Impact of EBITDA on Capital Expenditures in the Shipping Industry

Yatin Bhagwat, Grand Valley State University, USA
Marinus DeBruine, Grand Valley State University, USA

Abstract: The shipping industry plays a key role in the global economy. It has changed dramatically in the last thirty years as regulatory and economic changes drove increased efficiencies, increased merger activity, and increased growth. Shipping firms make large investments in rolling and floating stock, and funding these investments is crucial to sustaining growth. This paper studies a firm’s earnings impact on capital expenditures in order to help understand a firm’s investment funding decisions. More specifically, this study provides insight into how a change in a firm’s operating performance impacts its capital investment decisions.

Keywords: capital expenditures, degree of earnings leverage, shipping industry

1. INTRODUCTION

In 2007 the global marine shipping industry – shipping both passengers and goods overseas – generated total revenues of $578.3 billion. According to a report by DataMonitor (2008), a leading business information firm specializing in industry analysis, the industry volume measured in million metric tons of cargo grew by a compounded annual growth rate (CAGR) of 4.6% between 2003 and 2007 to reach a total volume of 7.3 billion tons in 2007. The dry cargo segment was the largest segment of the industry accounting for 65% of the total industry volume, while the tanker cargo generated about 2.5 billion tons in 2007. According to estimates by DataMonitor the industry is expected to grow at a CAGR of 4.1% for the five year period 2007-2012. Five of the largest marine shipping companies account for about 15% of the market share. Asia-Pacific accounts for 36% of the volume followed by Europe at 25% and USA at 21.5%.

High barriers to entry due to high cost of vehicles together with increasing economies of scale affect competition in the industry. The industry structure is also affected by strict international governmental regulations and the cyclicality of demand. The bargaining power of customers is limited. For example in the case of India, whose imports of raw materials and export of finished goods have shown an insatiable appetite, about 75% of the marine shipping needs are met by foreign shippers. Shipbuilding in India has kept at a rowboat’s pace while the economy has been surging at jet-ski speeds. A major operating expense that has skyrocketed for shippers has been the cost of diesel fuel. The sharp rise in fuels costs has surpassed all hedging scenarios and the hence gains from hedging have been contained the damage to limited extents. Other suppliers to the industry are port operators. Congestion at ports has resulted in higher fees that have added to the hardships due to rising energy costs. However, the limited buyer power has allowed the industry to transfer most of those hardships to its customers and remain profitable in recent years.

As international trade tends to be cyclical, demand for shipping services is also cyclical as reflected by volatile freight rates. The shipping industry is generally characterized by a continuous demand-supply imbalance. Demand is affected by volume of trade, shifting global
trade patterns, regional disparities, and regulatory interventions. Supply follows demand. The stock of vessels can be influenced by changes in scrapping of old vessels and changes in the stream of new builds. The capital investment in building of new vessels also follows cyclical patterns. Prices of ships are affected by variable costs and timing of ship purchase/sale is a critical determinant of shipper’s profitability. In 2004 the average age of the world fleet was 12.3 years with almost 27% of the fleet older than 20 years. General cargo vessels had an average age of 17.5 years then, and container ships were just 9.4 years old on an average. Fleet efficiency and operating costs are heavily affected by fleet age.

World trade is expected to gather steam under the aegis of WTO and regional free trade agreements. According to IBM Business Consulting Services, the shipping industry will face varied challenges in the next few years. Poor port productivity exacerbated by inland bottle necks makes it increasingly difficult to meet customers’ needs for reliability at low prices. Optimization of asset use is slowed by organized labor restrictions in some key countries. Trade flows are becoming more imbalanced. More and more containers are being sent back to their origins empty resulting in increased repositioning costs as companies struggle to maintain effective utilization of containers. Due to lack of discipline last minute changes in booking shipments, while they boost short term revenues, cost container shipping lines efficiency. Customers are also consolidating their shipping needs and aim to move to 4 ocean carriers from 8 or 9 to the extent possible. Improving container utilization by increasing load factors is a constant endeavor. Hence shipping firms are making judicious investments in new assets to guarantee reliability and efficiency to their customers and earn superior returns on their investments. It is beyond doubt that vessel procurement costs, timing of deliveries, and the mix of vessels acquired are important determinants of sustainable profits for marine shipping companies. Combinations of capital and operating leases, partial coverage from shipbuilders, mezzanine financing, and equity financing are used by shipping companies to acquire expand their fleets.

Based upon the theorems developed by Modigliani and Miller (1958; henceforth known as M&M), in perfect capital markets a firm’s value is independent of the source of capital and the debt-equity mix. Fisher’s(1930) separation theorem argues that investment and financing decisions are separate from each other. An alternative view, based upon the assumption that internal and external sources of capital are not perfect substitutes, postulates that capital investments depend upon financial factors. The study measures and evaluates the concomitance of operating earnings growth and capital expenditure growth for firms in the marine shipping industry. It begins with a brief literature review and is followed by a section on the theoretical model and hypothesis development. The results section includes a comparison of shipping industry data, performs statistical tests and discusses the results.

