

ERASMUS MUNDUS MSc PROGRAMME

COASTAL AND MARINE ENGINEERING AND MANAGEMENT
CoMEM

AN ANALYSIS OF INDEX-LINKED CONTRACT AS A SOLUTION TO SHIPPERS – CARRIERS CONTRACTUAL ISSUES IN CONTAINER LINER TRADE

City University London
26 June 2013

Fitriani Kusuma Dewi
4192087 (TU Delft)
120038888 (City University London)

The Erasmus Mundus MSc Coastal and Marine Engineering and Management is an integrated programme organized by five European partner institutions, coordinated by Delft University of Technology (TU Delft). The joint study programme of 120 ECTS credits (two years full-time) has been obtained at three of the five CoMEM partner institutions:

- Norges Teknisk- Naturvitenskapelige Universitet (NTNU) Trondheim, Norway
- Technische Universiteit (TU) Delft, The Netherlands
- City University London, Great Britain
- Universitat Politècnica de Catalunya (UPC), Barcelona, Spain
- University of Southampton, Southampton, Great Britain

The first year consists of the first and second semesters of 30 ECTS each, spent at NTNU, Trondheim and Delft University of Technology respectively.

The second year allows for specialization in three subjects and during the third semester courses are taken with a focus on advanced topics in the selected area of specialization:

- Engineering
- Management
- Environment

In the fourth and final semester an MSc project and thesis have to be completed.

The two year CoMEM programme leads to three officially recognized MSc diploma certificates. These will be issued by the three universities which have been attended by the student. The transcripts issued with the MSc Diploma Certificate of each university include grades/marks for each subject. A complete overview of subjects and ECTS credits is included in the Diploma Supplement, as received from the CoMEM coordinating university, Delft University of Technology (TU Delft).

Information regarding the CoMEM programme can be obtained from the programme coordinator and director

Prof. Dr. Ir. Marcel J.F. Stive
Delft University of Technology
Faculty of Civil Engineering and geosciences
P.O. Box 5048
2600 GA Delft
The Netherlands

School of Engineering and Mathematical Sciences

**An Analysis of Index-Linked Contract as a Solution to
Shippers – Carriers Contractual Issues in Container
Liner Trade**

by

Fitriani Kusuma Dewi

A Dissertation Submitted
in Partial Fulfilment of the
Requirements for the Degree

MSc in Maritime Operation and Management

Supervisor : Prof. John Hoar

London, 26 June 2013

Project Title: An Analysis of Index-Linked Contract as a Solution to
Shippers – Carriers Contractual Issues in Container Liner Trade

Student : Fitriani Kusuma Dewi

Supervisor : Prof. John Hoar

Submission Date : 26 June 2013

ABSTRACT

Containerization has emerged as the favourable method in ocean transport as it is able to transport cargoes worldwide with low cost. Liner service is the concept which develops as the concept that provides scheduled transport service. At the latter development, it also provides intermodal service which combine ocean and inland transportation. Shippers and carriers, as two main stakeholders in container shipping commonly engage in service contract with agreed price and volume. However, this arrangement is vulnerable to contract default due to the fluctuation of spot freight rate which challenge the commitment of both parties and their ingenuity to avoid loss and/or gain profit from the situation.

Index-Linked Contract (ILC) is concept that is introduced as one of alternatives in conducting service contract between shippers and carriers. With this concept, the contract price is adjusted by agreed indices and mechanism instead of fixed. This dissertation is focusing on the perception and future development of ILC form shippers and carriers point of view. The study objectives are met by conducting extensive literature review as well as gathering empirical data. Qualitative method is applied in this research by undertaking survey to companies which represents targeted group. The survey is conducted by interviewing key personnel in respective companies regarding the study objectives.

Based on the findings, it is found that the concept is flexible and has diverse method to be applied based on the intended outcome, one of which is to be coupled with hedging tools to obtain predictable rates. However, as the concept is still considerably new, many shippers and liner operators are still hesitating in implementing the concept. Although it cannot solve current contractual problem completely, ILC can be perceived as alternative in contracting in liner container shipping.

Finally, it is suggested to conduct more researches in the impact of commodity values specific commodities and trade routes with the implementation of ILC. Further investigation about the implication of regulation such as EU Commission in Competition and OSRA is equally important.

Key Words : shippers, carriers, container, liner, contract, indices

Acknowledgement

The author would like to express utmost appreciation to Prof. John Hoar for supervising the dissertation project and for the valuable comments, suggestions and continuous support during the dissertation research, and Prof. John Carlton as Program Director in Maritime Operation and Management course.

The author is also very grateful to be part of CoMEM program and would like to express gratitude to every personnel in NTNU, TU Delft and City University London for the support that has been given throughout the program.

Last but not least, the author would like to express gratitude to fellow CoMEM MOAM students for the support and friendship during the study, and to author's family for their continuous support.

Table of Content

ABSTRACT	ii
Acknowledgement	iv
Table of Content	v
List of Figures	vii
List of Tables	viii
List of Abbreviations	ix
CHAPTER 1 – INTRODUCTION	1
1.1 Background	1
1.2 Research Focus	2
1.3 Research Aim and Objectives.....	4
1.4 Value of Research	5
1.5 Report Outline	5
CHAPTER 2 LITERATURE REVIEW	7
2.1 History of Liner Service and Containerization	7
2.2 Contractual Relationship between Carriers and Shippers in Liner Service..	9
2.2.1 Liner Conference	9
2.2.2 Global Alliances	10
2.3 Liner Cost and Price Structure.....	11
2.3.1 Liner Cost	12
2.3.2 Liner Freight Rate	13
2.4 Issues Regarding Contractual Relationship and Price Structure	19
2.4.1 Price Transparency	19
2.4.2 Spot Freight Rate Volatility.....	20
2.5 Index-Linked Contract (ILC) as method to overcome issues between Shippers and Carriers	21
2.5.1 Indices	21
2.5.2 Methodology	24
2.6 Summary and Emerging Issues.....	25
CHAPTER 3 – RESEARCH METHODOLOGY	27
3.1 Research Strategy	27
3.2 Data Collection	30

3.2.1	Primary Data.....	30
3.2.2	Secondary Data	33
3.3	Framework for Data Analysis.....	33
3.4	Limitation and Potential Problems	34
CHAPTER 4 - FINDING PRESENTATION AND DISCUSSION.....		36
4.1	Primary Data Presentation.....	36
4.1.1	Findings from Company A	37
4.1.2	Findings from Company B	38
4.1.3	Findings from Company C	40
4.1.4	Findings from Company D	41
4.1.5	Findings from Company E	43
4.2	Secondary Data Presentation.....	44
4.3	Discussion.....	45
4.3.1	Problems with current contracts.....	46
4.3.2	Applicability of ILC.....	47
4.3.3	Future Application of ILC	51
CHAPTER 5 – CONCLUSION AND RECOMMENDATIONS.....		52
5.1	Summary of Findings and Conclusions.....	52
5.2	Research Limitations	55
5.3	Recommendations for Future Research	56
REFERENCE LIST		57
Appendix A – Questionnaire Cover Letter.....		61
Appendix B – Questionnaire Template		62

List of Figures

Figure 1 - <i>General Scheme of Maersk' Tariffs</i> (Maersk Line, 2013b)	14
Figure 2 - <i>Example of BAF Calculation from Maersk' Website</i> (Maersk Line, 2013b)	15
Figure 3 - <i>Framework for Data Analysis which includes Description, Analysis and Synthesis</i> (Biggam, 2011).....	34
Figure 4 - <i>Spot Rate Volatility as Indicated by Shanghai Containerized Freight Index from 2011 to 2013</i> (Shanghai Shipping Exchange, 2013c)	49
Figure 5 – <i>Summary of Diverse ILC Implementation</i> (Author, 2013)	54
Figure 6 <i>Summary of Findings - Shippers and Carriers Opinion</i> (Author, 2013).....	55

List of Tables

Table 1 - <i>Top 20 Commodities Transported by Container from North American Market year 1990 and 2005 (Wilson & Benson, 2009)</i>	8
Table 2 - <i>Example of Surcharges Levied to Shippers (Slack and Gouvernal, 2011)</i>	18
Table 3 - <i>Container Ship Time Charter Rates (US Dollars per 14-ton slot per day) (Review of Maritime Transport UNCTAD, 2012)</i>	21
Table 4 - <i>Several Methods for Quantitative and Qualitative Research (Silverman, 2010)</i>	28
Table 5 - <i>Top 20 Liner Companies based on Fleet Deployment (Alphaliner, 2013)</i>	31
Table 6 – <i>List and description of respondent companies</i>	37
Table 7 – <i>Summary of Indices for ILC (Author, 2013)</i>	53

List of Abbreviations

BAF	Bunker Adjustment Factor
CAF	Currency Adjustment Factor
CCFI	China Container Freight Index
CFRI	Container Freight Rate Insight
CFSA	Container Freight Swap Agreement
CPI	Consumer Price Index
CTS	Container Trade Statistics
ESC	European Shippers' Council
EU	European Union
FCL	Full Container Loads
FEU	Forty-equivalent Unit
FMC	Federal Maritime Commission
GDP	Gross Domestic Product
IHS	Information Handling Service
ILC	Index-Linked Contract
NVOCC	Non-Vessel Operating Common Carrier
OSRA	Ocean of Shipping Reform Act
PCC	Port Congestion Charge
ROI	Rate of Investment
SCFI	Shanghai Container Freight Index
SCM	Supply Chain Management
SSE	Shanghai Shipping Exchange
TEU	Twenty-equivalent Unit
THC	Terminal Handling Charge
TOC	Terminal Operations Conference
TSA	Trans-pacific Stabilization Agreement
UNCTAD	United Nation Conference of Trade and Development
WCI	World Container Index
WSC	World Shipping Council

CHAPTER 1 – INTRODUCTION

1.1 Background

Today, seaborne shipping has been the main preference by most merchants for international trade. The liner business emerged from late 19's century due to the technology advancement in ships which allow ship owners to run their vessels in a scheduled regime to a certain schedule and port calls (Stopford, 2009). Liner transportation usually involves containerization method and transport high value goods, such as vehicles, machinery and other manufactured goods. According to independent report by IHS Global Insight (2009), liner industry comprises many routes of deep sea, short sea and inland waterways worldwide which enable manufacturer and exporter to transport their goods worldwide with low cost.

Although nowadays liner service cannot be separated with containerization, these two are actually unrelated from their early emergence. Unlike the liner business, containerization only come in 1955 when it firstly introduced by Malcolm McLean as the concept of merging ocean transport by ship and inland transport by truck. It is claimed to change the world economy and trusted to be responsible in trade globalization (Levinson, 2006). This method of distributing cargoes in a unitized form and enabling transportation method in intermodal system with possible combination of rail, road, canal, and maritime transport makes the cost proportion of transport significantly lower due to the massive reduction of manpower cost (Branch, 2007). Containerization is highly automated with minimum cost, labour and complications. It revolutionized global trade because with the low cost of transportation, manufacturer can pretty much market their product worldwide and those who do not wish to go international have no choice other than follow the trend, because ultimately their local market will be invaded by global competitor (Levinson, 2006). General cargoes have been subject to containerization, but there is a raising trend to put dry bulk goods such as grains in container. The trend of intermodalism which generates highest revenue and great potential of growth is one of the factors that encourage containerization.

There are several stakeholders involves in the liner industry. The main parties are carriers as the party that operate vessels to carry the cargo and shippers as the

cargo owner. However, the definition of shippers has been changing in line with the development of supply chain system. A shipper may deal with their own cargoes and directly engage with carriers, but many of them contract with third party logistic provider or freight forwarder to manage their shipment. According to the European Shippers' Council (ESC) website, *"The job of a shipper is to ensure the delivery of the freight to their customer (whether internal or external) in the right condition, at the right time, at the right price, legally, and in the most efficient way that optimises the supply chain (i.e. balancing risk with costs the company is willing to bear)"* (ESC, 2013). As per the statement above, "legally" is also one of the important aspects in the relationship between shippers and carriers. As two opposing sides dealing in the same business, shippers and carriers often caught up in a situation where they seem to be against the other party. Therefore, the presence of association body is perceived to be beneficial to both shippers and carriers in order to advocate their needs. ESC is shippers' organization which represents its members with regard to European Union's legislative activity. On the other side, World Shipping Council (WSC) represents carriers and liner operators in the relation with policy makers and other stakeholders (WSC, 2013). Certain government also finds it necessary to establish bodies to regulate and supervise this industry. Several regulating bodies are being formed accordingly by regional authority to regulate the business practice in their jurisdiction. For United States of America, Federal Maritime Commission (FMC) is established as independent regulatory agency responsible for regulating ocean borne in benefit of exporters, importers and American consumers (FMC, 2013). For EU countries, the ocean freight business is regulated by EU Commission for Competition for the transport sector (European Commission, 2012)

1.2 Research Focus

The contractual relationship between shippers and carriers consist of factors, viz. stated price, time duration, volume of cargo, origin and destination, service expectation and remedies for breach of contract (Wood, et al., 2002). Price is often become the most crucial factor in the contract. Liner pricing imposed by carriers normally should cover the capital, operational, administration cost and profit margin. The price structure offered by liner companies in their contract usually consist of base rate which covers the ocean freight rate and surcharges, such as Terminal Handling Charges, Bunker Adjustment Factor, Currency Adjustment Factor, Port

Congestion Surcharges and other miscellaneous additional services (Slack & Gouvelal, 2011).

