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MODIGLIANI - MILLER APPROACH TO CAPITAL STRUCTURE AND RATIO ANALYSIS OF SHIPPING CORPORATION OF INDIA

Dr. K. Jayaraman
Associate Professor, Department of Economics, Periyar University, Salem.

Abstract
Shipping Corporation of India is the major public sector shipping company under the auspices of Government of India. Shipping contributes to the economy directly and indirectly in a greater magnitude. Hence it is essential to peep into the capital structure and financial of the Shipping Corporation of India.

The economic reform unleashed a plethora of opportunities for the economy and its sub-sectors. It is in this backdrop the research was conducted to analyse the capital structure of SCI in the pre and post reform periods. The researcher took 1980-81 to 1990-91 for pre-reform period and 1991-92 to 2009-10 for the post reform period. The study concludes that the overall position of SCI has improved in the post reform period. It is safely concluded that the reform has made positive impact on the company.

Keywords: Shipping, SCI, Modigliani-Miller Approach, Capital Structure, Ratios.

Introduction
Shipping is the catalyst for the economic development of a country. Around 90 per cent of world trade by volume and 70 per cent by value takes place through the shipping. It reduces the cost and increases the employment opportunities both direct and indirect. International trade is the important route for socio-economic and political unity among the comity of nations. Shipping corporation of India moves cargoes in a cost-effective, energy efficient and environment friendly way.

Adam Smith (1776) categorically said, ""Shipping is one of the major catalysts of economic development. ... Shipping is a cheap source of transport which can open up wider markets of specialization, offering shipment of even the most everyday products at prices far below those that can be achieved by any other means".

The new shipping policy was announced as a part of new economic reforms in 1990-91. The important measures of the shipping policy are

- Automatic approval – acquisition of all categories of ships except crude oil tankers
- No approval is required for sale of ships
- Retaining sale proceeds for fresh acquisition
- Acquire vessels on charter-cum-demise method
- Chartering Indian ships to foreign companies for employment in international cross trade and
- Amendment to Merchant Shipping Act, 1958

Objectives
1. To study the capital structure of Shipping Corporation of India with Modigliani-Miller approach
2. To examine the changes taken place in the post period period.
3. To draw fruitful inferences and provide suggestions for the financial strength of SCI

Review of Literature
David Bendall (2009) states that Shipping Finance and Investment Forum focused on the ship finance, particularly to the oil tankers, dry bulk shipping and containers. The supply of container capacity is more than the demand. the excess capacity would depress the freight rate in future.

Daniel Hulton (2004) made a study on "Financing sources for Shipping – A case study at Wonsild & Son". This study informed about the vessel financing, chemical tanker evaluation, industrial shipping and the management of the enterprises.
Jane Jing Haider et al informed that failure of shipping companies could not be calculated three years prior to their collapse. But it could be gauged six months in advance by looking into the ship finance. Wen-Cheng Lin et al (2009) analyzed the debt-paying ability for a shipping industry in Taiwan. They analyzed various ratios to understand the financial position of shipping industry. EVERGREEN shipping company pays more attention in reducing the default risks and creating revenue competency.

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The operating profit is one of the determinants of measuring the bankruptcy of a firm. Higher the bankruptcy risk lower would be the debt. During the times of prosperity the operating profit would be at the highest level. This would enable the firm to have better demand and higher operating profit.

Myers an d Majluf (1984) used the pecking-order theory and highlighted the low level of debt financing and low debt ration of high debt-paying ability firms. Booth et al (2001) stated that the relationship between tangible fixed assets and debt financing is related to the maturity structure of debt. Efficient tangible fixed assets turnover is a significant factor increasing long-term debt-paying ability.

Studies of Harold (1938), Atkinson and Simpson (1967) and Altman (1190) show the historical records of bond default. Piotroski (2001) put in a succinct way that improvement in the debt-paying ability is positively related to the stock profitability and performance.

Modigliani-Miller Approach

The Modigliani – Miller (MM) Thesis explains the relationship between the capital structure, cost of capital and valuation. The importance of MM approach lies in the behavioral justification for overall cost of capital and the total value of levered firm. This is used to calculate the value of the firm using four steps, namely, calculation of cost of equity, value of unlevered firm, tax rate and the value of the levered firm. The average cost of equity was Rs.26.18 during the pre-reform period. Shipping Corporation of India incurred losses during 1982-83 and 1983-84. So the Earning per Share (EPS) could not be calculated for the two years. The average face value of shares of SCI was pegged at Rs.10. The increase in EPS had a positive impact on the cost of equity. The Cost of Equity was less from 1984-85 to 1986-87. This was due to low earnings earned by the firm andun absorbed depreciation in 1985-86. After that there had been increase in the cost of equity. The Earning per share came down drastically to 1.9 in 1990-91. This may be due to economic conditions prevailed during that time. The year 2004 saw a robust growth in many parts of World and Indian Economies. The peak position was achieved during the year 1996. The increase in the earnings of assets of SCI would increase in the Cost of Equity.

