Understanding Power Relationships in Chinese Hub Seaports

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Abstract

The development of global trade and logistics chains has reshaped the market environment of the seaport and liner shipping sector. Against this background, there is no consensus regarding the relative market position between terminal operators (TOs) and global liner shipping companies (LSCs). Using the theory of power, this paper aims to investigate this issue in the context of Chinese hub seaports. To fulfil this purpose, this paper adopts a qualitative case study research design. Whereas the findings about power relationships in Chinese hub seaports are multi-dimensional, TOs appear to be in a more powerful position compared to LSCs. This paper contributes to the literature in several ways: it clarifies the market position between TOs and LSCs in the Chinese hub seaport sector, and it contributes to the development of the power theory with empirical findings from an underdeveloped research context. The overall findings are beneficial for TOs and LSCs to form business strategies and ultimately achieve business success.

Keywords: Terminal operators, Liner shipping companies, Power patterns

1. Introduction

Maritime transportation has been a fast growing and changing market over the last few decades. The total world containerised trade reached 160 million TEUs in 2013 (United Nations Conference on Trade and Development (UNCTAD), 2014). The development of seaborne trade has resulted in significant organisational and technological changes in seaports, which has enabled them to improve their transportation services from a port-to-port level to a door-to-door level (Paixao and Marlow, 2003). Even so, the seaport sector has often been regarded as being 'reactive' to the shipping industry's development (Paixao and Marlow, 2003; Bichou and Gray, 2004).

On the one hand, the development of the liner shipping sector has brought significant challenges to seaports. Vertical and horizontal integration strategies are widely adopted by LSCs. The industrial structure of the liner market has become increasingly concentrated, and seaports are facing intensified competition. These issues have significantly shaped the business environment of the maritime industry in which seaports are dealing with increasingly powerful liner customers (Notteboom, 2008; Woo et al., 2011).

On the other hand, the trend of power development has shown that this transportation node is playing an increasingly important role in supply chains (SCs). The role of the seaport has evolved from being an isolated interface between land and sea transport focusing on cargo handling to being an integrated logistic platform in the international distribution channel providing various value-adding transport activities (Beresford et al., 2004). Global expansion and consolidation has granted TOs a stronger negotiating position with regard to LSCs (Heaver et al., 2001; Pallis et al., 2008; Martin and Thomas, 2001).

Therefore, the relative market position between seaports/TOs and LSCs is unclear in view of

the current development of the maritime industry. This paper collects data from four Chinese hub seaports, namely, Xiamen Port, Shanghai Port, Qingdao Port, and Ningbo Port (see Figure 1), and investigates this issue by virtue of the theory of power. As an essential attribute of social systems, power is central to all business-to-business relationships (Cox, 2001a). In light of the research gap and the significance of power theory for understanding business relationships, this paper investigates the power relationship between TOs and LSCs in the context of Chinese gateway seaports.
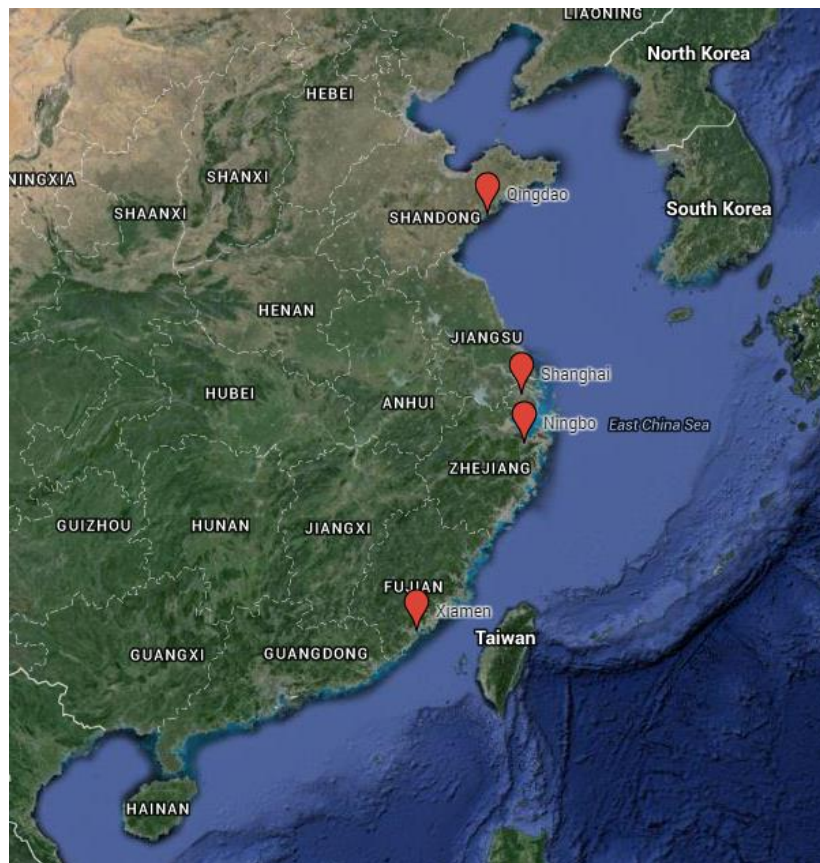

