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ANALYSIS OF M&A EFFECT ON THE LINER SHIPPING INDUSTRY

—A Case Study on M&A between Maersk Sea-Land and P&O Nedlloyd—

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1. INTRODUCTION

The global liner shipping industry has been faced with a negative evaluation by investors due to the recent economic slump and uncertain future prospects. Under these unfavorable conditions, unprofitable shipping lines in the industry will be expected to withdraw from the market as mergers and acquisitions (M&A) occur to rearrange the overall fleet of ships and personnel systems.

In business administration, mainly finance and accounting fields, the effects of M&A have been studied since the 1960's. Recently, a short-term analysis by CAR (Cumulative Average Residual) assessment has been carried out using short-period changes in stock price indexes based on M&A disclosure dates. However, in the shipping industry a long-term perspective is likely to be more reasonable to analyze the effects, since liner shipping companies implement M&A to improve efficiency in managing resources like ships and terminals and to strengthen market position. Nonetheless, there are few studies regarding M&A in the liner shipping industry, especially from the long-term viewpoint.

This study is, therefore, designed to fill this gap. It is a long-run and integrated analysis from various angles assessing M&A effects on the industry by considering the characteristics and purposes of M&A amongst liner shipping companies. These research aims are achieved through a case study of liner shipping companies evaluating M&A effects by focusing the analysis on three categories: changes in market power, management efficiency, and synergy effects.

This study is organized as followings: Section 1 outlines the purposes of this study and explains the research methods employed. Section 2 provides a definition of M&A. Section 3 aims to describe the trend of M&A in the liner shipping market. Section 4 aims to assess M&A effects by analyzing changes in market power, management performance, and synergy effects of Maersk Sea-Land after taking over P&O Nedlloyd. Lastly, Section 5 suggests implications of this study and directions for further studies.

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2. THEORETICAL CONSIDERATION OF M&A

2.1 Definition of M&A

M&A means taking over companies and is also used as a generic term for a group arrangement. Here, takeover of a company means that individual corporations are legally combined into one by changing the old group into a new one. On the other hand, buy-out literally means to buy parts of another corporation or the whole. M&A is a considerably difficult strategy, because it can be implemented by understanding not only the integration process and reorganization between two companies, but its effects on society and the overall economy. Therefore, there are numerous studies of integration in social science fields and humanities.

2.2 Expected Effects of M&A

The effects of M&A are typically divided into financial effects and strategic effects. Arbitrage trading has financial characteristics and means financial acquisition. That is, it targets gaining profits using the difference between the purchase price and the resale price. Synergy effect is created by an amalgamation of competence of two companies. For example, when an Internet company and a securities company jointly establish an Internet training firm using individual capabilities, they can expect that it will bring lots of synergy effects. In business administration and industrial organization, typically, it is expected that M&A will improve a market power. Market power means influence on product price, quantity and perceived quality in the market and greater control over the market or the opposing company to be acquired.

It is obvious that horizontal M&A has the advantage of scale economy. That is, it can cause an economy of scale in production or sales. Enterprises related can also expect an economy of scope through M&A. Economy of scale and economy of scope can be expected not only for sales, but for R&D, production and service.

Risk control targets forecasting risks in advance and establishes strategies for dealing with them. For example, in medicine and the medical supplies industry, M&A is frequently carried out to deal with global mega competition. Not only does M&A improve business competitiveness, but also enables corporations to manage risks effectively. Recently, corporate brands have high importance in the competition with competitors, but constructing brand values from the beginning requires lots of time and costs, and has effects on social factors. Since establishing brand value is so difficult to do, M&A is actively carried out among companies with high brand values. Therefore, M&A allows companies to internalize established brand values.

3. M&A TREND IN THE LINER SHIPPING MARKET

3.1 M&A Characteristics of the Liner Shipping Companies

M&A was carried out mainly by large shipping companies in the past. Since the turn of the century, however, various forms of M&A such as mergers or purchases between shipping companies and distribution companies, and between shipping companies and terminals have been carried out. The majority of M&A deals took place in 1998 and 1999, and from 2000 to 2002, the frequency was low. However, since 2003 its frequency has gradually increased, and in 2005 large-scale M&A deals were carried out.