Shippers and carriers contract with fixed price. However, the spot freight rate which is the basis rate for vessels with no long-terms contract has always been fluctuated due to market competition and supply-demand mechanism (Stopford, 2009). Spot freight rate volatility has always been the issue which hinders shippers and carriers to engage in a long-term commitment. When the spot freight rate is low, shippers tend to deviate from their long-term commitment to transport their cargo with lower rate. Consequently, carriers suffer for lack of consumers and this condition enforce them to lower their rate even more which resulting rate fight between carriers. In contrast, when the spot freight rate is high, the shippers experience difficulties in finding capacity from carriers. This price volatility is then allegedly become the reason of the contract default between shippers and liner companies. The big deviation of contract price and spot market will challenge both shipper and liner companies' ingenuity to avoid the loss and gain more from the situation. This condition makes the cash flow become less predictable and this situation is not in favour to the service given to the consumer because both parties are more focused on hindering the risk rather than concentrating in providing better service.

In order to solve this matter, several approaches have been attempted, especially initiated by liner companies and financial institutions to establish better service contract that can accommodate the interest of both shippers and carriers. New form of contract has been introduced to the market, one of which is Index-Linked Contract. The concept of Index-Linked Contract (ILC) just been triggered in 2011, which also marked by the establishment of World Container Index by Drewry and Cleartrade at the same year (Traganida, 2011). However, the respond from shippers about ILC so far has been slow (Leach, 2012). Most shippers seems to be still in doubts because lack of information and simply because this is not a common practice. There are also concerns about the agreement of what indices to be used and the credibility of the indices for the representation of spot market. Therefore, the arrangement of ILCs as the future form of freight contract is still questionable.

1.3 Research Aim and Objectives

The aim of this research is to investigate the perception and future development of Index-Linked Contract for containerized liner shipment with regard to shippers and carriers outlook.

The objective of this research are elaborated in these 5 points :

- a. Explain historical and existing liner cost and pricing structure.

As a scheduled shipping service in particular port calls, liner companies has been subject to routine expense. In the connection with shippers, liners usually engage in specific term contract. Thus, the analysis of liner costing due to the expenses will be discussed and the pricing that borne to the shippers will be further analysed.

- b. Identify and analyse problems arise between shippers and carriers in liner service.

Shipping industry is closely related to commodities and hence very vulnerable with the dynamics of world economy. The annual Review of Maritime Transport by United Nation Conference of Trade and Development (UNCTAD) shows that the volatility especially occurred in 2008 where the freight rate is in relatively high position during the year and drop significantly by end of the year. This unfavourable condition remains in the following years.

The section will in particular discuss about the behaviour tendencies of shippers and carriers with regard to the rapid freight rate changes and other emerge issues.

- c. Investigate the methodology and purpose of Index – Linked Contract (ILC)

ILC as the tools to overcome freight rate volatility is still a new and unfamiliar subject by most of shipping business people. There are also debates about which index should be used and no clear information about how to retrieve those indices. Therefore, the method and basic principle of the application of the indices to the contract will be further discussed and analysed.

- d. Critically discuss views from shippers and carriers with regard to advantages and disadvantages of ILC.

Shippers and carriers are in the position of opposite each other in favour of freight rate ups and downs. However in terms of freight rate volatility, both parties are in the equally same risk. However, they are not necessarily receptive to the ILC concept. Their views and inputs will be discussed in this objective. There will be a formulation of advantages and disadvantages of ILC from their respective perception.

- e. Formulate conclusion and recommendation of further changes (if any) for ILC'S.

Conclusion and recommendation will be formulated after discussing findings from shippers and carriers point of view.

1.4 Value of Research

This topic is worth investigating because despite the above concerns, theoretically, ILC is a favourable solution for both carriers and shippers. However the resistant and ignorance phenomena by fair amounts of shippers are still to be the biggest challenge for the development and application of ILC. There is not yet a research which addressing the resisting factors which hindering the method to be widely applied. Therefore, qualitative research with the method of gathering data and information from the first-hand experiences is beneficial for the purpose of this study.

1.5 Report Outline

Chapter 1 Introduction

This chapter comprises of background information about the history of containerization and liner service, current development and brief discussion about the stakeholders that are involved in the business. Research focus is presented and

justified which leads to the identification of the overall research aims and individual research objectives.

Chapter 2 Literature Review

Relevant literatures and previous works will be discussed in this chapter. It comprises the history of liner service and containerization, discussing contractual relationship between shippers and carriers, explaining liner costing and pricing, investigating issues between shippers and carriers, overview of the emergence and methodology of Index-Linked Contract (ILC), and finally the elaborated of summary and emergence issues are presented which justified the need of empirical data on examining the perception of shippers and carriers towards ILC.

Chapter 3 Methodology

This chapter elaborates the research strategies that are applied to fulfil the overall research aim and objectives. The primary and secondary data needed for the research will be further presented, along with the execution plan of collecting the data, and framework of analysing the data and the justification of selecting the said method. Finally, limitation and potential problems in conducting the research will be elaborated.

Chapter 4 Findings Presentation and Discussion

Findings from primary and secondary data will be presented in this chapter. The findings are further analysed and discussed in relation to the problems of current contract and applicability of ILC which elaborates the advantages, disadvantages and future application of ILC from the respondents' point of view.

Chapter 5 Conclusions and Recommendations

Finally, the chapter will conclude the dissertation based on the literature review, data findings and analysis. The connection between overall aims and individual research objectives in relation with literature review and primary data gathering are discussed. After that, recommendations based on the conclusion will be presented, along with recommendations in relation of future research.

CHAPTER 2 LITERATURE REVIEW

2.1 History of Liner Service and Containerization

In general, there are two methods of sea transport, i.e. liner service and tramp. By definition, liner service is the method of carries goods at the sea within a given frequency of calls at specific ports with determined routes. This is as opposed with the tramp shipping which characterized by the non-scheduled ships that are freely wandering from port to port to be chartered to carry cargoes for a given voyage over a period of time, usually as per on the spot deal (Munari, 2012). The history of liner service dates back in 1870s when the ship technology developed and steamship technology was introduced. This new technology in shipping service enabled shipping provider to run their fleet in regular service to carry general cargo. However, this method is extremely labour intensive due to the requirement of huge amount of manpower in the loading and unloading process. The manpower safety, cargo handling and time also became serious issue because of the manual handling of cargo loading and unloading process in port (Stopford, 2009) ; (Levinson, 2006). This criticism required major restructuring in the general cargo carrier system, especially in liner industry.

The solution for this issue arrived in the form of containerization. In 1955, Malcolm McLean introduced the early concept of containerization (Levinson, 2006). In principle, containerization is a method of distributing general cargo in a unitized form. This way of doing business is impacting in cost and time saving in handling cargo at port and also revolutionized the transportation of general cargo. Another emerging benefit of containerization is it permits intermodal transport system to be developed providing a possible combination of rail, road, canal and maritime transport. However, prior to get the desired result, the investment in integrated transport system should be made in order to give smooth interface for other transportation mode, such as road and rail vehicles, to be included in the whole transport chain. Another investment to be made is cargo handling facilities, i.e. cranes and heavy equipment to ensure the smoothness in container handling in storage and/or to another mode. Owning dedicated container terminal can also bring additional benefits in resource management and minimize interface with third parties. Therefore, liner containerization requires heavy capital.

UNCTAD Statistics (2013) conveys that from time to time, the method of containerization has gain moderate but stable increase in popularity as the sea carrier method for general cargo. In their annual statistic of Merchant Fleet by type of ship, it is shown that in 2012, the proportion of container fleet is 12,91% and general cargo fleet is only 6,94%. The picture is quite the opposite 30 years ago where the proportion of container and cargo fleet is 1,76% and 16,51% respectively. In his study, Wilson (2009) have shown that more commodities are being containerized, especially high-value commodities such as electronic, machinery and manufactured goods. Shippers which commodities are easily spoiled such as consumable fruits and nuts also prefer containerisation to be the main shipping method.

Commodity	Rank	2005			Rank	1990		
		Tonnage (thousands)		All Tons		Tonnage (thousands)		
		Tons	%			Tons	%	
Mineral Fuel, Oil etc.; Bitumin Subst; Mineral Wax	1	858,856	20,889	2	1	530,072	3,941	1
Salt; Sulfur; Earth & Stone; Lime & Cement Plaster	2	104,333	18,299	18	3	46,311	7,143	15
Cereals	3	77,600	5,905	8	2	98,887	1,440	1
Iron & Steel	4	45,869	12,648	28	6	27,116	2,721	10
Ores, Slag and Ash	5	43,380	2,718	6	4	43,146	9,856	23
Organic Chemicals	6	32,491	8,096	25	10	13,995	4,396	31
Oil Seeds etc.; Misc Grain, Seed, Fruit, Plant etc.	7	29,899	7,915	26	7	18,072	1,693	9
Wood and Articles of Wood; Wood Charcoal	8	26,714	14,515	54	5	35,489	4,721	13
Inorg Chem; Prec & Rare-earth Met & Radioact Compd	9	25,070	6,526	26	8	17,165	2,219	13
Fertilizers	10	22,422	1,641	7	19	4,064	464	11
Wood Pulp etc.; Recovd (waste & scrap) Ppr & Pprbd	11	19,555	15,605	80	11	11,301	6,714	59
Nuclear Reactors, Boilers, Machinery etc.; Parts	12	15,600	13,140	84	15	6,819	5,275	77
Plastics and articles thereof	13	15,471	14,666	95	16	6,526	5,654	87
Vehicles, except Railway or Tramway, and parts etc..	14	15,310	8,490	55	12	9,469	3,810	40
Paper & Paperboard & Articles (inc papr pulp artl)	15	13,280	11,563	87	13	8,834	3,975	45
Articles of Iron or Steel	16	12,428	8,374	67	17	4,970	2,249	45
Food Industry Residues & Waste; Prep Animal Feed	17	11,380	4,816	42	9	15,262	1,371	9
Edible Fruit & Nuts; Citrus Fruit or Melon Peel	18	10,601	8,729	82	14	7,052	4,158	59
Furniture; Bedding etc.; Lamps nesoi etc.; prefab bd	19	10,590	10,404	98	nr	1,588	1,513	95
Electric Machinery etc.; Sound Equip; TV Equip; pts	20	8,413	7,824	93	nr	3,204	2,887	89

Table 1 - Top 20 Commodities Transported by Container from North American Market year 1990 and 2005 (Wilson & Benson, 2009)

2.2 Contractual Relationship between Carriers and Shippers in Liner Service

2.2.1 Liner Conference

By nature, liner service is a capital intensive industry as it required strong fleet and investment in infrastructure. This condition makes liner companies struggle in managing their capital in investment and operation. Moreover, seasonal cycles, economic crisis and trade imbalance add more factors in revenue volatility (Stopford, 2009). Above those reasons, competition among fellow liner companies makes the situation worse because this leads to rate war to win consumers. Therefore it is then make sense to make formal allies within liner companies to pool their resources with the purpose to control the price. This encourages the emergence of shipping conferences which consists numbers of ship owners to give their service in a given route on condition agreed by members (Branch, 2007). The main objectives of liner conference are to avoid wasteful competition among members by regulating loading, to have better organization to deal with outside competition, and to maintain a tariff by mutual agreement as stable as condition will permit.

Wood, et al (2002) investigates the relationship among conference members and shippers. The conference system does not mean that there are no competitions among their own members. Limited competition between conference members is allowed to find cargo. Shippers also have freedom to negotiate with individual carriers as well as with conference in one entity. This right to have independent action on rates and service items of conference members is protected under the Shipping Act of 1984. The formalization of agreement between shippers and liner conference are made by service contract. The basic requirements of the proper service contract are there must be a stated duration, minimum volume, rate, list of covered commodities, origin and destination, a defined service expectation, and remedies for breach of contract. These requirements will avert bias and increase chances of the service contract will be fulfilled with full commitment by both parties.

However, there are some cases that the signing of service contract does not make shippers exclusively use conference line service for the agreed route. To overcome this problem, some conference lines impose deferred rebate system which makes shippers always have money deposited at the account of conference line. The money is a rebate based on the percentage of what shipper has paid in a cargo over a specific period (normally three to six months). The fund is then kept by conference to be paid after the next shipment period with the condition shippers always use conference for all shipments. Of course by the time the payment is due, another rebate is imposed to shippers which required shippers to wait for another period of time to be paid.

Another strategy is to impose dual rate to shipper which were applied by conference calling at US ports. With this method, 10-15% of lower rate will be imposed by carriers with the condition some fixed portion of shippers cargo. This type of arrangements also called “loyalty” contract.

2.2.2 Global Alliances

Liner Conference meant to stabilize rate and service levels, and somehow provides advantage for shipowners to keep their vessel in operation and stabilize freight rate despite the rise and fall of the trade. It also allows the possibilities of investing more in new vessels and infrastructure (TSA, 2013).

However, liner conference keeps receiving fierce critics and has weakened due to the antitrust regulation in the U.S. and the fact that liner business has become more differentiated and competitive. One of the notable steps towards this criticism is the repeal of regulation 4056/86 by European Union which removed the liner industry's block exemption from article 81 and 82 of Treaty Rome. This change gives effect to liner service operating in and out of EU territory, and thus also gives major impact with the European – Far East trade route. The United States also banned liner conference system and as per today, only 10% of liner trades are based on conference system (Stopford, 2009) ; (Branch, 2007).

Due to the major pressure in regulation and global competition, carriers start to find other method to cooperate together in pooling their resources. Global alliance is then developed in lieu to liner conference that has weakened by the late 1980s (Stopford, 2009). In global alliances, carriers retain their individual identities but cooperate in the area of operations. The alliances manage joint service in inland service, sharing information and run integrated operation for major line routes. Strategic alliances enable firms to confront the challenges of uncertainty, allocation of resources and market penetration (Wood et al, 2001). By the year 2006, three major global alliances controlled approximately a quarter of world container tonnage (Stopford, 2009).