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Table 1: Value of Levered Firm in the Pre-Reforms

Year	Cost of Equity (in rupees)	Tax Rate	Value of Unlevered Firm	Value of Levered Firm
1980-81	65	8.64	28.25	5150.05038
1981-82	16	30.31	29.61	17844.78578
1982-83	NA	----	-----	----
1983-84	NA	----	-----	----
1984-85	3	55.50	75.62	3872.1278
1985-86	9	3.17	74.96	3872.1278
1986-87	10	17.01	71.55	2873.775
1987-88	51	16.32	70.33	1243.3573
1988-89	77	16.78	70.81	1264.1555
1989-90	38	17.20	266.05	10406.48
1990-91	19	82.66	286.63	60092.7949
Average	32	27.51	88.53	9692.696

Source: Various annual reports of Shipping Corporation of India

Table 1 vividly shows that the value of the levered firm in the pre-reform period was Rs.9692.696 crores. There was a 1.88 times increase in the value of the levered firm from 1980-81 with Rs.5150.05 crores to Rs.9692.696 in 1990-91.

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Table 2: Value of Levered Firm in the Post-Reforms

Year	Cost of Equity (in rupees)	Tax Rate	Value of Unlevered Firm	Value of Levered Firm
1991-92	38	38.60	286.4736	34899.8656
1992-93	47	1.12	304.6382	1377.0494
1993-94	59	0.36	284.0338	663.19
1994-95	71	0.174	283.6478	499.1851
1995-96	114	0.083	283.6842	390.5127
1996-97	82	14.73	284.4756	17341.0791
1997-98	87	18.26	283.0344	21638.287
1998-99	71	18.93	283.5633	3341.1369
1999-2000	57	20.24	283.5263	3202.3367
2000-01	135	31.01	283.3378	4179.1614
2001-02	85.6	36.31	282.1962	3746021.796
2002-03	97.3	45.52	282.4049	50906.5625
2003-04	222.1	12.13	282.3007	16915.8058
2004-05	503	23.77	282.2883	33623.2788
2005-06	369.2	6.53	282.2860	9257.118
2006-07	359.4	8.59	282.2983	10974.3572
2007-08	283.3	9.96	287.2926	14771.1246
2008-09	222.1	10.80	423.5344	3092.8624
2009-10	89	20.81	423.4944	56545.151
Average	157.4737	16.733	299.3953	29819.01

Source: Various Annual Reports of Shipping Corporation of India Computed

Table 2 exemplifies the value of the levered firm in the post reform period from 1991-92 to 2009-10. There was a reduction in the value of the levered firm by 0.85 times in 2009-10.

The Value of Unlevered Firm

The average value of unlevered firm was Rs.88.5308 during the pre-reform period. This increased to Rs.299.3953 during the post-reforms. There has been 3.38 times of the value of unlevered firm during the post-reforms. The cost of equity has a negative relationship with the value of unlevered firm, VU. Tax rate depends on the Profit after Tax. Higher the Profit after Tax, higher would be the tax rate. As the value of unlevered firm was more in the post-reform period, this has benefitted the Shipping Corporation of India.

$$\mathbf{V_{u\,=}\ EAT/Ke\ x\ 100}$$

Where, V_u = Value of Unlevered Firm
EAT = Earnings after Tax
Ke = Cost of Equity

Calculation of Tax Rate

The tax rate may be calculated as

Tax Rate = PBT – PAT / PBT

Where, PBT – Profit before Tax, PAT –Profit after Tax

The Tax rate depends on the earnings of the Shipping Corporation of India over a period of time.

The average tax rate during the pre-reform period was 21.7236 per cent and this has come down to 16.5377 per cent during the post-reform. The tax rate was calculated by adding the interest rate to fixed cost. No provision for Indian Income Tax had been made by SCI due to the unabsorbed depreciation, development rebate and investment allowance in 1982-83. PBT and PAT were the same in 1990-91, 1994-95 and 1995-96 and the PAT was higher in 1991- 92, 1992-93 and 1993-94.