Figure 1: Four Chinese hub seaports covered in this study

The rest of this paper is organised as follows. Section 2 reviews the market environment of the maritime industry and introduces the concept of power patterns. Section 3 describes methodological issues. Then, the presentation and discussion of findings are provided in section 4. The last section concludes the whole study.

2. Literature Review

The evolution of the seaport market has been significantly shaped by the development of seaborne trade, logistics chains, and the liner shipping industry. Thus, it is argued that the seaport sector is located at the end of the changing sequence of the maritime industry (Woo et al., 2011). In view of this sequence, this section firstly reviews key factors that have contributed to the restructuring of the seaport sector, based on which the research gap is further clarified. Then, the focus moves to the examination of the theory of power, which lays down the theoretical grounds for the investigation of the vested business relationship.

2.1. The market environment

2.1.1. Globalisation and containerisation

Globalisation has always been closely related to the development of the maritime industry

(Reynaud, 2009). The rapidly globalising marketplace has shaped the geography of seaborne trade and poses a challenge to both seaports and LSCs. Driven by the trend of globalisation, production sites are widely dispersed (Organization for Economic Cooperation and Development (OECD), 2008). This dispersed source of production has increased the difficulty for seaports regarding gathering cargos and attracting ship calls, given their physical immobility.

Containerisation is another influential factor that has shaped the maritime industry. Since the utilisation of the first container in the 1960s, the trend of containerisation has swept the liner shipping sector (Stopford, 2009). Containerisation has significantly improved the performance of logistics chains and standardised port operations and port services (OECD, 2008). As a result, ports have become very similar in terms of their core services. Although the development of a port hierarchy and a hub-and-spoke system has largely defined the role of the port in a regional port group, ports in proximity to each other are highly substitutive.

While port competition has been increased due to globalisation and containerisation, the challenge to attract port calls is further intensified by the 'foot-loose' feature of liner operators and supply chains (Heaver et al., 2001). On the one hand, LSCs are highly mobile. They act footloose to find a better deal in terms of port service and port charge. On the other hand, the mobility of liners and the global search for economic production sites have rendered SCs footloose as well (Robinson and Malhotra, 2005). These two factors have further intensified the port competition and placed seaports in a disadvantageous position when dealing with LSCs.

2.1.2. The existence of strong LSCs

The development of seaborne trade and logistics channels has also posed challenges for the liner shipping sector. Carriers bear the pressure of offering abundant shipping services at a lower cost. This pressure has significantly affected the conduct of carriers and the market structure of the liner industry.

Shipping companies have used increasingly large ships in the liner trade so as to gain economies of scale. According to the statistics, the average size of a container ship has shown a continuously increasing trend since the 1980s (UNCTAD, 2008). The increase of ship size has a significant impact on the maritime industry, as large ships call at fewer ports. The reduction in the number of port calls has decreased the dependence of carriers on a particular port and intensified the competition among seaports, especially those that are able to accommodate large vessels (OECD, 2008).