M&A activity of the liner shipping companies has three characteristics. Firstly, M&A among large shipping firms enabled global management by securing the capital resources or IT technology and management technology. Secondly, large shipping companies expanded their market powers in trunk routes through M&A and alliances. Thirdly, because scales and internal resources of shipping companies got larger and it was possible for shipping companies to provide integrated distribution and IT services for their clients after M&A, they increased profits by attracting lots of shippers. To illustrate these M&A characteristics, five examples from the liner shipping industry are provided below.

3.2 M&A Examples of Major Liner Shipping Firms

1) APL buy-out by NOL (1997)

NOL [should these names be written out in the first instance?]is a representative shipping company of Singapore providing regular sailing tankers, bulks, and carrier services. After NOL took over the second largest container company of the United States, APL in November 1997, the total number of operating ships increased to 113 (including 76 containers). NOL was ranked sixteenth for the number of ships in the past, but became one of top five shipping companies in the world after buying APL.

2) M&A between P&O and Royal Nedlloyd (1997)

P&O is a large diversified company in addition to shipping business and Nedlloyd is a name company in the Netherlands. They jointly established a large shipping firm, 'P&O Nedlloyd' possessing 99 container ships through integration in January 1997. Through this M&A, P&O Nedlloyd became the world's second largest liner shipping company.

3) Sea-Land buy-out by Maersk (1999)

Maersk, a globally managed multiple business system, took over Sea-Land from CSX Corporation (Freight Railroad Company) at a cost of US$8 billion in July 1999. Before the takeover, Sea-Land generated US$3.9 billion in gross income and US$133 million in operating profits in 1998 by sailing 84 containers to 120 harbors in 80 countries. Maersk reduced costs and improved service quality by expanding shipping tonnage and sharing terminals and systems through the takeover of Sea-Land.

4) CP Ships takeover by Hapag Lloyd (2005)

In 1970, Hapag (Germany) changed its group name to TUI AG (a Germany group that is the largest traveling company in Europe) by integrating itself with NGL (North German Lloyd, German). TUI AG announced in 2005 that they would buy the business rights of CP Ships. TUI AG reorganized the distribution system of Hapag Lloyd that was their subsidiary company to manage distribution from 2004 to 2005. As a result, every business arm of Hapag Lloyd disappeared except for the container business by Hapag Lloyd Container Line and passenger ship business by Hapag Lloyd Cruises and they bought CP Ships in 2005.

5) Delmas buy-out by CMA CGM (2006)

CMA CGM is the biggest container company in France and the third largest one in the world. On September 5, 2005, CMA CGM signed the contract to buy Delmas that was a shipping subsidiary company of Conglomerate Bollpre Group in France. CMA CGM managed a sea transportation business using 76 routes in 216 harbors of 126 countries by 2006.

4. ANALYSIS OF THE MAERSKI SEA-LAND AND P&O NEDLLOYD M&A CASE

4.1 Background of the Takeover

On May 11, 2005, Maersk Sea-Land announced that they would take over P&O Nedlloyd, the world's third largest container company, by acquiring their shares. Maersk Sea-Land took over P&O Nedlloyd by paying a 40.6 percent premium (based upon the dividend date of May 9), and paying 57 euros of the takeover price per stock and 2.3 billion euros of the total purchase price through negotiations.

After the takeover, Maersk Sea-Land became the world's largest liner shipping company covering 19 percent of the world container tonnage by possessing 549 container ships and handling 1.5 million TEU. It changed its group name to "Maersk Line". Maersk Sea-Land took it over in order to secure market power in the severe liner market, to enhance its global network, to deal with changes in the market, to strengthen management efficiency, to secure exclusive terminals and to construct a port network.