One of these alliances is TSA (Trans-pacific Stabilization Agreement). TSA is forum established by container shipping lines which shares common routes from U.S. to Asia. As an organization, TSA provides forum for discussion and joint market research which provides voluntary and non-binding guidelines rates and charges, exchange market information, discussion standardization for several services in relation to public interest, and represents its members in consultation with government regulating body and shippers' organization. One of the products of TSA that are publicly reported is TSA Revenue Index which comprises of the average revenue of 12 carriers per FEU of the total TSA trade route. Weighting factor is applied based on the cargo volume per month. The aim of publishing this index is to provide information about the long term market trends to shipping public. Later on, the index is also being utilized for ILC which will be furthered discussed in this dissertation.

2.3 Liner Cost and Price Structure

The underlying principle to understand the liner price is to investigate what are the expense components of liner service. Ideally, the freight rate should reflect freight cost. The actual relationship between liner cost and liner freight rate will be further discussed.

2.3.1 Liner Cost

Stopford (2009) examined the components that form liner cost. These components comprise from voyage cost and grouped by the elements of fixed and variable cost. The elements are structured as followed :

a. Cost of ship on the voyage

Cost structure of ship at sea voyage consists of capital cost, operational cost, bunker cost, and port cost. Capital cost of ship is subject to economic of scale because the capital cost per TEU for ships with bigger capacity is less than capital ship with small capacity. However there should be careful measurement of the extent for economic of scale because the biggest proportion of capital cost in a ship is in the engine room. Big ships might need special machinery requirements which at the end will not fulfil economic of scale principle.

Operating cost consist of crew, insurance, stores, maintenance and administration. Among these elements, only insurance and maintenance cost will increase along with the increase of ship size. Other elements do not increase very much as the ship gets bigger.

Ship characteristic comprise of technical ship design which determine the properties and at the end constitute the bunker cost borne by liner companies. The bigger the TEU ship capacity, fuel consumption per day also increases. However based on economic of scale, the bunker cost per TEU is decreasing. Accordingly, liner companies are more inclined to shift their fleet to bigger capacity. However, the economic scale also has certain limitations. For example, big vessel might not be able to berth in most ports because of the draught requirements and this will reduce route flexibility. However bunker unit price also depends on world oil price that cannot be controlled by company.

Port charges are also something that cannot be controlled because they are determined by respective port authority, and varied from one port to another. Typically, port charges are levied per tonnage. This arrangement is in favour to economic of scale principle, as the bigger ship will have less port charge/TEU.

b. Cost of Containers on Voyage

The cost of container consists of the price of container itself, maintenance of container and storage of unused container.

c. Administration Cost

Administrative cost of a liner service comprise of office expense, management team salary, overall maintenance and control of whole company assets. Basically all cost borne by activities in shore-based office is included in this department. This administration cost is not to be confused with administrative cost as part of operation cost, as the latter is administration cost on board.

d. Cargo handling and onward transport

The advance of containerization allows transshipment and intermodalism. These require capital cost and maintenance for equipment for container handling and infrastructure for intermodalism.

2.3.2 Liner Freight Rate

In a simple way, freight is total voyage cost plus profit. According to Stopford (2009), the movement of spot freight rate is determined by the power of supply and demand, where the supply is the amount of fleet and the demand is the cargo to be transported. There is competition between contract and spot market because this market price is following supply and demand change which can be heavily fluctuated, while liner rate are usually determined in a fixed price for a period of one to three years, depends on the agreement on service contract. Generally speaking, contract rates are less sensitive to changes in market demand and more sensitive to changes in cost than spot rates (Branch, 2007).

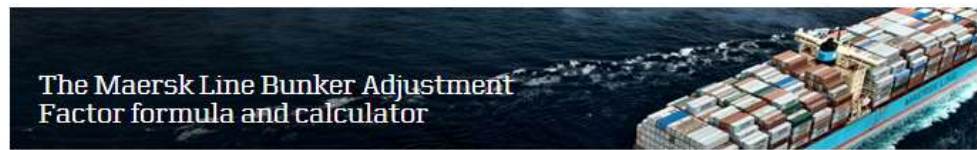
Nowadays, with the advancement of information technology, almost all of prominent liner carriers deal their business online. Online business makes the way of doing business easier for both shippers and carriers. Carriers can ask queries and quotation by filling online forms and most carriers also put the information about their rate and rules in their website. The example of

carrier that has their rates published in their company website is Maersk Line. Tariffs provided at Maersk Line website divided by scope, terms and rules. This also includes specific routes and various selections of services. The published rate of Maersk Line service, surcharge and fees contains of 114 different rates which consist of tariffs that are freight-base and local tariffs of origin and destination (Maersk Line, 2013a). From these different rates, the shippers could be charged with up to 44 mandatory tariffs and 62 optional charges. The attempt to simplify rates has been done for several years and has been through several phases. This is not an easy process because carriers still need to differentiate between operational and administrative cost. The first phase of this simplification is started in January 2013 by simplifying the freight rate and dividing them in 3 main tariffs, viz. basic ocean freight, bunker surcharges and emergency surcharges. By May 2013, the local surcharges will be based on 3 charges for each origin and destination. There will be separated charges for value-added and optional services, which depends on shippers' requirements and subject to local regulations (Maersk Line, 2013b).



Figure 1 - General Scheme of Maersk' Tariffs (Maersk Line, 2013b)

In lieu with the intention to make tariffs more transparent to the costumer, Maersk Line also includes the method of counting BAF (Bunker Adjustment Factor) and CAF (Currency Adjustment Factor), BAF simulation calculation can be accessed by inputting the country of origin, destination, and container type (dry or reefer). The result is BAF charge per TEU.



« Back

Your selections:

From any location below:

Argentina

Brazil, Paraguay, Uruguay.

To any location below:

Belgium

Austria (Atlantic), Belarus, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary (Atlantic), Iceland, Ireland, Latvia, Lithuania, Luxemburg, Netherlands, Norway, Poland, Slovakia, Sweden, Switzerland, United Kingdom, France (Atlantic), Russia (Baltic).

Container type:

Dry

Related links:

» Maersk Line website

» Bunkerworld website - data source for bunker prices used in ML BAF calculations

Standard Bunker Adjustment Factor (SBF):

Container type:	Current charges: (Apr)	Upcoming charges: (May)
20'dry container	USD 630	USD 600
40'dry container	USD 1,260	USD 1,200
40'high cube dry container	USD 1,260	USD 1,200
45'high cube dry container	USD 1,260	USD 1,200

USD

Change displayed currency?

Bunker Adjustment Factor (BAF):

Container type:	Current charges: (Apr)	Upcoming charges: (May)
20'dry container	USD 775	USD 740
40'dry container	USD 1,550	USD 1,480
40'high cube dry container	USD 1,550	USD 1,480
45'high cube dry container	USD 1,550	USD 1,480

USD

Change displayed currency?

Figure 2 - Example of BAF Calculation from Maersk' Website (Maersk Line, 2013b)

CAF applied primarily but not limited to for European trade routes. The CAF levels is updated in monthly basis and are charged in percentage from any of the following rates :

- Basic Ocean Freight
- Dangerous Cargo Surcharge
- Special Equipment Surcharge
- Congestion Charge
- Peak Season Surcharge
- Transport Arbitrary - Origin
- Transport Arbitrary – Destination
- Emergency Risk Surcharge
- Winter Surcharge
- Suez Transit Fee

15

Another surcharge is levied subject to routes and services required by customer.

Other perspective on liner tariffs can be retrieved from Evergreen Lines website which also provides their rates published online. The method of finding the tariff rules are by entering either the origin or destination of port and selecting the intended route. The rates are subject to various conditions which cover the mandatory and optional rates that can be costumed as per customers' requirements. In general, the tariffs are divided in 2 general groups, general tariff and route-related tariff. The trade tariffs consist of various rule lists which consist of Essential Terms Tariffs, Equipment Interchange Tariffs, and Bill of Lading Tariffs. Route-related tariffs consist of surcharges such as Bunker Adjustment Factor (BAF), Currency Adjustment CAF, Terminal Handling Charges (THC), and other optional tariffs which depend on the nature of the cargo and customer requirements.

From these two examples, it can be perceived that surcharge play a big role in the overall price paid by customer. A study about freight rates structure and role of surcharges has been performed by Slack and Gouvelal (2011) by collecting export rates from ports on the European Northern range. The containerized freight rate is charged per box and the price structure consist of these 2 main components :

a. Base rate

Base rate is the freight rate minus the surcharges. The result of the study shows that for some port destination, i.e. Korea, Japan, China, and Singapore, the base rates are negative. There also some inconsistency in base rate in connection to the physical destination distance, where rates to East Asia and South Asia are much lower than closer market. This observation advises that physical distance is not a determining factor in basic freight rate. Another important point is the surcharges actually play more important role total freight rate.

b. Surcharges

Carriers usually introduce surcharges in different structure as "add-ons". The most common surcharges that are globally levied by carriers are

Bunker Adjustment Factor (BAF), Currency Adjustment Factor (CAF), Terminal Handling Charges (THC), Port Congestion Charge (PCC) and other additional charges.

i. Bunker Adjustment Factor (BAF)

Bunker Adjustment Factor (BAF) is additional rate that levied by carriers to cover unexpected rise in bunker price. It was firstly introduced in 1974 as the result of oil crisis. Liner companies argued that the fluctuating nature of bunker price cannot be included in base rate. The enforcement of BAF is in lump sum, based on monthly calculation. There is a strong indication that variability of BAF, also depends on economic of scale where BAF/TEU is decreasing by the increase of ship size.

ii. Currency Adjustment Factor (CAF)

Shipping is a global business which involves parties from different part of the world that are using different currencies. Currency Adjustment Factor (CAF) is additional which covers currency rate fluctuation which resulting net revenue reduces. The study plots time series currency fluctuation of Euro against US Dollars. The statistic shown that US Dollar has fallen below its original rate set when Euro was firstly introduced in 2002. Hence, the CAF is levied. It should be noted that CAF variation is depends on currencies used and shipping routes.

iii. Terminal Handling Charges (THC)

Terminal Handling Charges (THC) is levied by local port authority, usually in local currency for container handling. This type of charge is considerably fixed under published rate or service contract between port authority and liner companies, and therefore is not subject to temporal fluctuation.

iv. Additional Surcharges

Additional surcharges are levied in the case of seasonal events, such as war, peak season, port congestion and holiday. These surcharges also applied based on specific route or when the ship is

passing through specific geographical feature which allegedly impose in additional cost. Optional services, such as storage goods, transshipment and customs clearance are sometimes included in this additional, as well as some cargoes that needs special handling method.

Example of additional surcharges and regions that imposed it can be seen from Table 2.

Examples of other surcharges.

Surcharge	levy/teu	Example
Congestion	€40	Callao
War risk	€15	Syria
Aden gulf	\$23.00	Middle East
Suez Canal transit	\$9.00	Middle East
Panama Canal transit	\$175.00	WCSA
Chassis Pool	\$60.00	US East Coast
Logistical imbalance	€15	Morocco
Peak season	\$150	India
Piracy	€20	East Africa
Water level	\$150.00	Montreal
Heavy weight	\$250/teu if over 10 metric tons	Australia
Winter surcharge	€50	Baltic

Table 2 - *Example of Surcharges Levied to Shippers (Slack and Gouvelal, 2011)*

Based on the study conducted by Slack and Gouvelal (2011), base rates represent only a proportion of the total charges paid by shippers. The carriers add surcharges that in several markets account for a very significant portion of total rates. Another notable fact is despite the FAK (Freight of All Kinds) policy which imposing the same base rate tariff per box for any commodities. However liner companies generally applying dual principle in their approach towards freight rates, i.e. commodities and consumer discrimination. Discrimination in commodities is enforced by carriers due to the fact that carriers are dealing with extensive range of shippers with various needs and these shippers have different scale of sensitivity in transport cost. Shippers with high—valued commodities generally less sensitive with transport rate. However it should be noted that this kind of shippers also requires more added value services. The second part is consumer discrimination. Large customer base, such as shippers association in specific commodities, can be offered special discount through service agreements (Wood, et al., 2002) ; (Stopford, 2009). Study about determinant of shipping rates with case study in North Atlantic has been performed by Brooks and Buttons (1996). Their findings in this study also conclude that

there is an influence on price based on type of customer being served. Customer variation provide different basis for settling price. For example, shippers in Europe placed greater importance in timely pick-up service, while their counterpart in North America think that transit time and on—time delivery is more important.

2.4 Issues Regarding Contractual Relationship and Price Structure

2.4.1 Price Transparency

Shippers and carriers relationship has been subject to various issues which in many ways impacted in their service towards their stakeholders. Issues that emerged between shippers and carriers mainly sourced to contractual relationship which rooting to transparency of freight rates arrangement. In their study, Slack and Gouveral (2011) conclude that there is growing evidence that many of the surcharges are not transparent and do not reflect the actual cost incurred by the carriers. Moreover, surcharge adds even more uncertainties in freight rate, because surcharges are changed with considerable frequency, a situation that adds uncertainty to shippers who are seeking to plan their supply chains. Shippers can obtain fixed base rate for period of 3 months to 1 year, but the surcharges can be changed in monthly based. This makes shippers experience difficulties in managing their supply chain budget for period more than 1 month.

Another serious barricade in this relationship is that there is raising suspicion that the BAF is bigger than the increase of Bunker Price. The study of BAF in Transatlantic and Europe – Far East trade by Meyrick and Associates (2008) conclude that Europe – North Atlantic conference was seriously overcharging. The estimation of BAF should have been US\$185/TEU whereas the conference was charging US\$607/TEU. Shippers' concerns regarding possibilities of carriers fixing the price also revealed in the annual survey organized by Containerization International (2012).

2.4.2 Spot Freight Rate Volatility

Another issues regarding shippers and carriers relationship is freight rate volatility due to global economic change. Stopford (2009) argued that supply and demand hold key place in freight rate movement. The demands i.e. world economy, seaborne commodity trades, average haul, random shocks and transport costs. The supplies are world fleet, fleet productivity, shipbuilding production, scrapping and losses and freight revenue. The problem is it is always hard to match supply and demand because as demands can change in a fast movement, it takes time for supply for catch up. For example should there a rising demand in cargo to be transported, carriers cannot instantly add their fleet capacity because new fleets require 1 to 2 years to be built.