In addition, LSCs have engaged in various types of cooperation, which also improves their negotiating position in relation to seaports/TOs. Strategic alliance is currently the most popular form of cooperation adopted by carriers. It usually covers a wide scope of cooperation agreements including operating joint services, slot and information sharing, shared terminals, and pooled containers (Stopford, 2009). The formation of an alliance implies the control of cargos by a group of liner operators. However, it has raised concerns about the dominant position of LSCs over other SC members. Since carriers bring more business volume to the negotiating table, ports have become more dependent on LSCs (Heaver et al., 2000).

In addition to the cooperation at the intra-industrial level, carriers are keen to engage in vertical integration and to cooperate with parties across the logistics chain. As the 'through

service provider', LSCs wish to participate in terminal operating and inland transportation in order to maintain the smooth operation of the logistics chain (Notteboom and Rodrigue, 2005). In the maritime industry, vertical integration is commonly adopted by carriers to seize the control of terminals (Van de Voorde and Vanelslander, 2009). They establish subsidiaries that specialise in terminal operations business and/or form joint ventures with pure terminal operators or with other liner operators (Kaselimi et al., 2011). Through these methods, carriers have strengthened their control over seaports on a global scale.

2.1.3. The uncertainty about the relative market position between TOs and LSCs

To deal with the restructured logistics chain and extensively consolidative activities within the liner shipping sector, TOs have also engaged in cooperative activities on the horizon. In addition, the trend of privatisation in the seaport sector has created a sound environment for the expansion of TOs' business on a global scale. Consolidation and the expansion of global coverage can help TOs to exploit economies of scale, develop network economies, and optimise the terminal's function within logistics networks (Midoro et al., 2005). From the perspective of inter-organisational relations, consolidation has contributed to TOs' stronger negotiating position. Global expansion has increased the flexibility of service supply and limited the liner's alternatives of port choice (Heaver et al., 2001). These two factors have also led to an increasingly concentrated seaport sector despite the involvement of integrated shipping lines (Pallis et al., 2008; Martin and Thomas, 2001). Therefore, the market position of TOs has increased over the last few decades.

Overall, the development of logistics chains and the maritime industry has implied a seaport sector that is 'reactive' to the shipping industry and a competitive terminal operating market. Even so, TOs and shipping lines behave actively to improve their position in the SC and in the dyadic inter-organisational relation. The review of these market features has revealed a complex and uncertain relative market position between LSCs and TOs, which calls for further investigation.

In maritime studies, terms including 'market power', 'buyer power' and/or 'monopoly power' have been widely used (e.g. Heaver et al., 2001; Song and Panayides, 2002; Van de Voorde and Vanelslander, 2009; Woo et al., 2011) to describe the vested business relationship. This popularity implies the importance of the concept of power for the 'knowing of reality' in the maritime industry. In addition, the theory of power has been an essential theory for the understanding of inter-organisational relations (Kaselimi et al., 2011). Accordingly, the next section reviews the power literature and attempts to form the theoretical basis for the investigation of the relative market position of TOs and LSCs.

2.2. The pattern of power

Power in an SC can be defined as one SC member's ability to influence or control the decisions and behaviour of another member (Narasimhan et al., 2009). The issue of power is an essential area of study in business research. Although there is already a significant amount of literature on power, investigation into power remains underdeveloped in the field of maritime research. The concept of power has many dimensions. Whether a power relationship is balanced or unbalanced represents the basic understanding of power (Casciaro and Piskorski, 2005). This issue is referred to as power patterns in this paper.

From the standpoint of the resource dependence theory, power imbalance refers to the difference in mutual dependence (Lawler and Yoon, 1996). Adopting a resource-based view,

Cox et al. (2002) developed a power matrix based on four possible power relationships between buyer (A) and supplier (B): interdependence (A=B), buyer dominance (A>B), supplier dominance (A<B), and independence (A0B). The illustration of the power matrix can be seen in Figure 2. These four types of power relationship are formed according to the relative amount of power held by the two parties involved in a power relationship. Whereas A>B and A<B refer to an imbalanced power pattern, A=B and A0B represent situations whereby A and B have largely equal amounts of power.

