. A firm consuming such a high ratio might not be equipped to handle any unforeseen events that affect their business. A high value might also mean that the firm is not able to competently utilize its fixed assets. Higher the percentage of assets that are illiquid, lesser the amount accessible for firm's other operations and working capital.

(3) Current Assets to Net worth

Current assets to equity ratio (also known as current assets to proprietors' fund ratio) displays the stockholders' funds invested in current assets. The ratio may be presented in proportion or percentage.

Formula

Current Assets to Net worth ratio is calculated using the following formula:

$$Current\ Assets\ to\ Networth\ Ratio = \frac{Current\ Assets}{Total\ Networth}\ X\ 100$$

Analysis:

Current assets to net worth ratio describes that how efficiently a firm is using its shareholders' funds in managing its current assets There is no norm, the ratio varies from industry to industry. Like fixed assets to equity ratio, it is used as a complementary ratio to proprietary ratio.

(4) Debt Ratio

Debt ratio is a solvency ratio that gauges a firm's total liabilities as a percentage of its total assets. It specifies the percentage of a firm's debt to its total assets. It shows how ample the firm relies on debt to finance assets. The debt ratio gives users a quick measure of the amount of debt that the firm has on its balance sheets compared to its assets. This ratio gauges the financial leverage of a firm. The higher the ratio, the greater the risk allied with the firm's operation. A low debt ratio specifies conservative financing with a chance to borrow in the future at no significant risk.

Formula

The debt ratio is calculated by dividing total liabilities (i.e. long-term and short-term liabilities) by total assets, these numbers can easily be found the balance sheet.

$$Debt\ Ratio = \frac{Liabilities}{Assets}\ X\ 100$$

Analysis

The optimal debt ratio is determined by the same share of liabilities and equity as a debt-to-equity ratio. If the ratio is less than 0.5, most of the firm's assets are financed through equity. If the ratio is greater than 0.5, most of the firm's assets are financed through debt. Maximum normal value is 0.6-0.7. The debt ratio shows a firm's capability to pay off its liabilities with its assets, this shows how many assets the firm must sell in order to pay off all of its liabilities, higher levels of liabilities equated with assets are considered highly leveraged and riskier for lenders. This helps investors and creditors analysis the complete debt burden on the firm as well as the firm's ability to pay off the debt in future, during undefined economic times. A lower debt ratio is more favourable than a higher ratio. A lower debt ratio usually implies a more stable business with the potential of longevity because a firm thru lower ratio also has lower overall debt. Each industry has its own benchmarks for debt, but .5 is reasonable ratio. This means that, this firm's liabilities are only 50 percent of its total assets and the shareholders own the balance of the assets. A ratio of 1 means that total liabilities equal total assets indicates that this is a highly leverage firm. Once its assets are sold off, the business no longer can operate. The debt ratio is an essential solvency ratio because creditors are always concerned about being repaid. When concerns borrow more money, their ratio upsurges creditors will no longer loan them money.

(5) Current Liabilities to Net worth

This ratio expresses the relationship between capital contributed by current obligation creditors and capital contributed by owners. It specifies the capacity of a firm to safely meet the obligations of current creditors. It specifies reliance on the equity for payment of debt & gauges the solvency of a firm it should not exceed 60 percent; higher percentages mean significant pressure on future cash flows. It is generally putative that a business is in trouble when this ration exceeds 80%.

$$Current\ Liabilities\ to\ Net\ Worth\ Ratio = \frac{Current\ Liabilities}{Net\ Worth}\ X\ 100$$

Analysis

The higher current liabilities to net worth ratio shows that the greater the risk that a firm will not be able to meet the obligations of creditors and a ratio less than 1 may be an indication of potential cash shortage problems. It Indicates the amount due creditors within a year as a proportion of the owners' or stockholders' investment and gauges the funds creditors are risking with a business provisionally against the funds permanently invested by its owners. This ratio specifies the amount due to creditors within a year's time as a fraction of the shareholders' investment

IV- Comparison of Solvency Ratios of NSDL and CDSL

The comparison of financial performance between NSDL and CDSL on the basis of Solvency Ratios is presented here.

4.1– Equity Ratio

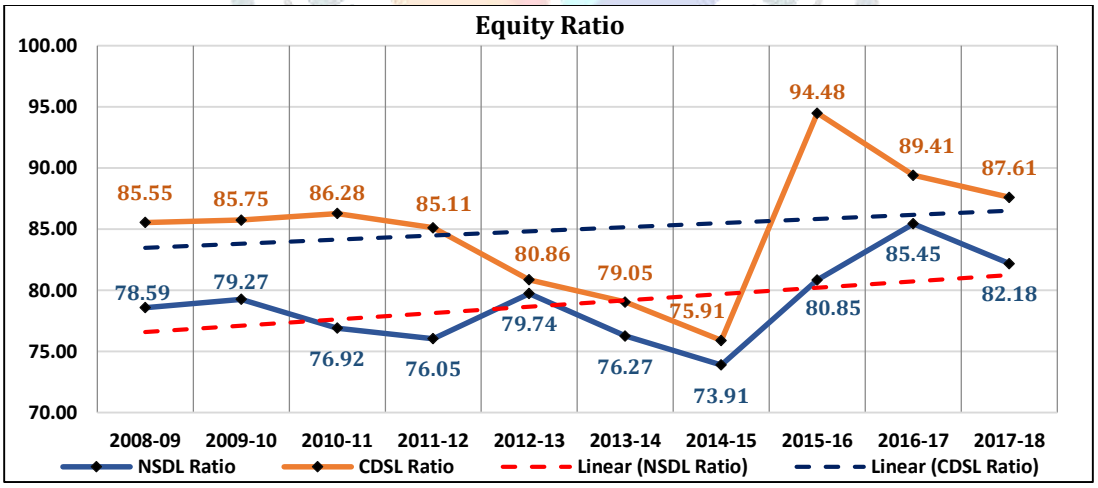
Table – 4.1 Comparative Ratio Analysis - Equity Ratio of NSDL & CDSL