The validity of this theory is proven in maritime industry during 2007-2008. In their Review of Maritime Transport 2008, UNCTAD highlight that in the year 2007, maritime transport has strong demand due to growth of world economy and the emerging of developing countries. The indication of demand increase in shipping volume stimulates the ship building industry. The rising prices for new ship buildings reflect this continuing high demand, as well as the surge in the price of steel. However the picture is quite the opposite in UNCTAD's report for the next year. In the year 2008, the growth in world economy as measured by Gross Domestic Product (GDP) slowed abruptly in the end of 2008 due to the influence of financial crisis in the US. Following with the downturn of world economy, the world trade also experienced sharp decline in 2008 which brings massive impact in the falling of freight rates (Table 3). This condition force tariff war among carriers and fierce competition with spot rates makes the situation even worse for them. The problem with the fixed rate from service agreement and fluctuation of spot freight rate is, when the spot rate decreases, carriers will risk in losing cargo, while if the rate increases, shippers will risk in losing capacity. This condition tests the commitment of both shippers and carriers in carry on their service agreement.

Similar view regarding freight rate volatility also given by Drewry, a shipping consultant based in London. In their White Paper of Index-Linked Container,

Drewry – World Container Index (2012) comprises 3 primary reasons which stimulate the increase of container freight volatility, i.e.

- Macro—economic and geopolitical uncertainty, as shown from the UNCTAD report. The global financial crisis massively impacting the shipping industry which brings the spot market downhill.
- Step change in ship size, as the implementation of economic of scale. Carriers tend to shift their fleet to bigger capacity in return to lower operational unit cost.
- Carrier market behaviour, which is related to the request for supply of new vessels.

Ship type and sailing speed (TEUs)	Yearly averages									
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Gearless										
200–299 (min 14 kn)	16.9	19.6	25.0	31.7	26.7	27.2	26.0	12.5	12.4	12.4
300–500 (min 15 kn)	15.1	17.5	21.7	28.3	21.7	22.3	20.0	8.8	9.9	12.8
Geared/gearless										
2 000–2 299 (min 22 kn)	4.9	9.8	13.8	16.4	10.5	11.7	10.0	2.7	4.8	6.3
2 300–3 400 (min 22.5 kn)	6.0	9.3	13.2	13.0	10.2	10.7	10.7	4.9	4.7	6.2
Geared										
200–299 (min 14 kn)	17.0	18.9	27.0	35.4	28.0	29.8	32.1	16.7	18.3	22.1
300–500 (min 15 kn)	13.4	15.6	22.2	28.8	22.0	21.3	21.4	9.8	11.7	15.4
600–799 (min 17 - 17.9 kn)	9.3	12.3	19.6	23.7	16.6	16.1	15.6	6.6	8.4	11.2
700–999 (min 18 kn)	9.1	12.1	18.4	22.0	16.7	16.9	15.4	6.0	8.5	11.5
800–999 (min 18 kn)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4.9	7.8	10.8
1 000–1 260 (min 18 kn)	6.9	11.6	19.1	22.6	14.3	13.7	12.2	4.0	5.9	8.7
1 261–1 350 (min 19 kn)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.7	4.9	8.1
1 600–1 999 (min 20 kn)	5.7	10.0	16.1	15.8	11.8	12.8	10.8	3.5	5.0	6.8

Table 3 - Container Ship Time Charter Rates (US Dollars per 14-ton slot per day) (Review of Maritime Transport UNCTAD, 2012)

2.5 Index-Linked Contract (ILC) as method to overcome issues between Shippers and Carriers

2.5.1 Indices

Freight rate is very confidential and only limited parties has access to the freight rate data. However, there are needs from scholar, industrialist and

analyst to find barometer of freight rate based on specific commodities and trade route. One of the examples of widely used shipping indices is provided by Baltic Exchange which published weighted index based on different trade routes which are reported by a panellist of broker in daily basis (Stopford, 2009).

Interest in index-linked contract has been raised, particularly after the launch of World Container Index in September 2011. The basis of WCI is 11 major east-west routes including backhaul as well as fronthaul trades (Porter, 2011a). The data are collected based on committed price reported by various anonymous panellists consists of freight forwarders / NVOCC (Non-Vessel Operating Common Carrier) based in Europe, North America and Asia. The WCI is the composite of those 11 routes which are respectively weighted by the volume percentage. The committed rates are reported in the basis of Forty Foot Equivalent Unit (FEU). The routes comprise the representation of major east – west trade routes, which include these locations: Far East, North Europe, Mediterranean, US West Coast, and US East Coast. The price includes various surcharges excluding documentation / bill of lading fee, booking fee and custom clearance fee. The application of THC are vary depends on the route. This index is designed specifically for index-linked contract (World Container Index, 2012).

Limited number of major shipping lines also proposed this new concept. Federal Maritime Commission, independent federal agency responsible for regulating the U.S. international ocean transportation system, encouraging ILC in cargo transport contract moving to or from US (Porter, 2012a). The basic idea of ILC is to incorporate index which represent the fluctuation of spot freight rate, plus any other agreed criteria. Eliminating the need to re-negotiation for new contract rate will reserve man hour, cut administrative cost and save time (King, 2012).

According to Drewry – WCI (2012), other indices that so far has been used as basis for ILC contracts are :

- Container Freight Rate Insight (CFRI)
The website of Drewry has provided ample information about the methodology of CFRI. This index represents multiple routes of transport rate based on spot rates provided by representative freight forwarders and NVOCC. CFRI consist of weekly and monthly/bi-weekly rate benchmark which represents Full Container Loads (FCL). The monthly/bi-weekly rate benchmark includes base ocean rates, THC for both origin and destination, BAF and all other surcharges, but excluding inland transport cost. Weekly rate benchmark is based on Hong Kong – Los Angeles route and includes base ocean rate, BAF and all other surcharges except THC at origin (Drewry, 2013).
- China Container Freight Index (CCFI)
CCFI is firstly introduced by Shanghai Shipping Exchange (SSE) in 1998 with the purpose as a barometer of shipping market and represent macro-economic of nationwide China trade. The data consist of China's nationwide container export that are retrieved from panellist consist of Liner Companies and Shippers. It should be noticed that CCFI rates consist of both spot and long-term rate (Shanghai Shipping Exchange, 2013a).
- Shanghai Container Freight Index (SCFI)
SCFI also established by SSE and consist of same panellist with CCFI. However, the rate basis consists of spot rate only without long term commitments. The geographical scope of SCFI is limited to Shanghai export only (Shanghai Shipping Exchange, 2013b).
- Transpacific Stabilization Agreement (TSA) Revenue Index
TSA is a forum of major carriers which operate in trans-pacific route (US west coast – far-east). The purpose of this forum is to stabilize the price service level among the forum member. TSA issue a monthly revenue index which represents the average revenue in U.S. Dollar from 12 of 15 TSA members per FEU. The index consists of base rates and all applicable non-ocean cost, such as THC, documentation fee, Panama/Suez canal, except fuel cost. The reported revenue includes both long-term contract and spot-term

rates from beneficial cargo owner and third party forwarders (TSA, 2013b).

- Bureau of Labour Statistic (Consumer Price Index)
According to U.S.' Bureau of Labour Statistics website (2013), "The Consumer Price Indexes (CPI) program produces monthly data on changes in the prices paid by urban consumers for a representative basket of goods and services."

The usage of Bureau of Labour Statistic as index in shipping contracts can be considered as a breakthrough as this is the only non-shipping index that has been used as the basis of a long-term contract. This index has been used by one major container lines for one of their ILC (Porter, 2012b).

- Container Trade Statistics (CTS)
CTS provides global aggregated volume statistics in TEU from and to the regions : Asia ; Australasia and Oceania; Indian Sub-Continental and Middle East ; North America ; South America and Central America ; Sub-Saharan Africa ; Europe ; and Intra Regional. The record data is provided by major liner companies as the combination of spot and contract rate and weighted by the trade volume.

The indices are compiled from both forwarder and cargo owner which comprise contract and spot rate. The rates are weighted based on trade volume (Container Trade Statistics, 2013).

2.5.2 Methodology

Based on the model developed by Drewry – WCI in their White Paper, there are two models of ILC, i.e. Time Lag and Real Time contracts. The first one is the arrangement of contract is adjusting future contract rate based on past index, while the latter is synchronizing the contract rate with real time index movement.

There are several mechanisms to adjust the price. The first one is dampeners, which provides barriers so that contract price will not be entirely

exposed to spot market. With this method, the contract price change will be smoothened relative to the movement of spot rate. The next one is triggers which provide the agreed thresholds of spot rate movements that will inflict contract rate adjustment. Another mechanism is floor and ceiling consist of agreed maximum and minimum price level in the contract so that both shippers and carriers can be protected to the extreme rise and fall of spot rate. These mechanisms can also be combined to achieve the desired risk management level.

In order to enter into agreement, both parties have to agree on the following contract terms :

- Scope of tariff to be index-linked
- Contract Period
- External Index
- Starting Rate
- Contract rate adjustment mechanism
- Carrier service commitment
- Shipper volume commitments

Contract period ideally to be set in long term, from one to three years. This is to allow both parties gain benefit from the ups and downs market cycle. The contract price will be negotiated on the basis of discounts to selected indices, with respect to the desired service level.

2.6 Summary and Emerging Issues

ILC claimed to be solution not only due to freight rate volatility, but also in relation to better consumer service and better relation because with this arrangement, shippers and carriers will no longer focusing their energy in anticipating price change and finally can concentrate on increase the level of service. However, the concept that seems give benefit for both carriers and shippers seems to receive slow reaction from shippers. Leach (2011) discovers that “the majority of indexed contracts are very complex and convoluted, and the industry appears reluctant to be exposed to spot markets.” Other opinion regarding ILC expresses that it is better to keep the

mechanism simple, rather than incorporate trigger mechanisms, price floors and ceilings, or benchmarks not directly linked to freight rates (Porter, 2012b).

Other issues that raised by shippers are non-familiarities with the new system, doubts regarding transparency of indices and accuracy of indices to be used. The price proportion to be index-linked also becomes major concerns due to the fact that surcharges such as BAF bring major influence in overall contract rate. According to Containerisation International annual survey (Containerisation International, 2012b), only 17% shippers stated that they have implemented ILC, while remaining 82% stated they have not started. Various reasons are disclosed by shippers. The first one is some shippers have “wait and see” attitude and need to be sure first that ILC is being confirmed as mature solution. Another US shipper stated that they have signed 3 years agreement with fixed price and the only variable price is bunker price, which is still acceptable. Further comments added index-linked agreement still following spot rates which is less stable than traditional market rate.

The main problem than needs to be resolved is to understand what the expectation from both carriers and shippers is. Van der Jagt (2004) argued that it is not stability that the shipper requires, but rather predictability and understanding of pricing and its component parts. However, apparently every shipper has their own requirements regarding how they behave towards liner price and contract arrangement. It is then interesting to discover what types of commodities or what kind of shippers that is suitable with this type of contract and how ILC can evolve to accommodate the needs.

CHAPTER 3 – RESEARCH METHODOLOGY

This chapter will elaborate the research methods which are applied to fulfil the objectives of this research. The Literature Review chapter has describes the theory to be used in the research based on published books, journals, publications and websites. However, there are deficiencies in past theories due to the fact that not all study objectives can be achieved from literature review. To overcome the problem, appropriate research method should be designed to fulfil all research aim and objectives within the limited time frame. Deciding an appropriate research methodology is very crucial to determine the quality of the research. There are plenty selection of research method which will be further described in later section. The determination of method to be used is based on the available time frame and the intended research outcome.

The subject of this research is Index-Linked Contract, which is concept that attracts several parties in shipping industry, particularly in container shipping. The direct stakeholders are shippers and carriers. Since one of the objectives is discussing the advantages and disadvantages of ILC from shippers and carriers perspective, it is important to establish direct contacts to gather related information from them. One method to be attempted is to gain perspective from shipping stakeholders association and organizations that keen on promoting the ILC concept.

3.1 Research Strategy

Research methodology is very important to determine the quality of desired outcome. It has to be carefully planned to suit the nature of the research and the intended outcomes. The foremost important thing to do is to determine whether the research will be based on qualitative or quantitative approach. Quantitative research is focusing on measurements and quantities of object, for example the proportion of a certain population which involving statistical analysis. On the other hand, qualitative research relying on an in-depth explanatory study of interpreting and understanding, which bring the “quality” response (Biggam, 2011). According to Creswell (2003), qualitative study is more appropriate to be applied for objects where the variables

and theory based are unknown. Morse (2011) stated that “Characteristics of a qualitative research problems are : (a) the concept is “immature” due to a conspicuous lack of theory and previous research ; (b) a notion that the available theory may be inaccurate, inappropriate, incorrect, or biased ; (c) a need exist to explore and describe the phenomena and to develop theory ; or (d) the nature of the phenomenon may not be suited to quantitative measures.”

ILC itself is a considerably new concept with limited number of carriers and shippers who are already applied it, therefore ‘immature’. The nature of this research is to understand why ILC is not yet gaining the widespread implementation despite the ideal theoretical concept by analysing comments from main stakeholders. Therefore, qualitative research is adopted for this purpose. According to Table 4, qualitative research can be conducted by interview with addressing open-ended question to small samples. In this case, the interview from small samples will be the main source of primary data.

Method	Methodology	
	Quantitative research	Qualitative research
Observation	Preliminary work, e.g. prior to framing questionnaire	Fundamental to understanding another culture
Textual analysis	Content analysis, i.e. counting in terms of researchers' categories	Understanding participants' categories
Interviews	Survey research': mainly fixed-choice questions to random samples	Open-ended' questions to small samples
Transcript	Used infrequently to check the accuracy of interview record	Used to understand how participants organize their talk and body movements.