4.2 Analysis of Effects of Maersk Sea-Land Takeover of P&O Nedlloyd

1) Assessment of market power

When announcing the M&A in May 2005, P&O Nedlloyd was the world's third largest company with 145 container ships, handling 460 t housand TEU of container volume and having a 8.1% worldwide market share. At the time of the takeover Maersk Sea-Land was the world's top container shipping company with 327 ships, handled 1.05 million TEU of container volume and had a 12.3% worldwide market share. After the takeover, Maersk Sea-Land could occupy twice the market share than the world's second largest shipping corporation MSC (8.1%), by handling a total of 1.2 million TEU of container volume and increasing its market share by 20.4%. However, Maersk Line's market share gradually decreased due to aggressive inducement activities and fleet expansion of competitors like MSC and CMA-CGM and they failed in recovering the market share lost due to inefficient

Table 1 Market Share of Maersk Line

Date	Shipping Corporation	NO. of Ships	TEU capacity	Market share (%)
2005Y 5M	Maersk Sea-Land	327	1,051,350	12.3
	P&O Nedlloyd	145	464,769	8.1
Sum of both corporation before M&A		472	1,516,119	20.4
2006Y 1M	Maersk Line	516	1,541,411	19.2
2007Y 1M		505	1,623,701	17.4
2008Y 1M		506	1,768,278	16.9
2009Y 1M		499	1,915,563	15.7
2010Y 4M		-	2,048,120	14.7

management of fleets.

In April 2010, their market share recorded 14.7% and it decreased by 5% compared to the initial share when they took over it. Because they didn't accurately predict the market trend before the

Table 2 Management Efficiency of Maersk Line

			2003	2004	2005	2006	2007	2008	2009
Liquidity Analysis	Current Ratio	Maersk Sea-Land	1.51	1.54	1.35	1.49	1.32	0.99	0.93
		P&O Nedlloyd	1.47	1.39					
Asset Management Analysis	Total Asset Turnover	Maersk Sea-Land	0.96	0.88	0.73	0.83	0.85	0.91	0.75
		P&O Nedlloyd	1.10	1.42					
	Fixed Asset Turnover	Maersk Sea-Land	1.38	1.42	1.02	1.18	1.19	1.12	0.91
		P&O Nedlloyd	1.54	2.82					
Profitability Analysis	Profit Margins on Sales	Maersk Sea-Land	13.22	17.64	9.63	6.22	6.68	5.66	(2.11)
		P&O Nedlloyd	1.21	3.36					
	ROA	Maersk Sea-Land	12.75	14.06	7.46	4.72	5.07	5.13	(1.97)
		P&O Nedlloyd	1.65	7.40					
	ROE	Maersk Sea-Land	24.87	24.87	17.18	10.84	11.33	11.11	(4.28)
		P&O Nedlloyd	2.17	15.1					
	EPS	Maersk Sea-Land	5044	6841	4883	3781	4328	4112	(1674)
		P&O Nedlloyd	23.4	41					

* ROA is return on assets, ROE is return on equity, EPS is earning per share. * () means deficit

takeover and, subsequently, re-arranged fleets inefficiently after that, they lost numerous clients to competitors and this worsened profitability (see Table 1).

2) Assessment of management efficiency

In this study, management efficiency was assessed based upon liquidity, asset management, and profitability. The liquidity ratio initially indicated that liquidity was favorable, recording more than 1 by 2007 after the takeover, but since 2008, has fallen to less than 1. Thus, there was a problem with short-term solvency. Also, Maersk Line's asset management recorded -0.11 times in total asset turnover and -0.22 times in fixed asset turnover after the takeover. It means that they failed to increase sales because of the increase in inefficient management of assets after the takeover. Also, when analyzing profitability according to the four categories of: profit margins on sales; ROA, ROE and EPS; and, profit margins on sales, ROA and ROE declined by 7.4%, 6% and 12%, respectively. It means that the market value of the company considerably decreased with the reduction of profitability after the takeover (see Table 2).

3) An analysis of synergy effects

In this study, tools to analyze synergy effects were based on the prediction equation used in the Devos and Kadapakkam (2009) study. Analysis methods of synergy effects developed by Devos and Kadapakkam are based on the extraction of total synergy effects after determining Operating Synergies and Financial Synergies.