Year	NSDL Ratio	CDSL Ratio
2008-09	78.59	85.55
2009-10	79.27	85.75
2010-11	76.92	86.28
2011-12	76.05	85.11
2012-13	79.74	80.86
2013-14	76.27	79.05
2014-15	73.91	75.91
2015-16	80.85	94.48
2016-17	85.45	89.41
2017-18	82.18	87.61
Average	**78.92**	**85.00**
SD	**3.37**	**5.31**
CV%	**4.27**	**6.25**
CAGR	**0.45%**	**0.24%**

Source: Computed from Annual reports of NSDL & CDSL downloaded from https://www.nsdl.co.in/ & https://www.cdslindia.com/ respectively.

The comparative table No. 4.1 represents the information related to equity ratio of NSDL and CDSL. The mean score of equity ratios in NSDL is 78.92% and in CDSL it is 85.00%. **Generally high equity ratio is favourable for the companies in this case CDSL is Performing well than NSDL**. Both the standard deviation and coefficient of variance percentage is high in CDSL which indicates the high level of inconsistency and more fluctuations with higher intensity in the equity ratio of CDSL than NSDL. The growth rate of ratio is positive in case of both the depositories but this growth is comparatively more in NSDL than in CDSL this shows that NSDL is efficiently managing its equity ratio growth rate than CDSL.

Chart – 4.1



The comparative Chart No. 4.1 depicts the information about the equity ratio of NSDL & CDSL during study period. In the early years of study period, the pattern of fluctuation of equity ratio in both NSDL & CDSL is increasing & later on there is sudden decrease in both the depositories in the year 2014-2015, and sudden increase in the very next year i.e., 2015-2016. CDSL recorded its highest equity ratio percentage 94.48% in the year 2015-2016 and NSDL recorded its maximum equity ratio percentage 85.45% in the year 2016-2017. There are more fluctuations with high intensity are recorded in CDSL than NSDL. The linear trend lines of both CDSL & NSDL shows fair increasing trend but this increase is comparatively little high in NSDL, this shows that equity ratio is increasing with higher rate in NSDL than CDSL.

From the above table & chart it is concluded that in case of equity ratio, if mean scores are compared, high mean value of equity ratio in CDSL shows that **CDSL is performing well, having higher investment levels by shareholders & have less financing and debt service costs than NSDL** during the study period. But if linear trend lines of both depositories are compared then the ratio is more rapidly increasing in NSDL this shows that NSDL in more efficiently managing its equity shareholders' funds during the end years of study period.

4.2 – Fixed Assets to Net Worth Ratio

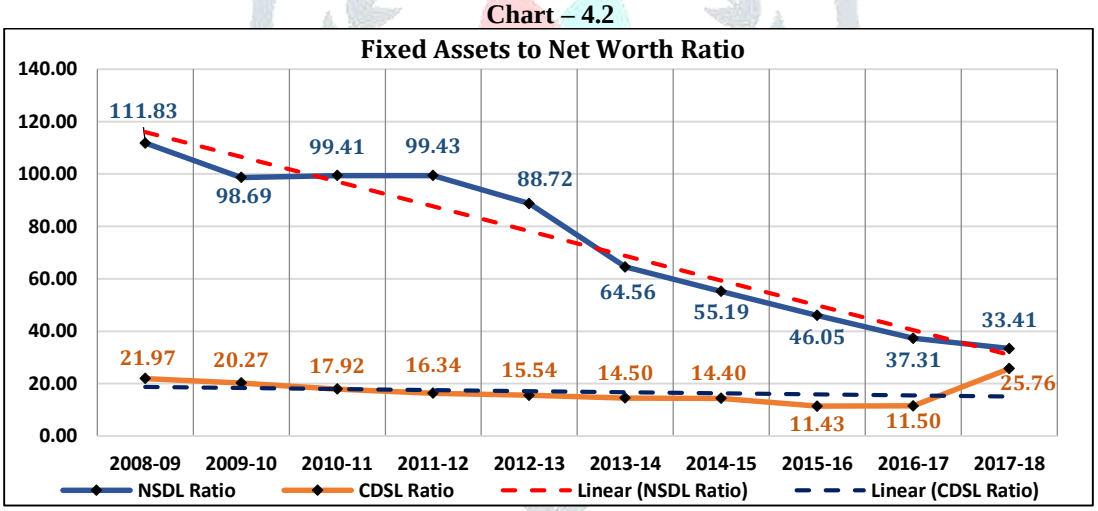
Table – 4.2 Comparative Ratio Analysis - Fixed Assets to Net Worth Ratio of NSDL & CDSL

Year	NSDL Ratio	CDSL Ratio
2008-09	111.83	21.97
2009-10	98.69	20.27
2010-11	99.41	17.92
2011-12	99.43	16.34
2012-13	88.72	15.54
2013-14	64.56	14.50
2014-15	55.19	14.40
2015-16	46.05	11.43
2016-17	37.31	11.50
2017-18	33.41	25.76
Average	**73.46**	**16.96**
SD	**29.37**	**4.59**
CV%	**39.98**	**27.07**
CAGR	**-11.38%**	**1.60%**

Source: Computed from Annual reports of NSDL & CDSL downloaded from https://www.nsdl.co.in/ & https://www.cdslindia.com/ respectively.