Table 4 - *Several Methods for Quantitative and Qualitative Research* (Silverman, 2010)

The research will be based on both primary and secondary data. The difference between these two are: primary data will be based on raw data that are retrieved by the researcher herself, while secondary data are retrieved by existing sources such as reports, literatures, and statistics.

The primary data will consist of the information gap that cannot be found from the secondary data. Method of research can be done in several ways, i.e. case study, survey, experimental, historical, action research, grounded theory, and ethnographic research (Biggam, 2011). For this research, the primary data will be collected by survey to gain information from the first-hand experienced people regarding their view about Index-Linked Contract. There are two main groups of the sources, *viz.* carriers and shippers. To maintain the source reliability, the sources will be carefully chosen from large and credible companies. The observed carriers are chosen from the top 20 liners based on their fleet share which can be retrieved online from reputable resources, *inter alia* Alphaliner which provides ranking of liner companies based on the global market shares of fleet operator. Shippers are chosen from globally-known product manufacturer or freight forwarder, especially those who are already applying ILC which can be discovered from Lloyd's List articles and publications. Direct contacts are attempted to the personnel in each company who are mentioned in the Drewry – WCI White Paper for Index-Linked Contract. Professional – based social media such as LinkedIn are also utilized to find the specific contact person.

As describes at Table 4, Interview with open-ended questions to small samples will be chosen as a method of research to get the sense of understanding the experience from the first-hand practitioner. The first preference for data collection will be in the form of interviews to several liner companies and shippers / freight forwarders. It is preferable to have interviewee that directly dealing with contract negotiation and well informed with the concept of ILC. However, e-mail questionnaire and correspondence will be considered as alternative method due to the difficulties that may occur in undertaking face-to-face interview. Telephone interviews are also be conducted as per the request and mutual agreement of researcher and interviewee.

Researcher also attempt to make contact with European Shippers' Council (ESC) to gain perspective from shippers in general regarding their understanding about the concept and the plan of implementation (if any). Ideally, the samples should consist of parties that already apply ILC and those who have not to retrieve equal opinion from different parties. The companies involving in this study will be treated with confidentiality. For the purpose of the study, the identity of the sources will only be revealed based on the characteristic of the organization. To increase eagerness of

the interviewee to participate, the research finding will be offered to be informed directly to them.

The secondary data will be based on the literature review and analysis based on the update and analysis from shipping news portals and company websites. Another source are documents, such as public documents retrieved from federal agencies such as FMC and audio and visual materials such as public interview video and open discussion at professional forums.

3.2 Data Collection

3.2.1 Primary Data

Primary data is raw data that are retrieved by researcher herself to fill the information gap that cannot be found at the literature review. In this research, the primary data are intended to be gathered from companies which represent the general shipping industry. As already mentioned before, the first source group is carriers / liner companies. Table 5 provides the list of top 20 liner companies from Alphaliner website which was retrieved at 17 April 2013 and will be approached as respondent for the study. The position on the list is not subject to rapid movement because the calculation method is based on the fleet effectively deployed by each operator. Considering liner companies with specific schedule and routes, there will be no significant change in the fleet deployment over time.

Rank	Operator	Rank	Operator
1	APM-Maersk	11	OOCL
2	Mediterranean Shg Co	12	NYK Line
3	CMA CGM Group	13	Hamburg Sud Group
4	COSCO Container L.	14	Yang Ming Marine Transport Corp.
5	Evergreen Line	15	K Line
6	Hapag-Lloyd	16	PIL (Pacific Int. Line)
7	Hanjin Shipping	17	Zim
8	APL	18	Hyundai M.M
9	CSCCL	19	UASC
10	MOL	20	CSAV Group

Table 5 - Top 20 Liner Companies based on Fleet Deployment (Alphaliner, 2013)

E-mails with formal cover letters are being sent to the representative of the liner companies and shippers. Direct contact also attempted to specific personnel who are mentioned in news articles and public documents through phone calls, e-mails and LinkedIn Professional Groups. The primary data will be used to discover the following sub-topics :

- Problems arise between shippers and carriers in liner service with regard to current contractual concept.
- Views from shippers and carriers with regard advantages and disadvantages of ILC.
- Recommendation of further changes (if any) for ILC.

Literature review has discussed about the problems that had occurred in the past and also current issues in the shippers – carriers relationship. However, it will be interesting to compare the literature review with the findings which represents more current and updated perspective. The target groups for the survey are consist of four main groups :

Group A LINER OPERATORS

1. Already implement ILC
2. Not yet Implement ILC

Group B SHIPPERS / FREIGHT FORWARDERS

1. Already Implement ILC
2. Not yet Implement ILC

A set of questions list is prepared for the survey purpose. The questions are divided in 2 parts. The first part is intended to depict general view about shipper – liner contract, and the second part will be specifically discussing about ILC. The list of questions are as followed :

Part 1 General View about Shipper - Liner Contract

- What is your opinion about current price structure in shipper - liner contract agreement?
Please indicate whether the price structure is satisfactory (eg : transparent or reflecting the actual shipping cost, etc) or not (eg : too complicated, too many add-in cost, etc)
- What are the most common contractual issues between shippers and carriers?
eg : regarding price, time duration, volume of cargo, origin and destination, service expectation and breach of contract
- How was the abrupt drop of spot freight rate in late 2008 influence your long-term contractual relationship with your counterparty?
- How confidence are you with the representation of shipping indices towards spot freight rate? Please indicate the shipping indices that are closely related to your business.
Shipping indices, i.e. : Container Freight Rate Insight (CFRI), China Container Freight Index (CCFI), Shanghai Container Freight Index (SCFI), Transpacific Stabilization Agreement (TSA), etc.

Part 2 Index-Linked Contract

- How familiar is your organisation about the concept of Index-Linked Contract?
- Do you have plans to implement ILC in the future? / Will you continue in using ILC for alternative contract method in the future?
- How do you see ILC as alternative solution for shippers-carriers contractual issues?
- What are your major concerns about ILC?

- What is your suggestion for improvement of future ILC?

The survey link is also being posted to professional group related to shipping professionals at LinkedIn with the purpose to observe the reaction and comments from the group members. The groups are :

- World Container Index
- The Shipping Professional Network in London
- Shipping Network
- Shippers Voice Forum
- Global Liner, Ports and Freight Series
- Global Container Sea Freight
- Containerisation International

3.2.2 Secondary Data

Secondary data for this research are retrieved from qualitative sources which include commentary and opinion from various shippers, freight forwarders and carriers regarding ILC. To ensure the validity, secondary data only retrieved from reliable sources and created after the year 2010. The sources are :

- Public documents from WSC regarding Notice of Inquiry : Solicitation of Views on Requests to Develop and Release Container Filed with the FMC.
- Video interview from Terminal Operations Conference and Exhibition - TOC Container Supply Chain Europe June 2012 at Antwerp.
- News article from Lloyds List and Journal of Commerce.

3.3 Framework for Data Analysis

Both primary and secondary data are gathered with the intention to collect current perspective from shippers and carriers. All data are translated in the form of meaningful discussion and classified based on the specific topic in relation to

individual research objectives. According to Biggam (2011), there are 3 main steps in findings process, viz. :

- a) Description of primary and secondary data,
- b) Analysis and discussion regarding the findings with the means of grouping based on specific theme, and
- c) Synthesis, which involving comparing findings analysis with literature review.

This process is cyclic, which means the process can be summarised in the case the evaluation result has shown that the evaluation result has not yet depicted overall research objectives. The data from primary and secondary data will be compared with the literature review to produce critical analysis. The diagram can be seen in Figure 3.

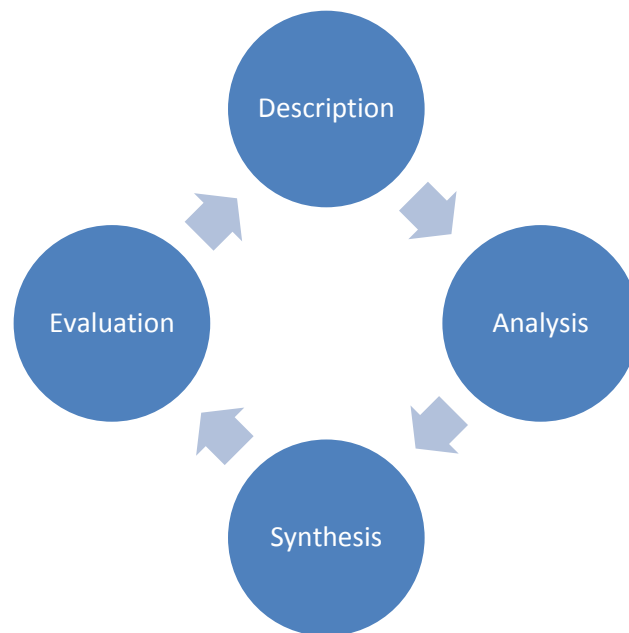


Figure 3 - Framework for Data Analysis which includes Description, Analysis and Synthesis (Biggam, 2011)

3.4 Limitation and Potential Problems

The research which conducted with qualitative methods has the criticism with regards to validity of the research approach and reliability of sources. Regarding

validity, questions may be raised regarding survey methods which relying on email correspondence and phone conversation instead of face to face interview. Time constrains, availability of interviewee and geographical location is the main justification of having this method. Another constrain is related to confidentiality of each company. Sharing information regarding ILC application can be regarded as revealing company strategies, which is avoided by most respondents. The solution for this is by not revealing the identity of companies involves in the study. However, there will be descriptive explanation for each organization that participating.

Another limitation is the risk of not having equal amount of respondent as planned in Section 3.2.1. This possible downfall could be covered by articles at shipping news portal that has been cited the comments and views from carriers representative regarding the implementation of ILC in their organisation. Questions may be raised regarding the possibilities of a bias news articles that may not represent the true meaning of what the person tries to convey. This problem can be resolved by only referring to a highly reputable news portal. Lloyds List and Journal of Commerce is the two shipping news portal that are used for secondary data in this research. The anonymous survey outcome from LinkedIn can raised questions about the validity of person who undertake the survey and make comments. However, the link of the survey is posted to a specific shipping group which members have to undertake verification from group administration to be accepted. Therefore, it can be concluded that although anonymous, the person undertake the survey can be considered accountable.

CHAPTER 4 - FINDING PRESENTATION AND DISCUSSION

In the previous chapter of this paper, it was mentioned that the main purpose of the study is to investigate the perception and future development of ILC from shippers and carriers outlook. Hence, in this chapter, results from interviews and correspondence as primary data will be presented. The respondents are chosen to represent all the relevant parties in relation to the application of ILC. The secondary data is utilized to find the information that cannot be fulfilled from the primary findings. In this report, secondary data is used to find the opinion of companies that cannot be contacted by the researcher, but these companies are believed to be able to give different perspective than the primary respondent. They are retrieved from qualitative data such as news articles which citing the opinion of related parties and interview published by TOC (Terminal Operations Conference) Exhibition.

The data will be utilised to identify problems arise between shippers and carriers in liner service. After that, the methodology and purpose of ILC (based on the experience of organizations which have implemented it) will be presented will lead to the discussion of views from shippers and carriers regarding advantages and disadvantages of ILC. Finally, based on the findings, conclusion and recommendation of further changes (if any) for ILC will be formulated.

4.1 Primary Data Presentation

As already mentioned in the previous section, the primary data is meant to be retrieved from survey with face to face interview and/or questionnaire method. Questionnaire has been sent to considerable amount of freight forwarders; however the respond has been really low. Survey link is also being posted to professional group on LinkedIn to get an idea of the familiarity about ILC concept in shipping practitioners. However this approach also receives very poor response. Nonetheless, limited amount of respond has been received by researcher by email and LinkedIn message which indicate the interest about the concept.

Correspondence has been conducted with 5 companies from the period of 1 to 28 May 2013, which consist of four shippers/NVOCC and one liner operators. For ethical reason, the name of each company will not be revealed. The list and description for each company are as stipulated at Table 6 below.

Name of Company	Description
Company A	Europe based global manufacturer company in household appliances and appliances for professional use.
Company B	U.S. based large global commodities trading company focusing on agriculture.
Company C	Europe based large global commodities trading company focusing on foods and beverages.
Company D	U.S. based non-vessel operating common carrier (NVOCC) and freight forwarder
Company E	Top 20 Global Container Line Operator

Table 6 – List and description of respondent companies

4.1.1 Findings from Company A

Company A regarded as one of the first pioneers in the application of Index Linked Contract. E-mail correspondence has been conducted with Company A's Vice President in Logistics regarding the application of ILC in the company. It is revealed that they implement one ILC in the Asia – Europe trade routes with the basis of Container Trade Statistics (CTS) Index with the duration of 2 years. CTS are chosen for the reason "it includes big shipper contract rates, and does not exhibit the volatility of the SCFI and CCFI."

The indexed rate is an all-in rate per TEU except THC. The rate is adjusted every three months and adjusted based on the average of last three month's index change. There is agreed ceiling and floor mechanism but no trigger which means the slightest change in index average will change the price.

Destination THC and inland haulage cost are negotiated separately on the annual basis. The considerations for negotiating these costs are “development in fuel costs, regular trucking in Europe, currency, and the overall market situation.”

In general, Company A has been pleased with the outcome of the implementation of ILC and the contract has been extended for another two years. The time-lag factor is not a problem because the intention of ILC application is not for hedging purpose nor they are interested to be exposed in the spot rate. What interests them is the change of index itself. However, they experience difficulties in applying the concept to other trade routes but it has been difficult. For example, the trade route between Asia and North America. This route is identified by the rates which ocean based rates and IPI (Inland Point Intermodal) are difficult to be separated. Ocean-based indices are not applicable for the IPI arrangements. There are also problems in the mutually agreed indices in other trade routes.

