Impacts of Ocean Carrier Alliances on the Maritime Freight Economy: Accounting for Variation in Alliance Utilization

# Abstract

Since the turn of the 21st century, vessel sharing via strategic alliances has become the dominant cooperative strategy among maritime freight carriers. These alliances have increasingly captured the attention of economists, industry analysts, and regulators, yet few empirical analyses have been published that measure the impact of such cooperative agreements on the maritime freight economy. This paper analyses extensive trade data at the vessel and container level to assess the impacts of ocean carrier alliances on the maritime freight economy, with an emphasis on US agricultural exporters. While alliances are global in their permitted scope, the level of actual cooperation between allies varies substantially across lanes and across time. This variability has not been addressed in previous works; we propose a simple indicator of alliance utilization and more directly measure the impacts of alliance activity. When alliances are highly utilized, we find +/- impacts on service frequency, shippers choice of carriers, and… We also show that excess capacity, a critical source of supply inefficiency that alliances are formed to resolve, +/- with alliance utilization, indicating that alliances are an in/efficient strategy to reduce oversupply.

# Introduction

The transition from the sailing vessel to the steamship in the early 1800s enabled the first regularly scheduled maritime freight services, and maritime shipping has been a vital part of the global economy ever since. By the dawn of the 20th century, the maritime freight economy was well established and enabled producers, typically referred to as “shippers”, to deliver their products to any coastal market on the globe[[1]](#footnote-1). The firms operating the vessels that carried the cargoes between ports became known as “carriers,” and the state of competition among carriers, or lack thereof, has been the subject of many volumes.

The primary concern has been, since at least the work of Alfred Marshall in the early 20th century, that the economies of scale inherent in ocean shipping and the relatively small number of firms operating between port pairs enable carriers to act as monopolistic cartels (Marshall 1921). Despite these concerns, regulations in the United States have historically been favorable to cooperation between carriers, especially under the conference system that dominated maritime freight for most of the 20th century. This system began in the late 1800’s and was formalized in 1916 when US regulators granted antitrust immunity to groups of carriers, termed “conferences”, in exchange for regulatory oversight in an attempt to mitigate the oversupply issues common at that time (Sjostrom 2010) (Clyde and Reitzes 1998). In practice, this allowed shippers to enter conferences on a given lane (i.e., an origin-destination port pair) that collectively set rates, subject to regulatory approval and the publishing of said rates to the public. Conference members were forced to honor the published rates for any shipper wishing to send similar cargo on that lane. The resulting economic behavior of carriers under this system has been widely viewed as the exact kind of monopolistic cartel behavior that Marshall anticipated (Stewart and Inaba 2003) (Clyde and Reitzes 1998) (Tang and Sun 2018) (Fox 1992) (Wilson and Casavant 1991).

Globalization skyrocketed the maritime shipping industry to prominence. Between 1970 and 2023, shipments of goods via maritime container ship increased by more than an order of magnitude and now account for some 90% of international trade (UNCTAD 2023, OECD 2024). This rise brought renewed focus on maritime shipping from the public and regulators, and support for the antitrust exemptions long enjoyed by carriers began to weaken in the late 20th century. The Ocean Shipping Reform Act of 1984 weakened the market power of the shipping conferences, and by 1998 the conference system was eliminated entirely. Since that time, carriers have been required to negotiate rates and service contracts with shippers in private under typical antitrust regulations. This regulatory change, along with concurrent advancements in supply chain management techniques, have led to strategic alliances becoming the dominant cooperative strategy between ocean carriers (Evangelista and Morvillo 1999) (Sheppard and Seidman 2001) (Panayides and Wiedmer 2011).

An Ocean Carrier Alliance (OCA) is a strategic alliance between two or more carriers that enable them to share space on each other’s vessels, set service types and schedules, coordinate on vessel maintenance and repair, and even co-charter vessels. OCAs must be approved by the Federal Maritime Commission (FMC) and are highly similar to the vessel sharing agreements that carriers have been commonly utilizing both before and after the fall of the conference system; however, vessel sharing agreements are typically very limited in geographic scope—applying only to a handful of lanes within a single region—and in the expected number of vessels utilized, which is typically less than a dozen. OCAs, by contrast, are global agreements that allow for the use of hundreds of vessels (in other words, up to the majority of the alliance members’ combined fleets). The most recent filing of the THE Alliance agreement, for instance, applies to “ports in North Asia, South Asia, Middle East (including the Arabian Gulf and Red Sea Regions), Northern Europe, Mediterranean, Adriatic, and Black Sea, Egypt, Panama, Mexico, Canada, Central America and the Caribbean on the one hand, and ports on the East, Gulf, and West Coasts of the United States, by any route including via the Panama and Suez Canals or the Cape of Good Hope, on the other, as well as ports and points served via such U.S. and foreign ports” (THE Agreement 2024). One needs not be a transport economist to recognize the global reach of such an agreement. OCAs also require standing committees and/or coordination centers to be jointly operated by the members in order to execute the alliance’s joint operations.