Figure 2: The power matrix
Source: Cox. (2001a)

From a dyadic inter-organisational perspective, power imbalance is a common relationship in business world as seen in many studies, including Byrne and Power (2014), Kahkonen (2014), and Lin et al. (2013). The reason lies in the benefit of having power, which is the acquisition of surplus value (Casciaro and Piskorski, 2005; Cox, 2001b; Hingley, 2005). Although a buyer-supplier transaction can never be solely about power, and there is always some sort of mutual interest between two contracting parties, not all of the interest between suppliers and buyers is mutual (Cox, 2001a). Given that SC members are primarily motivated by self-interest and strive to acquire and keep surplus value (Cox, 1999; Williamson, 1975), the pursuit for power is logically a primary pattern of organizational behaviour.

The desire for a favourable power position thus offers one explanation for the conduct of TOs and LSCs as reviewed in the previous section. Furthermore, section 2.1 has revealed an unclear status regarding the relative market position between TOs and LSCs. Although this issue has been assessed in a number of maritime studies, it has seldom been studied systematically. The description of the idea of power patterns shows that this concept is closely related to the relative market position of SC actors. In addition, power has been an underdeveloped concept in SCs (Canieels and Gelderman, 2007). Therefore, the study of the power relationship between TOs and LSCs tends to be advantageous not only for understanding these two actors' relative market positions but also for the development of power theory in the context of maritime logistics chain.

3. Research Setting and Methods

3.1. Research context

The area of Chinese gateway seaports was selected as the research context due to the increasingly important role of China in international seaborne transport and the unique

characteristics of the market. Since the application of the open-door policy in the late 1970s, the economic regime of China has undergone significant changes. The remarkable economic growth over the last few decades has made China a major global economy. Accompanied by strong economic growth, international trade has boomed in China and has significantly changed the maritime industry. Having developed from a semi-closed state with poor infrastructure, China has become the most accessible nation in the world to the global liner shipping network (UNCTAD, 2014). In 2013, 7 out the top 10 world container ports in terms of throughput were Chinese ports (including Hong Kong Port) (UNCTAD, 2014).

In addition to the essential role of China in international maritime transportation, the special political regime of this nation has had a significant impact on the governance structure of the seaport sector. The concept of governance has greatly benefited the examination of power issues among institutions involved in collective actions (Griffin, 2012). It is particularly relevant for studying power issues in countries like China, since the central and local government are still playing essential roles in the port sector (Wang and Slack, 2004).

The administrative system of Chinese ports has gone through several phases. The most recent port reform that has helped establish the current port governance structure in China took place in 2003 when the Port Law of the People's Republic of China (PLC) was implemented. Port reform after 2003 has been characterised by two principles: the corporatisation of port authorities and the establishment of the municipal port administration system under the supervision of the provincial and central government (The National People's Congress of the People's Republic of China, 2004). Besides, PLC has encouraged the involvement of private funding in the port sector (PLC, 2003).

In view of these changes, Qiu (2008) summarises three costal port governance models in mainland China: the general model, the Shanghai model, and the Shenzhen model. Despite their differences, all three models are characterised by the control of port operations by state-owned port corporations/groups to varying degrees. Joint ventures and/or subsidiary companies are established as TOs. Thus, in the context of the Chinese seaport sector, TOs seem to have a strong affiliation with their respective port group, which acts as the operators of the port. Therefore, the operator of the seaport and of the terminals within a seaport may behave as one party depending on the extent of the TOs' autonomy. Accordingly, the term 'port/terminal operator' (P/TO) is used in the selected research context of this paper, and the power pattern under study is between P/TOs in China and global LSCs.