Regarding the application of ILC in the future, they believe that they will not entirely relying on ILC for contracting method. However they believe that ILC arrangement provides the contract basis which encourages more stable and predictable flows. Therefore, they recommend the use for ILC and believe that this concept will be more acceptable in the future.

4.1.2 Findings from Company B

Company B also regarded as one of the first companies that adopt Index-Linked Contract. Researcher has conducted e-mail correspondence and phone interview with the company's Head of Logistic.

The main problem with the current conventional contract method is that in long term contract arrangements, the price volatility brings negative impact to the relationship between carriers and shippers because in general, both parties are tempted to propose price change. According to the statement made by the company's SCM executive, “When rates drop due to supply/demand changes, shippers will ask for lower rates or carriers will offer

lower rates. When rates go up due to supply/demand changes, carriers will ask for rate increases or minimize cargo acceptance.” Thus, in general, the conventional contract in long-term duration is not being honoured by both parties.

Regarding the 2009 - 2010 financial crisis in relation to carriers – shippers’ relationship, Company B stated that the relationship issues has been emerged long before that. This condition has been occurred since the beginning of confidential contracting after the passage of OSRA act 1998 in the U.S. The most remarkable period is 2007 where the U.S. export has rose dramatically (hence, dramatic increase in demands but relatively stable supply) which brings effects in the carriers had all the power regarding price.

Regarding the application of ILC, Company B had committed a two-year period ILC for the route North Europe and to U.S. East Coast. The index choice is Drewry’s Container Freight Insight (CFRI) with the adjustment every six months. The method is time-lag basis which means the price is changed based on the change of indices that were reported for the previous six months. There were no additional instruments such as dampeners, triggers or floor and ceilings. The price components that were indexed are port to port cost only.

This contract is not renewed because the result is perceived to be not satisfying. The main problem is the adjustment were not represents the current spot market because indices choices which were published in the basis of two months in arrears. With the adjustment mirroring the previous 6-month indices, it means that the price was basically adjusted based on the previous 8-month rate which was no longer valid. For this reason, one carrier refuse to adjust the rate down because at that time the spot rate was already rose again.

With regards to the general application of ILC, Company B agrees that conceptually it is favourable to some carriers and shippers. However, there are several shortcomings in the application :

- Currently, there are no suitable indices that are able to represent the specific needs of the company. The indices available in the current market are either too broad or too specific to be applied as the basis for ILC. Regarding the illustration of container market,

“Container shipping has myriad ‘micro-markets’ based on supply and demand of equipment in specific locations, each with its own seasonality, etc. It may be impossible to define truly useful indices ; instead shippers and carriers will have to agree that it’s ‘close enough’.”

Besides, there were no external indices that have close correlation with specific freight rates.

- Shipping business is still considerably conservative and not many carriers and shippers currently want to change the way they traditionally do.

Conclusion from Company B regarding the application of ILC, the fact that they do not extend the contract with the base of ILC does not mean that the concept is totally inapplicable. The contract was executed for experimental purpose and they admit that there is probability that the method that was being applied is one of the main reasons why the outcome is not satisfactory instead of the ILC concept itself.

4.1.3 Findings from Company C

Researcher has inquired company’s Logistic Head regarding the ILC application. Company C has global container volume of nearly 400,000 TEUs with movements in almost every global route. As explained by company’s Logistic Head, “We are not a classic east/west shipper but operate on a number of niche trades for which no conclusive and reliable information/intelligence exists”. For that reason, despite the knowledge and the familiarity of the concept, Company C does not have any ILC nor have plans to apply ILC in the future.

There are three main reason conveyed by Company C as to why they currently do not consider to implement ILC, viz. the model is not mature enough, lots of different mechanism approach and lack of geographical scope.

Currently, Company C has annual contracts with carriers and the contracts are being renewed with the competitive bidding mechanism using a commercial supply-chain platform. Hence, they are not exposed by the spot freight rate volatility.

4.1.4 Findings from Company D

Company D is an NVOCC (Non-vessels Operating Common Carrier) based in the U.S. which offers freight forwarding service, transloading within U.S. area, letter of credit banking, legalisation of export documentations, and marine cargo insurance. Their service covers the shipment from North America to worldwide destinations and they partners with more than 30 lines worldwide.

According to the company's Senior Manager, the problem with current contract is the failure in keeping fixed price and volume as stated in the contract. When the spot rate is increasing, carriers will propose the contract price increase. Meanwhile when the shippers cannot commit to the initial minimum quantity, they will propose to amend the contract. It is also emphasized that the floating bunker price holds significant influence in freight price fluctuation.

Regarding the application of ILC, the interesting remark is the fact that shipping intelligence are widely used for decision making means that the use of indices in container industry for contractual decision has been emerged for some time, although informally. The spot freight rate has been moving up and down based on the balance of supply and demand. The indication of this price movement is shipping indices that are issued by several companies and organization, usually with the profit motivation as the historical indices are usually available for purchase. Shippers and carriers are relying on the

indices for their decision making and strategy towards their on-going contracts. However, both parties are not formally engage in the ILC contracting.

Company D does not have ILC at the moment, however they have been a keen on promoting the use of derivatives contract in the form of Container Freight Swap Agreements (CFSAs) and ILC can be coupled with this hedging tool to adverse price volatility risk. Regarding the application of ILC without hedging tool, the company's Senior Manager stated that it could also be beneficial in efficiency of time for saving the negotiation time and related administration costs.

Regarding the choice of indices, it is important to use indices which represent spot market and have transparent panellists so that the indices' credibility can be assessed. For that reason, Company D utilize SCFI (Shanghai Container Freight Index) instead of other indices that are either has one-sided panellists (shippers or carriers oriented) or do not have appropriate weighting method. Regarding the method of ILC, it is stated specifically that they will avoid using floor and ceiling mechanism for the reason it will not represent the actual ups and downs of the spot market rate.

In general, there are still hesitancy in the application of ILC from both carriers and shippers. The main feature of ILC is that it can be utilized based on the desired outcome. It does not remove the volatility, but it could be utilized with other methods (i.e. hedging tools) for risk management purpose. It is also highlighted that shippers should be able to determine whether they really need to apply ILC because some shippers, especially those with large-scale and predictable cargo movement probably are exposed by rate volatility but it does not affect much in the business.

In the future, ILC will not replace the current traditional contract methods. However the number of ILCs will increase and allow flexibility for shippers and carriers to engage in service contracts.

4.1.5 Findings from Company E

Company E is a global container line operator with the ownership of approximately 20 vessels with capacity 4,500 TEU and 16 vessels with capacity 8,000 TEU, along with other fleet with the higher capacity vessels have the capacity of 13,200 TEU. The company serves the routes of Trans-Pacific, Trans-Atlantic, Asia-Europe, Australia / New Zealand, Intra-Asia and Intra-Europe.

According to company's Vice President in Trans-Pacific trade route, the problem with current contract scheme from their perception is not the price structure. But the fact that the freight rate is driven by the balance of supply and demands is not in favour of the company's Return on Investment (ROI).

Regarding the impact of financial crisis in 2008 – 2011, Company E stated that they “had a lesson in how to really make money but not capitalized on keeping the lessons and making money.” This remark can be interpreted that during the financial crisis, liner operators can actually gain profit, however it is not sustainable. With current spot rate price, shippers do not have to utilize ILC to protect them against rate volatility.

Currently, they have very few ILC contracts and most of them are U.S. import contracts (Trans-Pacific east bound route). Currently, there are no suitable indices that meet the needs of U.S. exporters. The index choice is Shanghai Containerized Freight Index (SCFI) with the trigger mechanism which limiting the price movement, only allowing certain percentage of price movement at one time.

In response for the future application of ILC in Company E, it is stated that current market situation is not favourable for the application of ILC. They may implement the concept when rates are rapidly moving upwards and the market has fair rates which are favourable for ROI from the beginning of contract. It is also indicated that the possible trade route for ILC in U.S. import.

4.2 Secondary Data Presentation

Secondary data has been collected from various sources which comprises the relevant information related ILC. Several discussions have been held with the topic of problems occurring in shippers and carriers relationship.

DHL is global freight forwarder companies which has not implemented the concept, but stated that they are interested and currently are carefully examining the concept. During an interview at TOC Container Supply Chain Conference in Antwerp, 2012, DHL's representative in Ocean Freight stated that there are potential markets in ILC, however, there should be a long term partnership and the method should be open, transparent and not complex. It is believed that ILC could help to avoid the contract negotiation process and rate volatility. Certain industries, for example consumer market, are vulnerable to market competition. Therefore ILC can help these industries to follow the market but still able to manage the cost. In connection to derivative market, they believe that the traditional market should remain in the sense that the rate negotiating and contracting procedures should stay in the shipping market instead of shifting to financial market. Therefore it is implied that they are still hesitating in implementing derivative contracts in conjunction with the application of ILC. The concluding remark is price volatility will bring no advantages for them as chances of losing money in a volatile market is equally the same with the chances of gaining them. Stability is much more desirable.

From another side, major container lines such as CMA-CGM and Maersk Lines are both strong promoters of ILC. As featured at Containerisation International's Shippers slow to sign up (2012a), currently CMA-CGM has 10 ILCs in transpacific route and few more in the Asia-Europe trade. Most of the agreements are long term, with the duration two to three years. One of the service contracts is utilizing consumer price index as the benchmark (Porter, 2012c). Regarding the hindrance of the spreading of ILC, the reluctance from freight forwarders seems to be the main issue as they are difficult to be approached regarding the application of ILC. There is also allegation from their side that forwarders are still interested to gain profit from market volatility.

Other liner operator which already implements ILC is Maersk Line. They have relatively insignificant amount of ILC in Asia – Europe trade. In the terms of indices

choice, Maersk Line is in favour with Container Trade Statistics (CTS) Index. It is by far the index that has the best correlation with their business because it is based on spot and contract rates, and also have panellist from both shippers and carriers. Another consideration is the index does not represent the raw spot market that is considered too volatile for consumers. The rates are then adjusted by the movement of the appropriate CTS index which can be done annually or every six months, depends on prior agreement. The rates that are being indexed are mainly ocean base freight rate, excluding surcharges such as BAF, which also become one the factors that are not in favour to shippers. Regarding this, Maersk Line argued that most of their contract service is in long-term basis and fuel cost has been the significant part of total cost (Containerisation International, 2011).

Concerning the feedback of ILC application, CMA-CGM stated that the arrangement has been mutually satisfactory by both sides and none have been cancelled. Concluding remarks come from Maersk Line which stated that ILC is only one of the tools to fulfil customers' requirements and price volatility will still be there. However, it provides more stability and save a lot of contract negotiating time.

4.3 Discussion

The primary data revealed that all five respondents have different unique perspective which can represent the different opinions in response to the emergence of ILC. Company A represents shippers which keen on promoting ILC, already implemented it and so far satisfied with the outcome and accordingly they decided to keep implementing it and encourage their counterparties as well. Company B represent shippers who have interest in the application of ILC, tried to implement it, but eventually not satisfied with the outcome. Company C represents shippers who are well informed about ILC but are still satisfied with the contracting method that they currently implement and not considering implementing ILC in the future. Company D represents NVOCC / freight forwarders which are actively promoting risk management tools for their customer, including the risk against price volatility. They support ILC as it can be utilized with or without derivative contract products, depends on the intended purpose. Finally, Company E represents liner companies that are remains sceptical about the emergence of ILC due to the current low spot level rate.

Other missing views are elaborated from secondary data which represents freight forwarder that are already well informed with ILC and currently examining its development, but not yet implemented it and the last one is liner companies that are actively promoting and implement ILC.

Difference perspectives from these parties will be critically discussed regarding three main subtopics, viz. problems with current contracting method, applicability of ILC, and future application of ILC.

4.3.1 Problems with current contracts

In traditional service contract, there are agreed rate component which include the ocean base freight rate, surcharges, handling rate, and other inland-based rate. There is also committed minimum volume of cargo. However in reality, none of these two parameters are able to be kept fixed. As conveyed by respondent from Company D, price increase is often imposed by liner operators when the spot rate increases. Shippers which experience difficulties in forecasting their own supply productivity are also tend to stray from fulfilling their minimum cargo quantity commitment, which finally creates over-supplied container shipping market and leads to decrease in spot rate. When it comes to price volatility, there is a danger in proposing and negotiating changes since it has the possibilities of leading into heated arguments and finally damage long-term relationship between shippers and carriers. Evidence from this is the remark from Company B which stated that in general, the long-term commitment is not being honoured by both parties.

However, interesting remarks comes from Company C which stated that they do not have issues in their current contracting practice with regard to spot rate volatility. Presumably this is related to the fact that instead of multi-years contract, they are engage in contracts which are renewed annually with competitive bidding method. With this method, according to the company's logistic head, they are not exposed to rate volatility. It can be assumed that the shorter contract duration, the less likely the fixed contract will be exposed

to spot rate volatility because after one year, the price will be automatically adjusted and it is easier to mitigate the spot rate fluctuation of one year period rather than multi year. However, this only possible for companies that are supported with advanced supply chain system which enables the contracting process can be done effectively with minimal administration cost. Therefore, long-terms contracts are still preferable for most shippers for efficiency reason.

Interesting remark regarding Rate of Investment (ROI) of liner companies are made by Company E that criticize current spot pricing mechanism which depends on supply and demands balance are not in favour for the liner companies' profit-driven business principle with large investments. Most probably it is related to current oversupplied market which triggered by the global financial crisis in 2008.

As already discussed in Section 2.2, liner conference system gives more certainty and simplicity for liner operators to calculate and predict their ROI. The uncertainty of demand in container business makes liner operators having difficulties in adjusting their supply to stabilize the rate. Consequently, the disability of adjusting the supply quickly which can match the demand movement makes the rate cannot be controlled and thus volatile. Short term solution for them is laying up vessels to balance the decreasing demand.