The comparative table No. 4.2 represents the information related to fixed assets to net worth ratio of NSDL and CDSL. The mean score of fixed assets to net worth ratios in NSDL is 73.46% and in CDSL it is 16.96%. The ideal fixed assets to net worth ratio ranges between 67% to 75%. The mean value of ratio in NSDL shows that it is closer to the ideal value than CDSL. Comparatively **NSDL is more efficiently** using its shareholders' funds in managing its fixed assets than CDSL during the study period. Both the standard deviation and coefficient of variance percentage are high in NSDL which indicates the higher level of inconsistency and more fluctuations with higher intensity in the fixed assets to net worth ratio of NSDL than CDSL. The growth rate of ratio is negative -11.38% in NSDL, which shows that ratio is decreasing in it & in CDSL it is 1.60%, which shows that there is increase in ratio during the study period. CDSL is efficiently managing its fixed assets to net worth ratio growth rate than NSDL.

Chart – 4.2



The comparative Chart No. 4.2 depicts the information about the fixed assets to net worth ratio of NSDL & CDSL during study period. In the early years of study period, the pattern of fluctuation of fixed assets to net worth ratio in NSDL is increasing & later on it shows continuous decreasing trends. In CDSL there is very steeper decreasing trend is recorded. CDSL recorded its highest ratio percentage 25.76% in the year 2017-2018 and NSDL recorded its maximum ratio percentage 111.83% in the base year i.e., 2008-2009. There are more fluctuations with high intensity are recorded in NSDL than CDSL. The linear trend lines of both NSDL and CDSL shows decreasing linear trend but this decrease is very steeper in case of NSDL than CDSL this shows that fixed assets to net worth ratio is constantly decreasing with high rate in NSDL than CDSL.

From the above table & chart it is concluded that in case of fixed assets to net worth ratio, if mean scores are compared than high mean of NSDL suggest that **NSDL is performing better than CDSL** because it is near to the ideal ratio value. But if linear trend lines of both depositories are compared then the ratio is more rapidly decreasing in NSDL and the same is increasing with slow rate in case of CDSL this shows that CDSL in more efficiently managing its fixed assets during the end years of study period.

4.3 – Current Assets to Net Worth Ratio

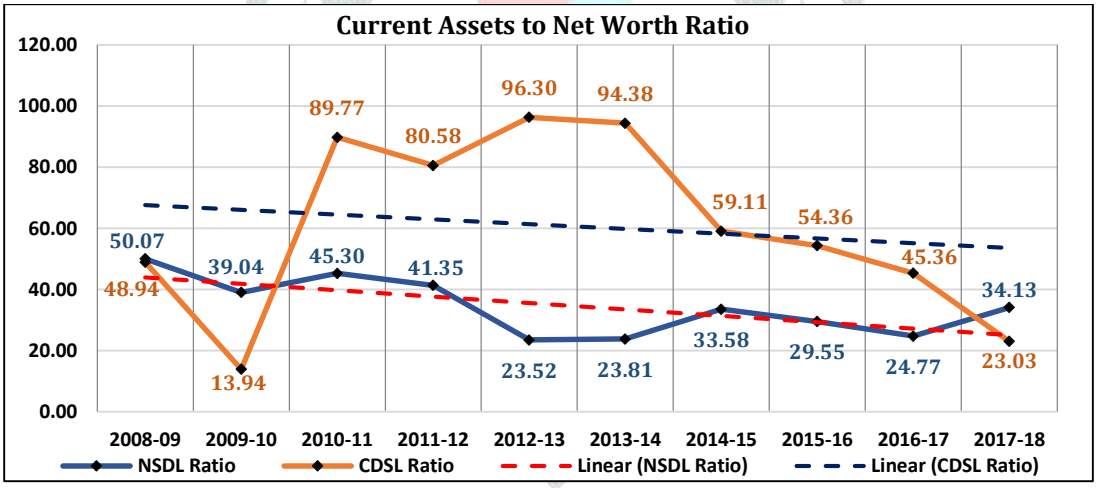
Table – 4.3 Comparative Ratio Analysis - Current Assets to Net Worth Ratio of NSDL & CDSL

Year	NSDL Ratio	CDSL Ratio
2008-09	50.07	48.94
2009-10	39.04	13.94
2010-11	45.30	89.77
2011-12	41.35	80.58
2012-13	23.52	96.30
2013-14	23.81	94.38
2014-15	33.58	59.11
2015-16	29.55	54.36
2016-17	24.77	45.36
2017-18	34.13	23.03
Average	**34.51**	**60.58**
SD	**9.32**	**29.18**
CV%	**27.00**	**48.17**
CAGR	**-3.76%**	**-7.26%**

Source: Computed from Annual reports of NSDL & CDSL downloaded from https://www.nsdl.co.in/ & https://www.cdslindia.com/ respectively.