3.2. Research design

A qualitative case study research design was adopted to fulfil the research aim. On the one hand, the selection of a qualitative approach was because of the contextual-embedded feature of the concept of power (Kasabov, 2007; Kim, 2000) and the research approach's strength to appreciate the richness, depth, and complexity of the social reality (Bryman and Bell, 2011). On the other hand, the purpose of this research is to explore, describe, and understand the vested power relationship, and the case study design was considered suitable for the fulfilment of these types of research purpose (Blaikie, 2010).

Semi-structured interviews, participant observation, direct observation, and documentation were used to gather data. The data collection took place between May and July 2014. Seaports involved in the case study are Xiamen Port, Shanghai Port, Qingdao Port, and Ningbo Port (see Figure 1). These ports are not only essential gateways for China's international trade, but

also are among the top ranked container ports in the world (see Appendix 1 for a brief description of these ports). The main data collection method of this study was interviews. The aim of interviewing in this paper was to gather data about power patterns. This means the interview topics were largely pre-determined. Thus, a semi-structured interview with open-ended questions was adopted to collect the data. An interview protocol was used in all cases to improve the reliability of the research.

In terms of the application of the interview strategy, the summary can be seen in Table 1. Firms participating in this research consist of six TOs from four port groups in these selected seaports and eight global shipping lines that have established business relationships with these seaports. In the case of Ningbo Port and Shanghai Port, key informants from the port group were also approached for information. The eight carriers in this study are Maersk (involved in two cases), Evergreen, Hapag-Lloyd, APL, MOL, Cosco, CMA-CGM, and Zim. These carriers cover key global alliances in the current shipping industry, including G6, CKYHE, 2M and O3.

Table 1: Interview summary

Case studies	Interview summary			Field work time (2014)
	Total No.	Party involved	No. of interviewees (Code)	
Xiamen Port	9	TO1	7 (XM1-7)	April
		LSC1	2 (XMS1-2)	
Shanghai Port	11	TO2	6 (SH1-6)	May
		TO3		
		Shanghai Port Group	2 (SH7-8)	
		LSC1	3 (SHS1-3)	
		LSC2		
		LSC3		
Qingdao Port	12	TO4	9 (QD1-9)	June
		TO5		
		LSC4	3 QDS (1-3)	
		LSC5		
		LSC6		
Ningbo Port	7	TO6	2 (NB1-2)	July
		Ningbo Port Group	3 (NB3-5)	
		LSC7	2 (NBS 1-2)	
		LSC8		
Total	39	6 TOs and 8 LSCs (one LSC is involved in two case seaports)		

Thirty-nine interviews were conducted involving ten respondents from the shipping sector and the rest from the port sector. All of these respondents were from the level of director and above, which guarantees the quality of the data collected. All the interviews were recorded and subsequently transcribed. The name of the respondents was not revealed in order to preserve anonymity. For the convenience of referencing, each was given a code; for example, [XM 1] means number 1 interviewee in the case of Xiamen Port.

The level of analysis in this paper is bilateral. Whereas P/TOs are the focus of this study,

respondents from both sides of the relationship, that is, P/TOs and LSCs, were interviewed to acquire accurate and unbiased data about the power relationship. Template analysis was adopted as the data analysis method. This method generates a list of codes to facilitate the analysis of the qualitative data set (King, 1998). The coding process started with a line-by-line reading of the whole transcript and the marking of possible codes. The transcripts were read several times in order to assure all possible codes and themes were marked. During this process, some higher-order categories seemed to emerge. The identification, organisation and further categorisation of these higher-order nodes generated the whole coding system. To facilitate the analysis and presentation of the power patterns in the Chinese hub seaport sector, Cox's (2001a) power regimes were adopted.

4. Findings and Discussion

The data collected from four Chinese hub ports are analysed with reference to the theory of power patterns. For the inter-organisational relationship between LSCs and P/TOs, the former party are regarded as buyers of the port services that are supplied by the latter party. In general, two types of power relationships from Cox et al.'s (2002) power regimes are most relevant in these four cases: interdependence and supplier (P/TO) dominance. On the one hand, respondents recognised the close relationship between the port sector and the shipping sector and felt that P/TOs and LSCs are highly interdependent. On the other hand, interviewees indicated the powerful position as being taken by P/TOs rather than LSCs. Based on the interview findings, the details and evidence concerning these two dominant types of power patterns can be seen in Table 2.