Regarding the price structure itself, none of the respondent has mentioned complicated price structure as a problem. Most likely because liner companies are already aware about this and started to restructure their rates to be more simple. The example for this is Maersk Line which in process to simplify their rates which effective in May 2013. Most carriers also include transparent BAF and CAF tariffs in their website.

4.3.2 Applicability of ILC

ILC can be utilised with many different purposes and accordingly it has several methods to be customized. Based on findings, there were no identical applications for ILC, although all of them are applied in long-term

duration. However, the indices choice, trade routes, adjustment interval period, mechanism and purpose of each party are different. This fact could be both advantage and disadvantage of ILC, depends on how the issues are observed.

4.3.2.1 Advantages of ILC

In response to the advantage of ILC, almost all respondent agree that in the condition of volatile market, it will make contract process more effective because the significant amount of time and energy are saved from re-negotiating process. The contract rate can be adjusted automatically with prior agreed method. It also provides more flexibility on how both parties want to control their cost from the choices of methodology and indices. There are several indices which are constitutes from purely spot rate or combination between spot and contract rate. Companies who do not want to be utterly exposed in spot market might choose combination of spot and contract indices which provides smoother curve. Another impact of the time saving is better relationship between shippers and carriers which promotes long-term partnership.

Those who are interested in risk management can also utilize ILC with hedging tools, such as Container Freight Swap Agreements (CFSA). It is implied that the utilization of spot rate- based indices is more favourable because they are more representing the actual market. However, indices which represent both spot and contract rate will also bring similar figure, only less fluctuated. The coupling of ILC and hedging is suitable for those who require predictability in their cash flow.

Liner operators which requires fixed price can benefit from this concept. For long term, since fixed price is the desired outcome, it is advisable to consider hedging as it will lock future price and thus will secure the profit as the freight rate are guaranteed. The application of ILC will bring efficiency in time and administrative cost. However as confirmed by Company B, shipping is considerably a conservative industry which is still prefer to have the rate negotiation stay in physical market instead of financial market and there is a

sentiment that ILC is actually stand in front of derivatives product that will shift shipping business into commodity rather than service. It will take more time for this practice to be more acceptable.

Regarding the current spot rate, Company E argued that it is not necessary for shippers to engage in ILC with current market condition. However, this comment was not very encouraging. Although in general container shipping market still not yet recovered it is still subject to seasonal volatility. As indicated from SCFI trend at Figure 4, the rate has increased massively in first quarter of 2012, although it slowly come to stable movement after the second quarter. As already mentioned in Chapter 2, the freight rate movement mostly depends on demand, such as world economy and seaborne commodity trade which are difficult to be forecasted. Therefore, volatility is inevitable in container shipping market, and extreme rapid upwards movement of spot freight rate could still occurs.

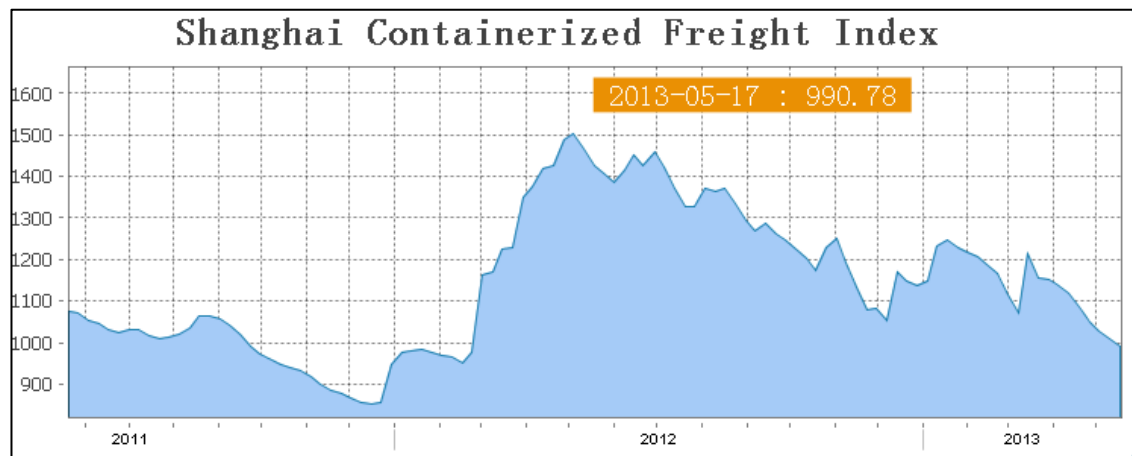


Figure 4 - Spot Rate Volatility as Indicated by Shanghai Containerized Freight Index from 2011 to 2013 (Shanghai Shipping Exchange, 2013c)

4.3.2.2 Disadvantages of ILC

The application of ILC receives challenges due to the fact that according to some shippers and carriers, the concept is not mature enough and it is safer to be in a position to wait and observe. Another challenge is the limited amount of indices available in the market which can fulfil each shippers' unique needs and specific routes. The limited numbers of available indices

do not have close correlation with shippers own calculation. This challenge is tried to be resolved by U.S. Federal Maritime Commission which is attempted to publish rate indices for U.S. agriculture exports based on sampling from service contract filed by FMC. Although this idea is supported by several shippers, there are concerns from liner business that it will violate the Ocean of Shipping Reform Act (OSRA)'s confidential contract carrier, as conveyed by World Shipping Council in their public commentary toward FMC (2012). However, this concern is raised due to the fact that it is FMC who will publish the indices and it is beyond their main objectives as government regulation body to published indices which are based on contract rates that by regulation are obliged to be reported to them, not because the idea of the indices publication itself.

The less appropriate choice of methods can also bring disadvantage. For example, as conveyed by Company B, the application of time-lag method may bring dispute between shippers and carriers because in this method, the rate will be adjusted with the previous period index. Most likely, at the time of rate adjustment, the spot rate is already increase or decrease and finally the one of the party will eventually refuse to adjust the rate. In the end, instead of solving the tension between shippers and carriers, it might actually initiate other disputes. Moreover, the chance of having the contract broken is still there.

The finding also suggests that it takes specialized knowledge in understanding shipping fixtures and financial market in order to determine precisely the suitable methodology, such as what indices to be used, what kind of mechanism to be applied (e.g. dampeners, floor and ceiling, triggers, or combination) and the adjustment period. There is no "best practice" in this, because every shipper has their own unique needs and requirement which may be change from time to time. The best way is to collaborate with financial markets, and considering shipping market is a conservative industry, the hesitancy of involving financial market in shipping contract deals are still considerably high.

From liner operator point of view, the fact that ILC do not mitigate the risk of rate volatility exposure naturally makes this concept generally are not

appealing for most of liner operators which commonly seek for fixing the rate and control of the market.

4.3.3 Future Application of ILC

Regarding the application of ILC in the future, Company A, B and D are aligned in their opinion that more shippers and carriers will embrace the concept. However, the concept of traditional contract will stay and still be the majority practice for the shipping industry. This opinion will doubtless be much scrutinized, especially with regard the raising trend of shifting contract modelling from conventional one to involving derivatives as the concept become more prevalent.

It can also be suggested that ILC is a very flexible concept with lots possible modifications depends on the designated outcome, which can be both the advantage and disadvantage of this concept compared to the conventional model. Therefore, it is expected that this concept will attract more companies which are keen of innovating and experimenting with new methods.

Since one of the biggest challenges of ILC is limited indices, it is also expected that indices providers such as Shanghai Shipping Exchange, CTS, Drewry Supply Chain and World Container Index will escalate the geographical scope and produce indices that are more specific in diverse commodities.

CHAPTER 5 – CONCLUSION AND RECOMMENDATIONS

This dissertation has investigated the reception from shippers and carriers regarding the emergence, development and possible future application of Index-Linked Contract (ILC). In this research, the main focus is to investigate the relationship between shippers and carriers towards their contractual engagement, and how ILC as new concept is accepted and implemented. In line with the objectives, the research is focusing on the perspective from the two main stakeholders of container transport business, *viz.* shippers and carriers, despite other stakeholders also possess major importance in the business, such as government regulating bodies and professional organizations.

The research was conducted with qualitative method by gathering primary data to shippers and carriers regarding their perception, opinion and application of ILC. Primary data is gathered by conducting surveys to targeted companies. There are four main groups that are targeted for the survey, which designed to comprise the equal proportion of shippers and carriers which have and have not implemented ILC. Researcher managed to contact and gather information through combination of correspondence and phone interview from five companies which based in diverse location. The companies represent different groups of main stakeholders of container shipping regarding the application of ILC.

5.1 Summary of Findings and Conclusions

After strong criticism and restriction of conference system by EU in 2008, the pricing mechanism of container shipping has been determined largely by supply and demands. The changing nature of shipping demand makes the spot freight rate volatile because the supply cannot quickly adapt to the change of demand. This study has found that generally the volatility of spot rate has significant impact in long-term contract between shippers and carriers because both parties tend to request price re-negotiation according to the spot rate fluctuation. The second

problem, capacities can also become issues because shippers naturally will shift their cargoes to spot market when the spot rates goes down and this condition will make carriers lose their capacity. Conversely, the rise of spot rate brings impact in shippers losing their space, even when they are in a long-term contract with carriers. Other problem is apparently the supply-demand mechanism often do not bring fair return to carriers in relation to their investment, especially in the current market situation.

ILC is concept that offers alternative in the method of engaging in service contract between carriers and shippers. In ILCs, in spite of having fixed price stated in the contract, the price is adjusted based on the chosen indices which are subject to mutual agreement between both parties. The reference of indices choice that is available in the market and commonly used in the existing ILC contract are as stipulated in Table 7 below.

Indices / Issuer	Source	Rate Structure	Rate Source
WCI / World Container Index	Freight forwarders / NVOCC	Base ocean rate, THC both at origin and destination, BAF and all other surcharges; do not include inland transport costs	Committed spot rate
CFRI / Drewry	Freight forwarders	Base ocean rate, THC when common market practice include them, BAF and all other surcharges; do not include inland transport costs	Committed spot rate
CCFI / Shanghai Shipping Exchange	Freight forwarders and liner operators	Base ocean rate and related maritime surcharges	Committed spot and long-term contract rate
SCFI / Shanghai Shipping Exchange	Freight forwarders and liner operators	Base ocean rate and related maritime surcharges	Committed spot rate
TSA Revenue Index / Trans-pacific Stabilization Agreement	Liner operators	All in rate, including IPI	Liner operator's revenue from spot and long-term contract
Consumer Price Index / Bureau of Labour Statistic	Public / Consumer	Household purchases	N/A
CTS / Container Trade Statistics	Freight forwarders and cargo owners	Base ocean rate and related maritime surcharges	Committed spot and long-term contract rate

Table 7 – Summary of Indices for ILC (Author, 2013)

ILC is a flexible concept which can be customized based on the agreed mechanism by considering the intended outcome. The summary of ILC application can be seen in Figure 5.

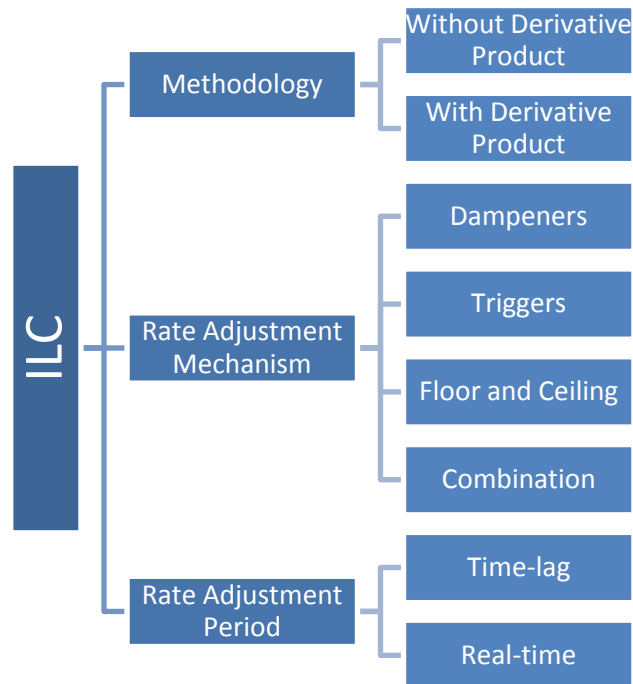


Figure 5 – Summary of Diverse ILC Implementation (Author, 2013)

The research has found that generally the respondents are already aware of the concept, but the concept is not necessarily attractive to be applied for all of them. Despite the fact that ILC can eliminate re-negotiation time and administrative cost inflicted by the process, it is still perceived as an immature concept and the fact that it still does not adverse the risk of rate volatility. The coupling of ILC and hedging tools will give better outcome for those whose requirement is to have fixed rate in long-term period.

Another finding is there are no guarantee that ILC can resolve the contractual problem between shippers and carriers. As the matter of fact, new issues might occur when the applied method are not delivering the intended outcome. There are no contracts that cannot be broken, and ILC is no exception for this.

Whilst this study did not confirm the significance of ILC practice in the future, it revealed that in general ILC is a promising concept with lots of growth opportunity in the future. Even those who have not implemented it stated that they currently examining it to anticipate the possibilities in the future trend and maturity of the concept, especially regarding the innovation initiate by indices provider.

The summary of findings can be seen in Figure 6 below.