(1) An analysis of synergy effects

Operating Synergy improves production efficiency and increases corporate values through M&A. Especially, M&A brings considerable merits when the target company possesses complementary resources. The company is also able to create corporate values since M&A increases market power. That is, financial synergy generates tax shields.

$$\text{Operating Synergy} = \{S \times OM \times (1 - Yavg)\} - \{INVEST\}$$

S: sales

OM: operating margin

Tavg: corporation tax

INVEST: investment expenditure of net fixed assets and net operating assets, excluding depreciation

$$\text{Financial Synergy} = \{DEBT \times R \times Tang\}$$

DEBT: long-term debt

R: the five-year constant maturity Treasury bond yield

Tavg: corporation tax

Therefore, total operating Synergy effects is next formula.

$$\text{Total CCF} = [\{S \times OM \times (1\text{-}Tavg)\text{-}\{INVEST\}\}] + [DEBT \times R \times Tang]$$

But the above formula does not consider the external environment, since it the analysis is based on the internal indices of the company. Values of assets change according to market conditions like recessionary pressures, boom cycles, and the price index. Asset value should be, therefore, assessed by first comprehending the market conditions. When applying a relational expression to inflation, risk and risk free rate by considering the current values of assets, synergy effects are assumed as represented in the following formula.

$$PV(CCF) = \Sigma\left[CCFt / \left(1 + K\right)^{t}\right] + \left[\{CCF_t \times (1+1)\} / \left\{(K-1) \times \left(1+K\right)^{t}\right\}\right]$$

t: ranges from 1 to n, and n is the year of the last available forecast

I: inflation

K: the cost of capital estimated using the asset beta, a market risk premium of 7%, and the yield on the ten-year Treasury bond as the risk-free rate

Therefore, analysis of synergy effects of two merged companies is defined as follows:

$$\text{Total Synergy} = PV(CCF)_{\text{Post-merger,A+T}} - \left[PV(CCF)_{\text{Pre-merger,A}} + PV(CCF)_{\text{Pre-merger,T}}\right]$$

(2) An analysis of synergy effects

Recently, the increase in asset values and fluctuation in the risk-free interest rate due to rapid economic changes have introduced lots synergy effects in the market. When analyzing synergy effects on the current values of Maersk Line, zero effects are assumed until 5 years after the M&A. Operating synergies to assess management efficiency recorded surprisingly amounted to -\$6,686 million in the first year of the takeover in 2005. Also in 2006, 2007, 2008 and 2009, it recorded respectively -\$2,790million, -\$2,042million, -\$2,206 million and -\$2,206 million. These figures show that the operating synergy effect improved somewhat in 2007, but it declined again, since the market status got worse and Maersk Line's competitive power was reduced from 2008. Total synergy recorded -\$6,304 million (2005), -\$2,362 million (2006), -\$1,766 million (2007), -\$2,153 million (2008) and