The comparative table No. 4.3 represents the information related to current assets to net worth ratio of NSDL and CDSL. The mean score of current assets to net worth ratios in NSDL is 34.51% and in CDSL it is 60.58%. The ideal current assets to net worth ratio ranges between 50%-60%. The mean value of ratio in CDSL shows that it is closer to the ideal value than NSDL. Comparatively **CDSL is more efficiently** using its shareholders' funds in managing its current assets than CDSL during the study period. Both the standard deviation and coefficient of variance percentage are high in CDSL which indicates the higher level of inconsistency and more fluctuations with higher intensity in the current assets to net worth ratio of CDSL than NSDL. The growth rate of ratio is negative in case of both the depositories but this growth is comparatively more negative in CDSL than in NSDL, this shows that current assets to net worth ratio is decreasing with more intensity in CDSL. In this case NSDL is ahead in maintaining its growth rate of current assets to net worth ratio than CDSL.

Chart – 4.3



The comparative Chart No. 4.3 depicts the information about the current assets to net worth ratio of NSDL & CDSL during study period. In the early years of study period, the pattern of fluctuation of current assets to net worth ratio in NSDL is decreasing and in CDSL the pattern of fluctuation is decreasing and later it again tends to decrease after the sudden rise in the year 2010-2011. CDSL recorded its highest ratio percentage 96.30% in the year 2012-2013 and NSDL recorded its maximum ratio percentage 50.07% in the base year i.e., 2008-2009. There are more fluctuations with high intensity are recorded in CDSL than NSDL. The linear trend lines of both NSDL and CDSL shows decreasing linear trend but this decrease is steeper in case of CDSL than NSDL this shows that current assets to net worth ratio is constantly decreasing with high rate in CDSL than NSDL during the study period.

From the above table & chart it is concluded that in case of current assets to net worth ratio, if mean scores are compared than high mean of CDSL suggest that **CDSL is performing better than NSDL** because it is near to the ideal ratio value. But if linear trend lines of both depositories are compared then the ratio is more rapidly decreasing in CDSL and the same is decreasing with slow rate in case of NSDL this shows that NSDL in more efficiently managing its current assets during the end years of study period.

4.4 – Debt Ratio

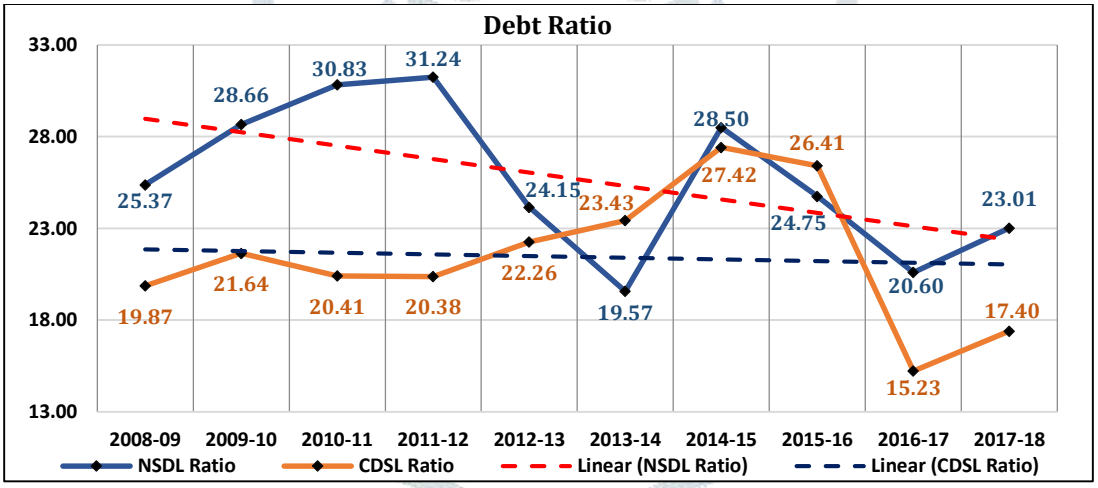
Table – 4.4 Comparative Ratio Analysis - Debt Ratio of NSDL & CDSL

Year	NSDL Ratio	CDSL Ratio
2008-09	25.37	19.87
2009-10	28.66	21.64
2010-11	30.83	20.41
2011-12	31.24	20.38
2012-13	24.15	22.26
2013-14	19.57	23.43
2014-15	28.50	27.42
2015-16	24.75	26.41
2016-17	20.60	15.23
2017-18	23.01	17.40
Average	**25.67**	**21.44**
SD	**4.05**	**3.72**
CV%	**15.78**	**17.35**
CAGR	**-0.97%**	**-1.32%**

Source: Computed from Annual reports of NSDL & CDSL downloaded from https://www.nsdl.co.in/ & https://www.cdslindia.com/ respectively.

The comparative table No. 4.4 represents the information related to debt ratio of NSDL and CDSL. The mean score of debt ratios in NSDL is 25.67% and in CDSL it is 21.44%. **Generally, low debt ratio is favourable for the companies in this case CDSL is Performing better than NSDL**. The standard deviation is high in NSDL while coefficient of variance percentage is high in CDSL which indicates the high level of inconsistency in NSDL and more fluctuations with higher intensity in the debt ratio of CDSL. The growth rate of ratio is negative in case of both the depositories but this growth is comparatively more negative in CDSL than in NSDL, this shows that debt ratio is decreasing with more intensity in CDSL. In this case CDSL is performing well by decreasing its growth rate of debt ratio than NSDL.