2. LITERATURE REVIEW

Myers’ (1982) Static Trade-off theory argues that managers are viewed as trading off the tax savings from debt financing against costs of financial distress, specifically the agency costs generated by risky debt and the costs of liquidation. The costs of financial distress are most serious for firms with valuable intangible assets in the form of growth opportunities and growth options that rely heavily on Research and Development and Advertising. Hence, such firms are expected to borrow less. A pharmaceutical firm is expected to borrow less than a chemical firm even if the two firms’ business risk (as measured by asset Beta) is identical. In contrast, mature
firms holding mostly tangible assets should borrow more. Long and Malitz (1985) confirm the predicted inverse relationship between proxies for intangible assets and financial leverage. This implies that in growth oriented firms internal generation of funds is the driving and perpetuating force for capital expenditures that generates higher revenues.

Titman and Wessels (1988) find that debt ratios are negatively correlated to marketing and selling expenses, and R&D expenses. These expenses are obvious proxies for intangible assets. The mature firms may have a tendency to borrow more, as the deadweight costs of financial distress are likely to be lower. However, the capacity to borrow is linked to the value of equity in the firm. The increase in debt of mature firms is thus linked to the earnings excluding the non-cash charges such as amortization and depreciation.

Gilchrist and Himmelberg (1995) find that capital investments for companies with limited access to capital markets are sensitive to fluctuations in cash flows. Cunha and Paisana (2004) find that financial factors affect capital investment decisions of companies plagued with informational asymmetry in capital markets. Bhagwat and DeBruine (2006) analyzed panel data to assess how companies in the oil and gas industry draw on their various financial resources (operating cash flows, liquid assets, and debt) when funding capital expenditures. They found that oil companies obtained more than half of their funding from internally generated cash flows.

Myers and Majluf (1984) observed that managers know more about their firms than outside investors do. They are reluctant to issue new stock when they believe their shares are undervalued. Investors understand that managers know more and that they try to “time” new stock issues. Investors, therefore, interpret the decision to issue new stock as bad news and firms, which issue equity, can do so only at a discount. Faced with the reality of this discount, firms adopt a pecking order in raising capital. They first use all the available internally generated sources of cash. Internal equity is better than external equity. A new security offering might mean that the firm has new profitable investment opportunities, but it also might suggest that management thinks that the firm’s earnings will be lower than previously expected (that is management’s expectation of a shortfall in cash profits may be the real reason for the new offering). The establishment of the nexus between informational symmetry and the self-utility maximizing behavior of managers has resulted in the widely accepted pecking order theory.

Myers (1984) postulates in his “pecking order” theory that a firm has no well-defined target debt ratio by examining the effects of asymmetric information market disciplining factors. Myers states those highly profitable firms with limited investment opportunities work down to a low debt ratio. Firms whose investment opportunities outrun internally generated funds are driven to borrow more and more. Thus the investment opportunities are primarily financed by internal funds. The negative intra-industry correlation between profitability and leverage is explained by the pecking order theory since the least profitable firms in an industry will have less internal funds for new investment and will end up borrowing more. It is also likely that the least profitable firm may have the least new investment opportunities.

Prior research suggests that operating earnings are a significant force driving new investment in advertising and research & development (Bhagwat and DeBruine, 2001, 2004). External sources of funds may be added to the internally generated pot of cash within limitations based upon the arguments made above. This paper presents the impact of operating earnings on capital investment in shipping firms and establishes the capital expenditures elasticity of their earnings. As a result, this study provides insight into how a change in a firm’s operating performance impacts its capital investment decisions.
3. CONCLUSION

This study developed and measured the CAPX elasticity of EBITDA (coined the degree of earnings leverage or DEL) using a cross-sectional regression model. The results obtained for the ten year period from 1997 through 2006 indicate that – on average – a 1.0% change in EBITDA results in a 0.5% change in CAPX investments for marine shipping firms – and even higher increases for firms in the railroad and trucking industries. This result is consistent with earlier reported findings that firms employing tangible assets are more likely to fund their CAPX investment from external sources.

This study further investigated whether firms in different shipping industries employ different CAPX sourcing strategies. Once the observations for trucking and marine shipping firms were partitioned to control for size differences, the results supported the first hypothesis that companies in different shipping industries having similar CAPX/EBITDA ratios have similar DEL estimates – consistent with having similar sourcing strategies. In addition, the results supported the second hypothesis that DELs decrease as firms increase in size. This does not necessarily imply that as firms grow larger they use fewer internally generated dollars to fund their capital investments as it may well be that smaller firms face more growth opportunities that in turn encourage them to spend more of their cash flows on capital expenditures and – proportionately – take on more debt than their larger counterparts.

4. REFERENCES