4.1. LSC-P/TO interdependence

Interdependence is, unsurprisingly, a notable pattern of the power relationship between P/TOs and LSCs. At the inter-industrial level, the operation of the seaport sector and the shipping sector only make sense with the existence of the other party (Talley, 2009). As adjacent actors in the logistics chain, these two sectors form the transportation nodes and lines that make maritime trade possible. Shipping lines need a seaport to accommodate ships and load/unload cargos whereas the assets of a seaport are highly specific to the carriers. The interdependence power pattern thus stems from the 'mutual indispensability' of these two sectors, as one operational manager from TO3 mentioned.

On the other hand, a high level of mutual dependence was also perceived at the inter-organisational level. The LSCs covered in this paper are top-ranking global carriers. All of them have established a business relationship with these four Chinese hub ports to varying degrees. With reference to the resource-dependence view, this means the existence of an interdependent relationship, which stems from the mutual demand for the other party's resources. Furthermore, the mutual dependence was further strengthened by the contractual form of the business relationship between P/TOs and LSCs. Often renewed on an annual basis, the formation of a contractual relationship implies the existence of mutual interest (Cox et al., 2002) and has been regarded by previous power researchers (e.g. Frazier, 1983; Kasabov, 2007; Moore et al., 2004) as an indicator of mutual dependence.

Table 2: Interview evidence for the dominant power patterns between LSCs and P/TOs in four hub ports

Power patterns	Cases	Illustrative quotations
Power interdependence	Xiamen Port	'From the perspective of relationship, they (LSCs and P/TOs) complement each other…I feel it is more about mutual influence.' [XM1] 'I see more and more cooperation, and their relationship is a kind of coexistence.' [XMS1]
	Shanghai Port	'These two sectors are dedicated to reach other, so they must tie together.' [SH2] 'No party can survive without the other; it is mutual dependence.' [SHS3]
	Qingdao Port	'Carriers and terminal operators have integrated. They are as close as fish and water.' [QD2]
	Ningbo Port	'Each party is an indispensable part of another. So they rely on each other and adjust themselves to fit the other party's need.' [NB2] 'For the relationship, they depend on each other, though it (pattern) may manifest differently in different time periods.' [NBS2]
P/TO dominance	Xiamen Port	'In China, port groups all have a strong capability to influence LSCs.' [XM3] 'If the carrier does not call at the Group's terminals, it has nowhere else to berth. So we have the advantageous position when negotiating.' [XM7]
	Shanghai Port	'Carriers can only influence the liner market. They cannot influence P/TOs, whereas P/TOs can affect them.' [SH3] 'P/TOs in Shanghai Port are more powerful.' 'There is only one operator in this port (Shanghai Port Group). If they (carriers) want to berth, they have to listen to me.' [SH7] 'Costal resources are scarce resources and are controlled by state-owned port groups. This tilts the scales in favour of the port side.' [SHS1]
	Qingdao Port	'The port group is a monopoly. (….) We have no power to require the P/TO to make any changes.' [QDA1] 'The terminal operator takes the significant (power) position for sure. It is a monopoly' [QDS2]
	Ningbo Port	'Speaking of the current stage, the port group is more powerful.' [NBS1] 'No carriers can give up the market in Ningbo.' [NB1]

In addition, the evidence for the interdependent power pattern in Table 2 reveals that the relationship between P/TOs and LSCs was also perceived as 'cooperative' and 'integrated'. These types of business relationship, which can reduce uncertainty, improve efficiency, and increase the possibility of business success, are also advocated by the resource dependence theory (Gundlach and Cadotte, 1994; Crook and Combs, 2007). From the perspective of power patterns, it adds additional evidence for the highly interdependent relationship between LSCs and P/TOs.

