



Who canvasses for cargos? Incentive analysis and channel structure in a shipping supply chain



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ABSTRACT

Ocean shipping (**OS**) and inland shipping (**IS**) are vertically complementary services in the shipping supply chain. In practice, we have observed that both OS and IS companies canvass for cargos. In addition, we have observed that more and more IS companies are forming alliances to obtain a better price from the OS companies by hiring a negotiation agent. We solve the strategy matrix based on the following questions: “Who canvasses for cargos?” “Should a negotiation agent be hired?” We find that when an OS company canvasses for cargos, a negotiation agent can raise the IS service price; however, when IS companies canvass for cargos, a negotiation agent can weaken an OS company’s monopolistic advantage. We show that there exists a *win-win* situation when an OS company canvasses for cargos without a negotiation agent and that this win-win situation is Pareto-optimal for all shipping supply chain parties. Interestingly, by comparing the equilibriums under *optimal strategies* and *equilibrium strategies*, we identify a *lose-lose* situation. That is, a classic Prisoner’s Dilemma occurs when IS companies canvass for cargos and a negotiation agent is hired. We find that the shipping supply chain’s overall profit and social welfare are maximized when an OS company canvasses for cargos and IS companies do not hire a negotiation agent.

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1. Introduction

In maritime industry, it is common for ocean shipping (**OS**) companies to canvass for cargos. For example, the Maersk Group owns a subsidiary, DAMCO Logistic, that takes charge of its cargo canvassing business, and other OS companies do the same. Similarly, AMERICAN PRESIDENT LINES (APL) owns APL Logistic and CHINA COSCO SHIPPING CORPORATION LIMITED (COSCO) owns COSCO International Freight Co. Ltd. Both APL Logistic and COSCO International Freight Co. Ltd. canvass for cargos. Because OS and inland shipping (**IS**) services are complementary and contain generic elements (Bouchery et al., 2015), OS companies have to negotiate with IS companies to procure upstream IS services. This forms a vertical shipping service supply chain. Clearly, if an OS company canvasses for cargos, it can provide “one-stop” transportation services for its customers and enhance its competitiveness. In addition, according to the latest COSCO report, canvassing for cargos strengthens a company’s relationship with its customers, improves the quality of service, and expands the total market demand size.¹

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¹ <http://en.coscocs.com/>.

However, we have also observed that more and more IS companies canvass for cargos. For example, Chu Kong Shipping Enterprises (Holdings) Co. Ltd. (CKS), the largest IS company in the Pearl River Delta region of China, canvasses for cargos by providing joint IS and freight-forwarding services. Under an arrangement with CKS, customers pay for a one-stop service, leaving CKS to procure the downstream OS services and to form a shipping service supply chain. Similarly, Danser Group, whose network covers the inland waterways in Northwest Europe, is an independent logistical service provider. Danser canvasses for cargos and quotes prices for both IS and freight-forwarding services. According to [Murphy and Daley \(2001\)](#), an empirical study showed that more than 54.4% of respondents agree or strongly agree that the barriers between the international freight forwarders (IFFs), the carriers, and the logistics providers are disappearing, and more shipping companies are canvassing for cargos. In recent times, freight forwarders have been required to provide multiple logistic services ([Murphy and Daley, 2001](#)), then merger and acquisitions occur between freight forwarders and shipping companies to provide agile and flexible service and improve maritime logistics value ([Bradley et al., 1999](#); [Lee and Song, 2015](#)).

Undoubtedly, canvassing for cargos can be beneficial for both OS and IS companies. For the latter, according to SINO-TRANS & CSC HOLDINGS CO. LTD. (SINOTRANS & CSC), the largest IS company in China, canvassing for cargos helps combine the company with other business, thus providing an integrated logistics service.² IS companies actually have more incentives than OS companies to canvass for cargos. The possible driving forces for this are as follows: First, there are many more IS companies in the upstream IS market compared to the downstream OS market. According to the latest Rotterdam Port information report,³ there are 119 IS companies in the inland waterways around Rotterdam Port. They are competing fiercely with each other, resulting in low profit margins and a huge system efficiency loss. Second, IS companies help to increase their profit gains by buying and reselling OS services to their customers (as a new profit resource), especially when the OS service price is at an acceptable level.