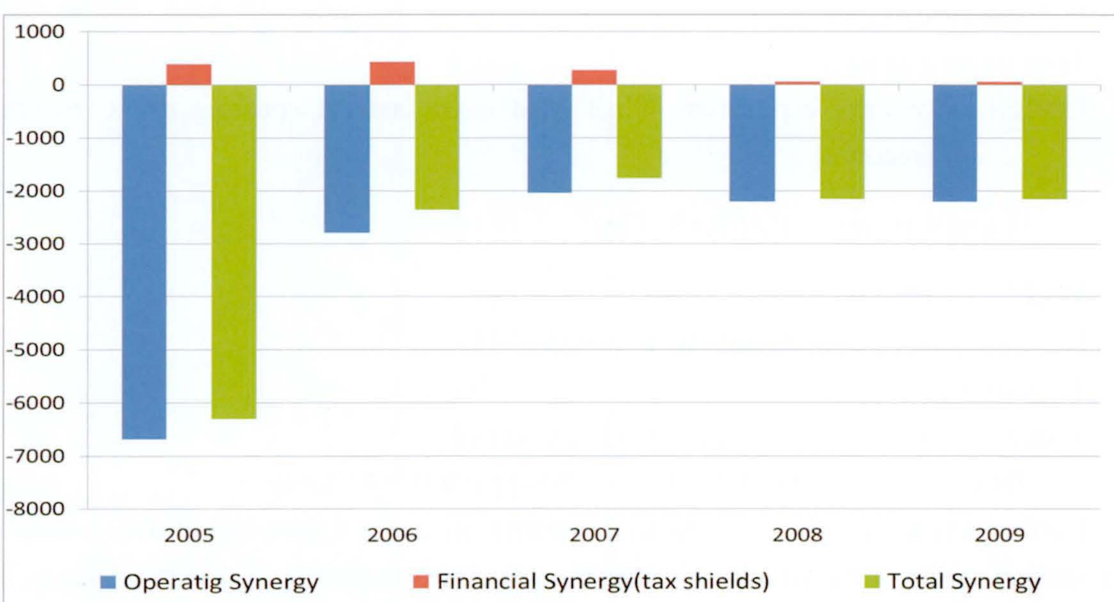

Fig. 1 Synergy Effects of Maersk Line

Table 3 Synergy Effects of Maersk Line

	Operating CCF	Financial CCF	Total CCF	Operating Synergy Effects	Financial Synergy Effects	Total Synergy Effects
Sum of Maersk Sea-Land P&O Nedlloyd の (2004)	3105.2	150.3	3121.8	-	-	-
Maersk Line (2005)	-3581.1	532.7	-3048.4	-6686.3	382.4	-6303.9
Maersk Line (2006)	315.0	579.0	894.0	-2790.3	428.7	-2361.6
Maersk Line (2007)	1063.6	426.1	1489.7	-2041.6	275.8	-1765.8
Maersk Line (2008)	899.6	202.9	1102.5	-2205.6	52.6	-2153.0
Maersk Line (2009)	899.8	204.3	1104.1	-2205.5	53.9	-2151.6

* Unit is US million dollars

-$2,152 million (2009). Therefore, it seems that there were no positive synergy effects caused by the M&A. These low figures resulted from financial burden due to impractical investment and inefficient operation. But a closer look reveals that there were financial synergy effects as the tax shield increased by $239 million on the average by managing debt after the takeover (see Table 3).

4) Reasons of low takeover effects of Maersk Line

Maersk Line did not get positive effects through the takeover for three principal reasons. Firstly, because Maersk Line took over the company without predicting the future market trend accurately, they couldn't create positive effects of M&A in the global economic slump after the takeover. Therefore, the timing of the takeover was unfortunate. Secondly, they invested excessive money in the takeover. Maersk Line offered a 40 percent premium per stock and payed 2.3 billion euro for the company. However, Maersk Line subsequently suffered from a lack of funds from 2005 after the takeover. This had negative effects on their management of fleets. Thirdly, they lacked in capabilities to manage the large new group created by M&A.

One of the effects that Maersk Line expected through M&A was providing more improved service for their clients by introducing new IT management systems that would allow them to control expanded terminals and fleets effectively. But since they were not prepared enough, the attempt to introduce the new IT system caused confusion after the takeover and led to a serious customer breakaway.

5. CONCLUSION

This study shows that M&A can create positive effects in the liner shipping business by understanding and analyzing market trends accurately. Also, it implies that for successful M&A, companies need to choose the rivals to acquire that display expected effects like market power and economy of scale to the maximum. M&A is a high-risk strategy that influences the future of individual companies and entire sectors of the economy. Thus, companies have to consider M&A strategies very carefully by analyzing expected effects and risk factors and thoroughly managing the whole processes after the takeover.

The significance of this study is found in the way that it verifies motives and purposes of the takeover by Maersk Line and suggests a methodology for further studies of M&A effects by analyzing and describing the results of M&A from various angles. Especially, synergy effects in this study were assessed by considering characteristics of the liner shipping industry and using long-term data (i.e., 5 years). These results, therefore, will be used for M&A research of diverse industries and companies to assess synergy effects from a long-term perspective in the future.

In this study, however, the M&A effects were analyzed based on a single case study, and M&A characteristics of the whole industry. Therefore, the effects of M&A are not obviously verified by the present study since there is still a lack of M&A cases in the liner shipping industry and it is difficult to get sufficient data. Thus, it is considered that not only a long-term perspective, but a short-term perspective in analyzing synergy effects of takeovers should be used for making future studies more reliable. Also, this study does not examine integration effects or conflicts of human resources in a merged group, because it is only focused on an analysis of quantitative performance. Clearly, these aspects of M&A deserve to be researched in depth in future studies.

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