The Value of Levered Firm (V_L)

The Value of levered firm is the final step in the calculation of the value in the Modigliani-Miller Approach. Value of Levered firm is calculated as

$$V_L = V_U + (\text{Tax Rate x Debt})$$

Where, VL = Value of Levered Firm, VU = Value of Unlevered Firm The average value of the levered firm during the pre-reform was Rs.9692.696 crores. This increased to Rs.29819.01 crores during the post reform period. The tax rate was a major factor determining the value of the levered firm. Since the value of levered firm has increased in the post-reform period, it is inferred that the capital structure of SCI seems to be on better side. The overall financial position of Shipping Corporation of India portrays that the economic reform has had positive impact on it.

Economic Performance

Economic Performance is the indicator of viability of a company, its contribution in terms of employment and to GDP (Gross Domestic Product) and GNP (Gross National Product). It is also a measure of long-term survival of a firm in the wake of stiff global competition. The economic performance part tries to analyse the profit rate, contribution to GDP and tonnage.

Employment

Labour is one of the important factors of production. Employment is the factor contributing to the national income. Employment of persons in the corporation shows that it has come down over the period. Employment means providing gainful jobs to the persons in need. Skilled personnel are the assets to any organization. Their efficiency helps in the growth of a company. Hence, the importance to employment aspects deserves merit.

Table 3: Ratio Analysis of Shipping Corporation of India- Pre and Post Reforms

Ratios	Pre-reforms	Post-reforms	Standard Rule	Rule
ROI	0.6327	0.6468	High profitability	Improvement
Return on Share Funds	0.118	0.172	High Ratio is good	Slight Improvement
Return on Total Assets	0.59	0.11578	High return	Low return and investment in short term funds
Net Profit Ratio	2.91 Percent	15.16 percent	12 percent	Increase in Net Profit ratio
Earnings Per Share	2.618181	15.7736	High ratio shows profitability and efficiency	Efficient
Interest cover ratio	1.24454	18.6736	Increase shows quick coverage of interest	Quick coverage of interest
Working capital turnover ratio	9.0027	4.19	High ratio indicates low investment and more profit	High investment and low profit
Fixed assets turnover ratio	0.6445	0.863157	High ratio means the efficient utilization of fixed assets	Increase in the efficient usage of Fixed Asset
Capital turnover ratio	0.632727	0.723157	high ratio means high efficiency	Increase in the efficiency
Debt-Equity ratio	6.8418	0.94263	1:1	Less than the ideal ratio
Capital gearing ratio	6.8418	0.9442	1	Lowly geared in the postreform Period

Source: Computed from the balance sheets of Shipping Corporation of India

Table 3 exhibits the value of various ratios both in the pre and post reform periods. This table provides a mixed picture about the financial of the shipping company. Most of the ratios show that there has been improvement in the financial conditions of SCI in the post reform period.

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Table 4: Ratio Analysis- Consistency Test for the pre and post-reform periods

Ratio	Pre-reforms (Co-efficient of Variation)	Post-reforms (Co-efficient of Variation)
ROI	15.56	18.49
Return on Total Assets	58.84	47.24
Net Profit Ratio	91.55	60.95
Earnings Per Share	84.06	84.29
Interest cover ratio	35.90	68.95
Working capital turnover ratio	203.66	50.86
Fixed assets turnover ratio	14.36	29.62
Capital turnover ratio	15.58	18.30
Debt-Equity ratio	65.61	71.81
Capital gearing ratio	65.61	71.81

Source: Computed

Lower the value of coefficient higher the consistency. The post reform period made the SCI to have changes to meet the competition and remain in the business. Accordingly it has changed the capital structure to that extent of growth. Many favouable changes taken place in the post reform period.

Shipping turns to be the trendsetter in the world economy pushing the economic growth forward by ferrying goods all around the world. As it is a cost-wise cheap mode of transportation, it enables one to have the prevalence of Law of One Price in the world. It further promotes the connectivity, enhances the productivity, certainty and equality. It is the equalizer of demand and supply of goods. It also enhances the socio-economic cooperation among the trading partners. The application of Modigliani-Miller approach to the capital structure of the Shipping Corporation of India shows that the company is on the right track. Various ratios indicate that there have been changes in the financial of Shipping Corporation of India.

Conclusion

Shipping occupies a pivotal role in the international trade. Shipping finance indicates the financial health of a shipping company. The Government of India owned major Shipping Corporation of India is on the right track. It can concentrate further on increasing the debt-equity mix. Proper financial planning would wonders in this regard as shipping companies are allowed to retain a part of the profit for acquiring new vessels.