Problems in Shippers - Carriers Contractual Relationship	Advantages of ILC	Disadvantages of ILC	Future ILC
<ul style="list-style-type: none"> • Failure in keep the commitment on long-term contract regarding price and volume • Tendency of not honoring long-term contracts • Pricing mechanism based on supply-demand does not bring fair could bring no fair return for the incurred cost for service provider (liner operators) 	<ul style="list-style-type: none"> • Effective contract, eliminate re-negotiation time and administrative cost • Flexible concept, can be used in accordance to various specific needs • Can be coupled with hedging tools for risk management purpose 	<ul style="list-style-type: none"> • Relatively new and immature concept • Limited amounts of available indices • May inflict new conflict between shippers and carriers. • Requires specialized person / organization with knowledge in fixtures / financial market. • Sole usage of ILC do not mitigate rate volatility exposure 	<ul style="list-style-type: none"> • A promising concept to be applied in the future • Depends on the future developments of indices provider

Figure 6 *Summary of Findings - Shippers and Carriers Opinion*(Author, 2013)

5.2 Research Limitations

There are several impediments in the initial process of primary data gathering. The researcher attempted to contact considerable amount of freight forwarders and shippers located in the UK but the received responds are very limited. Direct approach to targeted companies and personnel are proven to be more effective.

Whilst the liner operators can be perceived to have similar conduct in the business, shippers has diverse and multiform nature depends on their commodities, geographical location, and company vision. The study only depicts large-scale companies which are trusted to represents the shippers' general opinion. However, the study is unable to perceive the opinion of small-scale shippers which operate

within specific geographical location. It is also unable to analyse the sensitivity of commodities value with regard to shippers' exposure to spot rate volatility.

Finally, with time and resources constraint, the researcher managed to gather valid and reliable data and analyse them to fulfil the research objectives. However, the result from primary data is perceived to be not balanced in the proportion of designed group as described in Chapter 3. Therefore, secondary data is utilized to fill the information gap that cannot be fulfilled by solely the primary one.

5.3 Recommendations for Future Research

The recently emerging ILC is initiating wide range of further possible research in the future. It is recommended to conduct further research in the following areas :

- a. The impact of commodities value with regard to spot rate volatility which affect shippers' preference to implement ILC.
- b. Further research to companies with specific diverse commodities and trade routes.
- c. Investigation about the implication of more detailed and commodity-specific indices to the establishment of regulation, such as EU Commission in Competition and US' Anti-trust Law, and the OSRA (Ocean Shipping Reform Act) in confidential contract.

Finally, this study can be perceived as one of the early discussion regarding the emergence of ILC in container shipping. Further studies are needed to develop more reliable sense in the reception and future application of ILC.

Word count : 17,251

REFERENCE LIST

Alphaliner, 2013. *Alphaliner - TOP 100*. [Online]
Available at: <http://www.alphaliner.com/top100/>
[Accessed 17 April 2013].

Biggam, J., 2011. *Succeeding with your Master's Dissertation, A step-by-step handbook*. 2nd ed. Glasgow: Open University Press.

Branch, A. E., 2007. *Elements of Shipping*. 8th ed. Oxon: Routledge.

Brooks, M. R. & Button, K. J., 1996. The determinants of shipping rates : A North Atlantic case study. *Transport Logistics*, 1(1), pp. 21-30.

Bureau of Labor Statistics, 2013. *Consumer Price Index*. [Online]
Available at: <http://www.bls.gov/cpi/>
[Accessed 25 May 2013].

Container Trade Statistics, 2013. *Products & Services*. [Online]
Available at: <http://www.containerstatistics.com/products-and-services>
[Accessed 30 April 2013].

Containerisation International, 2011. *Maersk leads the way in box indices breakthrough*. [Online]
Available at: <http://www.loydslist.com/ll/sector/containers/article368914.ece>
[Accessed 28 February 2013].

Containerisation International, 2012a. *Shippers slow to sign up*. [Online]
Available at: <http://www.loydslist.com/ll/sector/containers/article418771.ece>
[Accessed 30 March 2013].

Containerisation International, 2012b. *Shippers have they say*. [Online]
Available at: www.loydslist.com/ll/sector/containers/article418880.ece
[Accessed 5 April 2013].

Creswell, J., 2003. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 2nd ed. London: Sage Publication.

Drewry - World Container Index, 2012. *White Paper Index-Linked Container Contracts*, London: Drewry - World Container Index.

Drewry, 2013. *Container Freight Rate Insight*. [Online]
Available at: <https://www.drewrycfri.co.uk/methodology>
[Accessed 25 April 2013].

ESC, 2013. *European Shippers' Council - What is a Shipper?*. [Online]
Available at: <http://www.europeanshippers.eu/top-1/what-is-a-shipper/#more-2985>
[Accessed 8 April 2013].

European Commission, 2012. *European Commission - Competition - Antitrust*. [Online]
Available at: http://ec.europa.eu/competition/antitrust/overview_en.html
[Accessed 13 April 2013].

FMC, 2013. *Federal Maritime Commission - About the FMC*. [Online]
Available at: http://www.fmc.gov/about/about_fmc.aspx
[Accessed 9 April 2013].

IHS Global Insight, 2009. *Valuation of the Liner Shipping Industry : Economic Contribution and Liner Industry Operation*, Englewood: IHS Global Insight.

King, M., 2012. *Indexing World Trade*. [Online]
Available at: <http://www.joc.com/print/431253>
[Accessed 11 March 2013].

Leach, P. T., 2012. Rate Indexing Grows AT A SNAIL'S PACE. (cover story).
Journal of Commerce, 13(24), pp. 10-13.

Levinson, M., 2006. *The Box : How the Shipping Container Made th World Smaller and the World Ec*. New Jersey: Princeton University Press.

Maersk Line, 2013a. *Maersk Line - List of services, surcharge and fees*. [Online]
Available at:
http://www.maerskline.com/link/?page=brochure&path=/our_services/Related%20services/VAS/ALL
[Accessed 9 April 2013].

Maersk Line, 2013b. *Experience more simplicity - Phase II : Clearing away the haze around local surcharges*. [Online]
Available at: <http://news.maerskline.com/surcharges>
[Accessed 20 April 2013].

Morse, J., 2011. Approaches to qualitative-quantitative methodological triangulation.
Nursing Research, 40(1), pp. 120-123.

Munari, F., 2012. Competition in Liner Shipping. In: J. Basedow, U. Magnus & R. Wolfrum, eds. *The Hamburg Lectures on Maritime Affairs 2009 & 2010*. Berlin: Springer-Verlag Berlin Heidelberg, pp. 3-25.

Porter, J., 2011a. *Shanghai corners market in box derivatives*. [Online]
Available at: www.loydslist.com/ll/sector/containers/article382827.ece
[Accessed 28 February 2013].

- Porter, J., 2012a. *US shippers sign more index-linked contracts*. [Online]
Available at: www.loydslist.com/ll/sector/containers/article398581.ece
[Accessed 28 February 2013].
- Porter, J., 2012b. *Simplicity the key to index-linked contracts as interest grows*. [Online]
Available at: www.loydslist.com/ll/sector/containers/article396409.ece
[Accessed 28 February 2013].
- Porter, J., 2012c. *CMA CGM pioneers new-style customer contract*. [Online]
Available at: www.loydslist.com/ll/sector/containers/article393085.ece
[Accessed 28 February 2013].
- Shanghai Shipping Exchange, 2013a. *China (Export) Containerized Freight Index*. [Online]
Available at:
http://www1.chineseshipping.com.cn/en/indices/introduction_ccfinew.jsp
[Accessed 20 March 2013].
- Shanghai Shipping Exchange, 2013b. *About the SCFI*. [Online]
Available at:
http://www1.chineseshipping.com.cn/en/indices/introduction_scfinew.jsp
[Accessed 20 March 2013].
- Shanghai Shipping Exchange, 2013c. *Shanghai Containerized Freight Index*. [Online]
Available at: <http://www1.chineseshipping.com.cn/en/indices/scfinew.jsp>
[Accessed 17 May 2013].
- Silverman, D., 2010. *Doing Qualitative Research*. 3rd ed. London: Sage Publication Ltd.
- Slack, B. & Gouvernal, E., 2011. Container freight rates and the role of surcharges. *Journal of Transport Geography*, Volume 19, pp. 1482-1489.
- Stopford, M., 2009. *Maritime Economics*. 3rd ed. Oxon: Routledge.
- TOC, 2012. *Speaker: Luc Jacobs - DHL*. [Online]
Available at: <http://www.youtube.com/watch?v=fOv7ts6wXjc>
[Accessed 25 April 2013].
- Traganida, S., 2011. *2012: the year of the derivatives Olympics? (Lloyd's List)*. [Online]
Available at: www.loydslist.com/ll/sector/containers/article386608.ece
[Accessed 28 February 2013].
- TSA, 2013a. *Transpacific Stabilization Agreement*. [Online]
Available at: <http://www.tsacarriers.org/about.html>
[Accessed 21 April 2013].

TSA, 2013b. *The TSA Revenue Index – April 2013*. [Online]
Available at: <http://www.tsacarriers.org/documents/TSArevindex413.pdf>
[Accessed 1 May 2013].

UNCTAD STAT, 2013. *Merchant fleet by flag of registration and by type of ship, annual, 1980-2012*. [Online]
Available at: <http://unctadstat.unctad.org/TableView/tableView.aspx?ReportId=93>
[Accessed 13 April 2013].

UNCTAD, 2009. *Review of Maritime Transport - 2009*, New York and Geneva: United Nations.

UNCTAD, 2012. *Review of Maritime Transport 2012*, New York and Geneva: United Nations.

van der Jagt, N., 2004. Liner Shipping : ancient myths and modern realities. *Consumer Policy Review*, 14(2), pp. 34-37.

Wilson, W. W. & Benson, D., 2009. *Container Flows in World Trade, U.S. Waterborne Commerce and Rail Shipments in North American Markets*, Fargo: North Dakota State University.

Wood, D., Barone, A., Murphy, P. & Wardlow, D., 2002. *International Logistics*. s.l.:American Management Association.

World Container Index, 2012. *Methodology*. [Online]
Available at:
<http://www.worldcontainerindex.com/index.php?mode=staticContent&id=methodology>
[Accessed 20 April 2013].

World Shipping Council, 2012. *World Shipping Council*. [Online]
Available at: http://www.worldshipping.org/public-statements/regulatory-comments/WSC_Comments_on_FMC_NOI_on_Rate_Index.pdf
[Accessed 1 May 2013].

WSC, 2013. *World Shipping Council - About the Council*. [Online]
Available at: <http://www.worldshipping.org/about-the-council>
[Accessed 9 April 2013].

Appendix A – Questionnaire Cover Letter



London, 1 May 2013

Dear Participant:

Re : Index-Linked Contract as a Solution to Shippers – Carriers Contractual Issues in Container Liner Trade

In the contractual relationship between shippers and carriers, price is often become the most crucial factor. Shippers and carriers contract with fixed price. However, the spot freight rate has always been fluctuated and this price volatility is allegedly become the reason of the contract default between shippers and carriers. In order to solve this matter, several approaches have been attempted, one of which is Index-Linked Contract which accommodate the fluctuation of spot rate in contract with the representation of chosen indices. The concept of Index-Linked Contract (ILC) has just been triggered in 2011 and believed to be able to solve the contractual problems between shippers and carriers. However, the application of this new method is still considerably low. This questionnaire will be part of the Master Dissertation Project with the aim investigating the perception and future development of Index-Linked Contract for containerized liner shipment with regard to shippers and carriers outlook.

The following questionnaire will require approximately 15 to 30 minutes to complete. To protect the confidentiality, all information regarding respondent identity will not be disclosed. It is not necessary to divulge any confidential information and no reference will be made to any particular organisation arising from the result of the questionnaire.

Thank you for taking the time to assist me in my educational endeavours. If you would like a summary copy of this study please kindly contact me. Completion and return of the questionnaire will indicate your willingness to participate in this study. If you require additional information or have questions, please contact me at the number or e-mail address listed below.

Sincerely,

A handwritten signature in blue ink, appearing to read "Fitriani".

Fitriani Kusuma Dewi
Master Student – Maritime Operation and Management
City University London
+44 7539933655
Fitriani.Kusuma-Dewi.1@city.ac.uk

Appendix B – Questionnaire Template



CITY UNIVERSITY
LONDON

Questionnaire - Index-Linked Contract as a Solution to Shippers – Carriers Contractual Issues in Container Liner Trade.

This questionnaire is part of the dissertation project with the aim investigating the perception and future development of Index-Linked Contract for containerized liner shipment with regard to shippers and carriers outlook.

Part 1 General View about Shipper - Liner Contract

- a. What is your opinion about current price structure in shipper - liner contract agreement?

Please indicate whether the price structure is satisfactory (eg : transparent or reflecting the actual shipping cost, etc) or not (eg : too complicated, too many add-in cost, etc)

- b. What are the most common contractual issues between shippers and carriers?

eg : regarding price, time duration, volume of cargo, origin and destination, service expectation and breach of contract

- c. How was the abrupt drop of spot freight rate in late 2008 influence your long-term contractual relationship with your counterparty?

eg : price re-negotiation, etc

- d. How confidence are you with the representation of shipping indices towards spot freight rate?
Please indicate the shipping indices that are closely related to your business.

Shipping Indices, i.e. : Container Freight Rate Insight (CFRI), China Container Freight Index (CCFI), Shanghai Container Freight Index (SCFI), Transpacific Stabilization Agreement (TSA), etc.

Part 2 General View about Shipper - Liner Contract

- a. How familiar is your organisation about the concept of Index-Linked Contract?

- b. Do you have plans to implement ILC in the future? / If you have implemented ILC, will you continue the usage of ILC for alternative contract method in the future?

- c. What are your major concerns about ILC?

- d. How is your prediction for the future of ILC as an alternative solution for shippers-carriers contractual issues?

- e. Do you have further suggestion for the improvement of ILC? Please specify.

Your response has been recorded and will be treated with confidentiality. Thank you very much for your time.

Regards,
Fitriani Kusuma Dewi
Master Student – Maritime Operation and Management
City University London
+44 7539933655
Fitriani.Kusuma-Dewi.1@city.ac.uk