Chart – 4.4



The comparative Chart No. 4.4 depicts the information about the debt ratio of NSDL & CDSL during study period. In the early years of study period, the pattern of fluctuation of debt ratio in both NSDL & CDSL is increasing & later on there is again sudden decreases are observed in year 2013-2014 for NSDL & 2016-2017 for CDSL. CDSL recorded its highest debt ratio percentage 27.42% in the year 2014-2015 and NSDL recorded its maximum debt ratio percentage 31.24% in the year 2011-2012. There are more fluctuations with high intensity are recorded in NSDL than CDSL. The linear trend lines of both CDSL & NSDL shows decreasing trend but this decrease is comparatively steeper in NSDL & nearly flatter in CDSL, this shows that debt ratio is decreasing with higher rate in NSDL than CDSL.

From the above table & chart it is concluded that in case of debt ratio, if mean scores are compared, lower mean value of debt ratio in CDSL indicates that lower **portion of the CDSL' assets is financed through debt borrowing than NSDL, in this case CDSL is Performing well than NSDL during the study period**. But if linear trend lines of both depositories are compared then the ratio is more rapidly decreasing in NSDL this shows that NSDL in more efficiently managing its debt shareholders' funds during the end years of study period.

4.5 – Current Liabilities to Net Worth Ratio

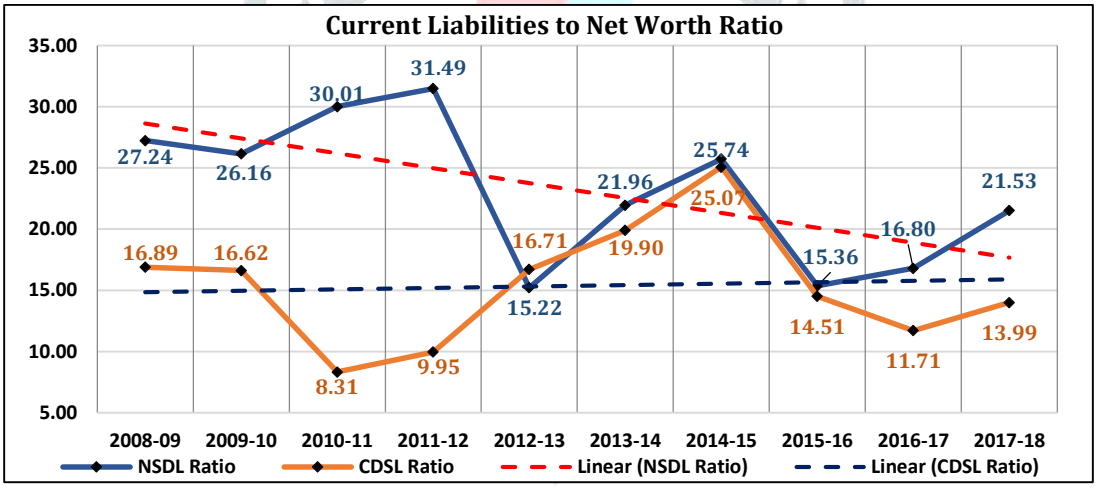
Table – 4.5 Comparative Ratio Analysis - Current Liabilities to Net Worth Ratio of NSDL & CDSL

Year	NSDL Ratio	CDSL Ratio
2008-09	27.24	16.89
2009-10	26.16	16.62
2010-11	30.01	8.31
2011-12	31.49	9.95
2012-13	15.22	16.71
2013-14	21.96	19.90
2014-15	25.74	25.07
2015-16	15.36	14.51
2016-17	16.80	11.71
2017-18	21.53	13.99
Average	**23.15**	**15.37**
SD	**5.93**	**4.89**
CV%	**25.63**	**31.84**
CAGR	**-2.33%**	**-1.86%**

Source: Computed from Annual reports of NSDL & CDSL downloaded from https://www.nsdl.co.in/ & https://www.cdslindia.com/ respectively.

The comparative table No. 4.5 represents the information related to current liabilities to net worth ratio of NSDL and CDSL. The mean score of current liabilities to net worth ratios in NSDL is 23.15% and in CDSL it is 15.37%. **Generally low current liabilities to net worth ratio is favourable for the companies in this case CDSL is Performing well than NSDL**. The standard deviation is high in NSDL while coefficient of variance percentage is high in CDSL which indicates the high level of inconsistency & more fluctuations in NSDL and less fluctuations with higher intensity in the current liabilities to net worth ratio of CDSL. The growth rate of ratio is negative in case of both the depositories it is -2.33% in NSDL & -1.86% in CDSL, the higher negative growth in NSDL shows that current liabilities to net worth ratio is decreasing with more intensity in NSDL than CDSL. In this case NSDL is performing well by decreasing its growth rate of current liabilities to net worth ratio than CDSL.

Chart – 4.5



The comparative Chart No. 4.5 depicts the information about the current liabilities to net worth ratio of NSDL & CDSL during study period. In the early years of study period, the pattern of fluctuation of current liabilities to net worth ratio in both NSDL & CDSL is decreasing & later on it again tends to decrease after a sudden rise in the year 2014-2015. CDSL recorded its highest current liabilities to net worth ratio percentage 25.07% in the year 2014-2015 and NSDL recorded its maximum current liabilities to net worth ratio percentage 31.49% in the year 2011-2012. There are more fluctuations with high intensity are recorded in NSDL than CDSL. The linear trend lines of NSDL shows decreasing trend and minimal increasing trend in CDSL, this shows that current liabilities to net worth ratio is decreasing with higher rate in NSDL than CDSL.