In practice, there are other ways for IS companies to protect their profits. Forming an alliance is the most popular way. For example, the South China Common Feeder Alliance (SCCFA) comprises 30 IS companies in the Pearl River Delta region in South China. It covers 21 cities and 52 inland feeder ports and aims to enhance the relative negotiation power when it contracts with the monopolistic OS companies.⁴ The SCCFA has an office that acts as a negotiation agent for the IS companies and receives commissions under a predetermined revenue-sharing rate. Obviously, both advantages and disadvantages exist when IS companies hire a negotiation agent in the process of contracting with OS companies. On the one hand, hiring a negotiation agent reduces the intense competition in the IS market ([McGuire and Staelin, 1983](#)) and improves the negotiation position of the IS companies. On the other hand, a negotiation agent shares part of the profits of the IS companies, which increases the IS companies' costs. Involving a negotiation agent also results in a decentralized supply chain because one more supply chain party is added, inducing system profit loss ([McGuire and Staelin, 1983](#)). In addition, all IS companies in the alliance receive the same wholesale price when they sell IS services or procure OS services. Therefore, the benefits of IS price increases and OS price reductions have to be shared with their competitors (i.e., companies in the alliance who are competing in the IS market), and this might reduce the IS companies' incentives of joining an alliance. Thus, we raise the following research questions: (1) *is it possible for a monopolistic OS company and competing IS companies to cooperate over incentives as to who should canvass for cargos?* (2) *Is it beneficial or not for IS companies to hire a negotiation agent and form an IS alliance?* (3) *What is the equilibrium channel structure in this two-to-one (two IS companies and one OS company) supply chain where the services of the IS and OS companies are complementary?*

To answer the aforementioned questions, we propose two contrasting models: (1) the *model with a negotiation agent* and (2) the *model without a negotiation agent*. For each model, we consider the following two scenarios: a monopolistic OS company canvasses for cargos, and two competing IS companies canvass for cargos, respectively. Thus, there are four combinations: (1) A-OS, where the OS company canvasses for cargos, and the IS companies hire a negotiation agent; (2) NA-OS, where the OS company canvasses for cargos, and the IS companies do not hire a negotiation agent; (3) A-IS, where the IS companies canvass for cargos and also hire a negotiation agent; (4) NA-IS, where the IS companies canvass for cargos but do not hire a negotiation agent. Comparing these four combinations helps us study the incentives for cargo canvassing and negotiation agent hiring. We also derive the equilibrium channel structure to answer research question (3). We investigate the channel structure, which comprises two IS companies, one negotiation agent, and one monopolistic OS company. This investigation characterizes the more competitive IS market and the monopolistic OS market and facilitates our analytical study of the benefits of cargo canvassing and negotiation agent hiring. Our main findings are summarized as follows.

First, we identify the value of cargo canvassing for the IS companies and the OS company, respectively. When there is no negotiation agent helping the IS companies, we find that both the OS company and the IS companies have incentives to canvass for cargos when the upstream IS market competition is sufficiently intense. In contrast, when the IS companies hire a negotiation agent, we find that both the OS company and the IS companies prefer the other parties to canvass for cargos. For the IS companies, we find that the negotiation agent helps raise the IS service price when the OS company canvasses for cargos; however, the OS service price is *not* lowered when the IS companies canvass for cargos. Therefore, the IS companies benefit more when they sell IS services to the OS company but let the latter to canvass for cargos. Having said that, we further demonstrate that hiring a negotiation agent is an advisable strategy for the IS companies if they eventually

² <http://www.sinotrans-csc.com/col/col12477/index.html>.

³ <http://www.rotterdamportinfo.com/companies>.

⁴ <http://www.sccfa.com/ev/>.

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