4.2. P/TO dominance and LSC dominance

The power pattern of interdependence identified in these four cases does not mean that the power between P/TOs and LSCs is strictly balanced. The multidimensional perception about power patterns has been witnessed in these four cases. In addition to interdependence, P/TO dominance was reported in all cases. A number of reasons for this perception were offered by interviewees. In Table 2, noticeable factors that contribute to P/TO dominance include the liners' lack of any alternative port choice, the monopoly management structure of the port group, and the scarcity of costal resources controlled by P/TOs.

Exceptional findings were reported in the case of Xiamen, where the port representative of LSC1 felt the P/TOs in the Port of Xiamen were 'a little weak' despite the interdependent relationship between the two parties being studied. This was agreed by one director from the business department of TO1, who claimed LSCs were more powerful, as they are international corporations. Evidence from the interviews indicates that the reasons for the perception of LSC dominance were related to the governance structure of Xiamne Port Group and the level of inter-port competition.

From the perspective of power theory, the explanations offered by the respondents for the power pattern regarding LSC/TO dominance were related to the source of power. Theoretically, this factor determines the amount of power held by social actors. As a power pattern is a reflection of the relative amount of power, power sources can be regarded as an essential indicator of the pattern of power relationships.

4.3. The mapping of power patterns in Chinese hub seaports

The analysis of power patterns makes possible the mapping of these four seaports' power positions based on Figure 2. In Cox's (2001a) power matrix (Figure 2), the four types of power relationship are formed based on the relative amount of power held by supplier and buyer. The location of the vested inter-organisational relationship in Figure 2 can be determined by the findings about the power patterns between LSCs (buyers) and P/TOs (suppliers) in sections 4.1 and 4.2.

However, the original power matrix needs to be revised to fit the power patterns in the Chinese seaport sector. More specifically, the four power positions in Figure 2 are theoretically exclusive. However, evidence from the case study indicates that there is a multidimensional perception about vested power patterns. This means the power pattern in one Chinese hub seaport may be characterised by more than one type of power position in Figure 2. In order to address this feature, the mapping of power patterns in Chinese hub seaports is presented in a coordinate system (Figure 3) based on Cox's (2001a) power matrix. In Figure 3, the horizontal axis represents the change of power imbalance from buyer (LSC) dominance to supplier (P/TO) dominance, and the vertical axis indicates the evolution of mutual dependence from buyer/supplier independence to buyer/supplier interdependence.

Scale is omitted in the coordinate system because of the qualitative nature of the data collected. The positioning of these four ports in Figure 3 is based mainly on interviewees' perception about power patterns.

In general, P/TOs and LSCs are highly interdependent in all these seaports. However, this does not mean these two parties' power is balanced. Interview evidence has indicated that in addition to the interdependent relationship, the power patterns in the case of Shanghai Port, Ningbo Port, and Qingdao Port were also characterised by P/TO dominance. In terms of Xiamen Port, both buyer dominance and supplier dominance were demonstrated. The characteristics of the power relationship in Xiamen Port are illustrated in the figure by virtue of its relative location in relation to the other three ports. Based on these four ports' location in Figure 3, it is noticeable that the power position of P/TOs in Xiamen Port is less advantageous in comparison to P/TOs in the other three hub ports.
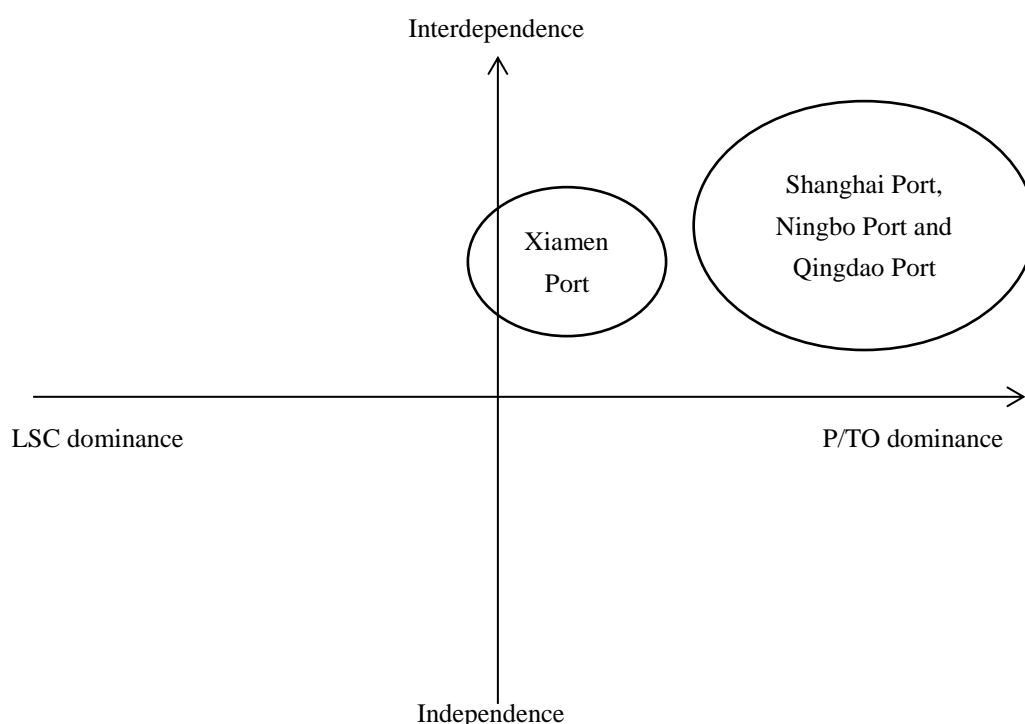
Interdependence