From the above table & chart it is concluded that in case of current liabilities to net worth ratio, if mean scores are compared, lower mean value of current liabilities to net worth ratio in CDSL indicates that there are lesser current liabilities are to be fulfilled as compare to net worth**, in this case CDSL is Performing better than NSDL during the study period**. But if linear trend lines of both depositories are compared then the ratio is more rapidly decreasing in NSDL this shows that NSDL in more efficiently managing its current liabilities to net worth ratio during the end years of study period.

Table: 4.6 Comparison of Financial Performance of NSDL And CDSL on the Basis of t-test on Solvency Ratios Analysis.

S. No.	Parameters (Ratios)	NSDL		CDSL	
		Mean Ratio	Performance	Mean Ratio	Performance
1.	Equity Ratio	Low	Low	High	High
2.	Fixed Assets to Net Worth Ratio	High	High	Low	Low
3.	Current Assets to Net Worth Ratio	Low	Low	High	High
4.	Debt Ratio	High	Low	Low	High
5.	Current Liabilities to Net Worth Ratio	High	Low	Low	High

In the above table 4.6, The financial performance of NSDL and CDSL has been compared. The table contains the summary of Solvency Ratios analysis which have been extracted on the basis of t-test.

In general, high Equity ratio is typically favourable it shows potential creditors that the firm is more sustainable and less risky to lend future loan. Here, CDSL is performing higher than NSDL. High fixed assets to net worth ratio of NSDL shows that the more funds are tied up with fixed assets while in case of CDSL it is low. But in case of current assets to net worth ratio it is higher in CDSL as compared to NSDL which shows efficient management and efficient utilisation of current assets. In case of debt ratio and current liability to net worth ratio the CDSL has lower mean ratio which indicates the high performance of CDSL. Here, CDSL is more stable in compare of NSDL.

V- Normality test

The Shapiro-Wilk test is one of the most popular tests for normality assumption. Diagnostic which has good properties of power and it based on correlation within given observations and associated normal scores. The Shapiro-Wilk test was developed by Shapiro and Wilk (1965) for sample size up to 20. It is considered the most reliable test for non- normality for small to medium sized samples by many authors. It is the ratio of two estimates of variance of a normal distribution based on a random sample of observations.

Table: - 5.1: Summary of Normality test on the basis of Shapiro-Wilk Normality Test.

Null Hypothesis: Paired differences are normal.

S. No.	Paired Differences	Shapiro-Wilk			
		Statistic	df	Sig.	Null Hypothesis
1.	Equity Ratio	.958	10	.760	Failed to Reject
2.	Fixed Assets to Net Worth Ratio	.912	10	.297	Failed to Reject
3.	Current Assets to Net Worth Ratio	.958	10	.761	Failed to Reject
4.	Debt Ratio	.952	10	.697	Failed to Reject
5.	Current Liabilities to Net Worth Ratio	.969	10	.885	Failed to Reject

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It can be observed that the table no. 5.1 is showing the result summary of normality test of given data by using Shapiro-Wilk test. In one hand, the paired differences are appeared in the 5 solvency ratios. Hence these solvency ratios are approximately normal distribution and they can be considered as parametric data. For these parametric data, the researcher has used a parametric test which is known as paired samples student's t-test to examine hypothesis related to these data (ratios).

Hypotheses Testing

(1) Null Hypothesis (H_{01}): There is no significant difference between the mean scores of equity ratios of NSDL and CDSL over the period of time.

$H_{01}: \mu_1 = \mu_2$

Alternate Hypothesis (H_{A1}): There is significant difference between the mean scores of equity ratios of NSDL and CDSL over the period of time.

$H_{A1}: \mu_1 < \mu_2$ or $\mu_1 > \mu_2$

Table- H_{01}, t – test on Equity Ratio of NSDL and CDSL

Pair/Ratio	Mean	Std. Deviation	Std. Error Mean	df	t-calculated value ($t_{cal.}$)	Level of sig. (2-tailed)	t-table value (t_{tv})
Equity Ratio of NSDL - Equity Ratio of CDSL	-6.078	3.86768	1.22307	9	-4.969	.001	**2.262**

Table No. H_{01} indicates that calculated value of t_{cal} (t=-4.969) is more than the alpha/critical/table value of t_{tv} at 5% level of significance, 2.262, $t_{cal} > t_{tv\,(9,\,0.05)}$. (p=0.001 which is less than level of significance 5%).

Which means that at 5% level of significance H_0 is in the rejection region and cannot be accepted. Hence, the mean score of Equity ratios of CDSL is higher than the NSDL over the period of time. **$\mu_1 < \mu_2$**

(2) Null Hypothesis (H_{02}): There is no significant difference between the mean scores of fixed assets to net worth ratios of NSDL and CDSL over the period of time.

H_{02}: $\mu_1 = \mu_2$

Alternate Hypothesis (H_{A2}): There is significant difference between the mean scores of fixed assets to net worth ratios of NSDL and CDSL over the period of time.

H_{A2}: $\mu_1 < \mu_2$ or $\mu_1 > \mu_2$

Table- H_{02}, t – test on Fixed Assets to Net Worth Ratio of NSDL and CDSL

Pair/Ratio	Mean	Std. Deviation	Std. Error Mean	df	t-calculated value ($t_{cal.}$)	Level of sig. (2-tailed)	t-table value (t_{tv})
Fixed Assets to Net Worth Ratio of NSDL - Fixed Assets to Net Worth Ratio of CDSL	56.497	28.47677	9.00514	9	6.274	.000	**2.262**

Table No. H_{02} indicates that calculated value of t_{cal} (t=6.274) is more than the alpha/critical/table value of t_{tv} at 5% level of significance, 2.262, $t_{cal} > t_{tv\,(9,\,0.05)}$. (p=0.000 which is less than level of significance 5%).

Which means that at 5% level of significance H_0 is in the rejection region and cannot be accepted. Hence, the mean scores of Fixed Assets to Net worth ratio of NSDL is higher than the CDSL over the period of time. **$\mu_1 > \mu_2$**

(3) Null Hypothesis (H_{03}): There is no significant difference between the mean scores of current assets to net worth ratios of NSDL and CDSL over the period of time.

H_{03}: $\mu_1 = \mu_2$

Alternate Hypothesis (H_{A3}): There is significant difference between the mean scores of current assets to net worth ratios of NSDL and CDSL over the period of time.

H_{A3}: $\mu_1 < \mu_2$ or $\mu_1 > \mu_2$

Table- H_{03}, t – test on Current Assets to Net Worth Ratio of NSDL and CDSL

Pair/Ratio	Mean	Std. Deviation	Std. Error Mean	df	t-calculated value ($t_{cal.}$)	Level of sig. (2-tailed)	t-table value (t_{tv})
Current Assets to Net Worth Ratio of NSDL - Current Assets to Net Worth Ratio of CDSL	-26.065	32.39607	10.24454	9	-2.544	.031	**2.262**

Table No. H_{03} indicates that calculated value of t_{cal} (t=-2.544) is more than the alpha/critical/table value of t_{tv} at 5% level of significance, 2.262, $t_{cal} > t_{tv\,(9,\,0.05)}$. (p=0.031 which is less than level of significance 5%).

Which means that at 5% level of significance H_0 is in the rejection region and cannot be accepted. Hence, the mean scores of Current Assets to Net worth ratio of CDSL is higher than the NSDL over the period of time. **$\mu_1 < \mu_2$**

(4) Null Hypothesis (H_{04}): There is no significant difference between the mean scores of debt ratios of NSDL and CDSL over the period of time.

H_{04}: $\mu_1 = \mu_2$

Alternate Hypothesis (H_{A4}) : There is significant difference between the mean scores of debt ratios of NSDL and CDSL over the period of time.

H_{A4}: $\mu_1 < \mu_2$ or $\mu_1 > \mu_2$

Table- H_{04}, t – test on Debt Ratio of NSDL and CDSL

Pair/Ratio	Mean	Std. Deviation	Std. Error Mean	df	t-calculated value ($t_{cal.}$)	Level of sig. (2-tailed)	t-table value (t_{tv})
Debt Ratio of NSDL - Debt ratio of CDSL	4.223	4.83519	1.52902	9	2.762	.022	**2.262**

Table No. H_{04} indicates that calculated value of t_{cal} (t=2.762) is more than the alpha/critical/table value of t_{tv} at 5% level of significance, 2.262, $t_{cal} > t_{tv\,(9,\,0.05)}$. (p=0.022 which is less than level of significance 5%).

Which means that at 5% level of significance H_0 is in the rejection region and cannot be accepted. Hence, the mean scores of Debt ratio of NSDL is higher than the CDSL over the period of time. **$\mu_1 > \mu_2$**

(5) Null Hypothesis (H_{05}): There is no significant difference between the mean scores of current liabilities to net worth ratios of NSDL and CDSL over the period of time.

H_{05}: $\mu_1 = \mu_2$

Alternate Hypothesis (H_{A5}): There is significant difference between the mean scores of current liabilities to net worth ratios of NSDL and CDSL over the period of time.

H_{A5}: $\mu_1 < \mu_2$ or $\mu_1 > \mu_2$

Table- H_{05}, t – test on Current Liabilities to Net Worth Ratio of NSDL and CDSL

Pair/Ratio	Mean	Std. Deviation	Std. Error Mean	df	t-calculated value ($t_{cal.}$)	Level of sig. (2-tailed)	t-table value (t_{tv})
Current Liabilities to Net Worth Ratio of NSDL - Current Liabilities to Net Worth Ratio of CDSL	7.785	8.28203	2.61901	9	2.972	.016	**2.262**

Table No. H_{05} indicates that calculated value of t_{cal} (t=2.972) is more than the alpha/critical/table value of t_{tv} at 5% level of significance, 2.262, $t_{cal} > t_{tv\ (9,\ 0.05).}$ (p=0.016 which is less than level of significance 5%).