Xiamen Port

Shanghai Port, Ningbo Port and Qingdao Port

LSC dominance

P/TO dominance

Independence

Figure 3: The mapping of power patterns in Chinese hub seaports

5. Conclusions

By studying power patterns in the Chinese seaport sector, the relative market position between P/TOs and LSCs has been clarified. In general, the vested power pattern is multidimensional. In addition to the wide consensus about LSC-P/TO interdependence, the power patterns in the case of Shanghai Port, Ningbo Port, and Qingdao Port were characterised by P/TO dominance, whereas both P/TO dominance and LSC dominance were demonstrated in Xiamen Port. Therefore, a broad conclusion can be drawn regarding P/TOs' powerful status in relation to LSCs in the context of Chinese hub seaports.

This paper has applied the theory of power to the seaport and liner shipping industry. It attempts to raise more awareness about the study of power in the maritime sector. The paper adds empirical findings to the flourishing Chinese maritime market. It contributes to the power literature by applying Cox's (2001a) power regimes to an underdeveloped research setting. The multidimensional perception about the vested power patterns implies that the four

possible power positions may not be exclusive when a qualitative research design is adopted. Since social actors tend to pursue a favourable power position, the identification of power patterns has suggested directions for P/TOs and LSCs to achieve such a purpose. In addition, it is also important for these two parties to form a business strategy and ultimately achieve business success. However, respondents' explanations about their perception of power patterns imply a contextual-embedded feature of this concept. Therefore, the extent to which the findings of this paper can be generalised to seaports in other regions of the world remains to be seen. The complexity of the concept of power and its underdeveloped status in SC studies calls for the attention of future researchers.

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Appendix 1: The descriptions of four Chinese hub container ports (based on figures in 2012)

Ports	Throughput (million TEU)	World ranking	Status in national port system	Major container feeder ports assigned by The Layout Planning of National Costal Ports
Xiamen Port	7.2	19	Hub port within the port system in southeast China	Fuzhou Port, Quanzhou Port, Putian Port and Zhangzhou Port
Shanghai Port	32.53	1	National gateway port, Hub port within the port system in Yangtze River delta	Nanjing Port, Nantong Port, Zhenjiang Port, Lianyungang Port, Jiaxing Port, Wenzhou Port and Taizhou Port
Ningbo Port	15.67	6	Hub port within the port system in Yangtze River delta	
Qingdao Port	14.5	8	Biggest container port in north China, Hub port of the port system in Shandong Province	Yantai Port Weihai Port and Rizhao Port

Source: Chen et al., (2013); UNCTAD, (2013); Ministry of Transport of the People's Republic of China, (2006).