Which means that at 5% level of significance H_0 is in the rejection region and cannot be accepted. Hence, the mean scores of Current Liabilities to Net worth ratio of NSDL is higher than the CDSL over the period of time. $\boldsymbol{\mu_1 > \mu_2}$

Table- 9.3-(A): Summary of hypotheses testing on the basis of t-test

S. No.	Null Hypothesis	t_{cal} Value	Reject/Fail to reject	Result
H_{01}	There is no significant difference between the mean scores of equity ratios of NSDL and CDSL over the period of time.	-4.969	Reject Null Hypothesis	$\mu_1 < \mu_2$
H_{02}	There is no significant difference between the mean scores of fixed assets to net worth ratios of NSDL and CDSL over the period of time.	6.274	Reject Null Hypothesis	$\mu_1 > \mu_2$
H_{03}	There is no significant difference between the mean scores of current assets to net worth ratios of NSDL and CDSL over the period of time.	-2.544	Reject Null Hypothesis	$\mu_1 < \mu_2$
H_{04}	There is no significant difference between the mean scores of debt ratios of NSDL and CDSL over the period of time.	2.762	Reject Null Hypothesis	$\mu_1 > \mu_2$
H_{05}	There is no significant difference between the mean scores of current liabilities to net worth ratios of NSDL and CDSL over the period of time.	2.972	Reject Null Hypothesis	$\mu_1 > \mu_2$

VI - Findings on the basis of Hypotheses Testing

After financial statement analysis of NSDL and CDSL, the hypotheses have been done through t-test on the solvency ratios of two depositories. The level of significance was 5%, which has the table value 2.262. NSDL is taken as first variable and CDSL is taken as second variable. The following findings have been concluded which are based on the results of hypotheses testing.

1. The results of t-test, shows that there is significant difference is identified between the mean score of Equity ratio of NSDL & CDSL. The mean score of Equity ratio of CDSL was higher than the mean score of Equity ratio of NSDL during study period. It was found that the CDSL is performing well and having higher level of investment by its shareholders. It was also concluded that CDSL have utilized less financing and debt services cost than NSDL. Comparatively NSDL is not managing its equity shareholders' funds efficiently during the study period. In this matter CDSL is leading over the period of time.
2. The results of the t-test showed that, there is significant differences are identified between the mean score of Fixed Assets to Net-worth ratio of NSDL & CDSL. The mean score of Fixed Assets to Net-worth ratio of NSDL is higher than CDSL over the period of time. It was founded that NSDL is performing better than CDSL because it is near to the ideal value of ratio. Comparatively NSDL is efficiently managing its fixed assets where as CDSL is not managing its fixed assets efficiently during the study period. In this case NSDL is leading over the period of time.
3. As per t-test, the mean score of current assets to net-worth ratio of NSDL was higher than the CDSL over the period of time. This shows that there is significant difference. It was founded that CDSL is performing better than NSDL because of it is near to the ideal value of ratio NSDL is not managing its current assets efficiently during the study period. in this case CDSL is leading over the period of time.
4. The results of the t-test showed that, there is significant differences are identified between the mean score of debt ratio of NSDL & CDSL. The mean score of this ratio of NSDL is higher than CDSL over the period of time. It was found that the lower value of mean of debt ratio is better. CDSL has the lower mean value than NSDL this means that lower portion of assets is financed by CDSL than NSDL, through debt borrowing. CDSL is performing better than NSDL during the study period. In this ratio CDSL is leading over NSDL during the study period.
5. The results of the t-test showed that, there is significant differences are identified between the mean score of current liabilities to Net-worth ratio of NSDL & CDSL. The mean score of current liabilities to Net-worth ratio of NSDL is higher than CDSL over the period of time. This shows that CDSL has lower current liabilities while NSDL has more current liabilities. In case of CDSL, there is lesser amount of current liabilities are to be fulfilled as compared to the amount of its net-worth, which means that CDSL is performing better than NSDL during the study period. In this matter CDSL is leading and managing its current liabilities to net worth ratio efficiently over the period of time.

Suggestions

1. NSDL had lower equity ratio than CDSL over the period of time it is suggested that NSDL should try to improve this ratio. The equity ratio is an indicator that gauges the amount of leverage that a company uses to finance its

operation by using debt instead of its equity. This can be done by managing more financial leverage, improving asset turnover, utilizing idle cash etc. Management of NSDL must try to improve the performance of its equity ratio.

2. The result of hypothesis testing reveals that CDSL had lower fixed assets to net worth ratio than NSDL over the period of time. It is suggested that CDSL should try to improve this ratio. CDSL should maintain the ideal value of this ratio. This ratio measures the solvency of the firm. This ratio indicates the extent to which the owner's cash is frozen in in form of fixed assets. This ratio tells that how much funds are actually available as working capital. The management of CDSL must try to improve the performance of its fixed assets to net worth ratio.
3. NSDL had lower current assets to net worth ratio than CDSL over the period of time. It is suggested that NSDL should try to improve this ratio. NSDL should maintain the ideal value of this ratio. This can be done by increasing the amount of current assets. It will be difficult to reduce the amount net-worth, then to increase the amount of current assets. So, the CDSL must focusses on the methods of increasing its current assets. The management of NSDL must try to improve the performance of its current assets to net worth ratio.
4. NSDL had higher debt ratio than CDSL over the period of time. It is suggested that NSDL should try to improve (minimise) this ratio. A lower debt ratio usually implies a more stable business with the potential of longevity because a company with a lower ratio has lower overall debt. This can be done by Debt restructuring, Implementation of debt/equity swap etc. The management of NSDL must try to improve the performance of its debt ratio.
5. NSDL had higher current liabilities to net worth ratio than CDSL over the period of time. It is suggested that NSDL should try to improve (minimise) this ratio. This ratio indicates reliance on the equity for payment of debt. This should not exceed 60%. The management of NSDL must try to improve the performance of its current liabilities to net worth ratio.

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