OCA members are required by their alliance agreements to negotiate slot sharing prices—the price that the member charges for carrying an ally’s container on vessels operated by the member—along with the specific number of slots on their ships that each member will allow their ally to utilize on that lane. This slot allocation and pricing is known to all members of the alliance, but it is not filed with the FMC nor made available to the public. Importantly, as of the time of this writing, all 3 active OCA agreements stipulate, either directly or indirectly, “the principle that the Parties’ basic slot allocation will be equivalent to contribution” to the alliance (OCEAN Alliance Agreement, 2024). We discuss this allocation extensively below.

The critical antitrust regulations for alliances are that they are barred from sharing rate information between the members, jointly marketing their services, or sharing revenues. These regulations undercut carriers’ ability to engage in traditional cartel price-fixing behavior (Wang 2012, Stewart, Inaba and Blatner 2003). However, this has not dissuaded all concerns that the maritime freight economy under the alliance system is not sufficiently competitive. Taken together, carriers in OCAs represent roughly 80% of global capacity, raising concerns that alliances may exercise market power in various ways (Evangelista and Morvillo 1999) (Ghorbani, et al. 2022) (Fusillo 2003). Despite these concerns, few empirical studies have been conducted with the goal of measuring the impacts of OCAs on the maritime freight economy (Ghorbani, et al. 2022).

This paper provides empirical research into the impacts of OCAs, arguing that viewing the members of an OCA as a single collective entity, and especially viewing all services provided by all members on all lanes as related to the OCA, is a flawed approach. Rather, it is vital to account for the fact that, while global in their *permitted* scope, in practice OCAs are highly utilized on some lanes and minimally utilized, if at all, on other lanes. The same is true across time, as we will see below in our analysis of the PIERS Bill of Lading database, which includes carrier, commodity, vessel, and various other data on every container imported or exported from US maritime ports since 2006.

This section introduced Ocean Carrier Alliances and provided the basic historical and regulatory context for our analysis, and the next section reviews the relevant economics literature. We then discuss our research methodology, followed by a discussion of the data sets utilized in our analysis. The Results section presents the empirical findings, and we conclude with a discussion of OCA impacts and recommendations for future research.

# Literature Review

As mentioned above, Alfred Marshal laid the foundation of analyzing anti-competitive behavior in the context of high economies of scale, and ocean carriers were used as a type example in his seminal book, *Industry and Trade*, first published in 1919. Modern studies have investigated these effects in the maritime freight economy, with the discussion relevant to OCAs beginning in the early 1990s as the conference system was coming under increased scrutiny. In 1992, Nancy Fox analyzed freight rates and found significant increases in price related to conference market shares, and decreasing price when the number of firms in the conference increases, supporting the argument that conferences act as cartels with more price-setting ability as market share increases, and decreased ability to enforce price collusion when the cartel is made up of many firms (Fox 1992). Subsequent analysis

1998 Market Power and Collusion Clyde and Reitzes

2001 Sheppard and Seidman – point out that alliances pre-date the fall of the conference system and allow carriers to benefit from economies of scale via cooperation without the complexities of mergers and acquisitions.

2003 Stewart and Inaba -

2003 Excess Capacity and Entry Deterrence

2010 Sjostrom in The Handbook of Maritime Economics and Business – provides a detailed history of cooperation and competition in the maritime freight economy, and among other topics, points out that firms with market power may extract rents not only from price-fixing behavior, but by

Important to note that not all economists agreed that shipping conferences were tantamount to cartels

* Some economists have argued that competitive equilibria may not exist in the ocean freight market, and “cartelization” may be an efficient response to such conditions (Pirrong 1992).

2011 Lun and Marlow – estimate that smaller-capacity firms are able to operate efficiently, while larger firms are not.

2011 Panayides and Wiedmer – provide a thorough discussion of the operational dynamics of Ocean Carrier Alliances, and argue, as we do, that OCAs “cannot be regarded as closed, corporate-lake entities”. This has, for some it seems, been the end of the discussion related to anti-competitive behavior among OCAs. If they cannot be regarded as a unique entity in the same way that a cartel might be, how could they possibly extract oligopoly rents from the market? We will return to this question in our analysis below.

2012 Wang – analyzed rate data from Drewery and found that the fall of the conference system in 1998 shifted the structure of the economy from cartel price-fixing to a competitive market. Notably, their analysis supported healthy competition through at least Q4 2009, well into the era of OCAs.

# Methodology

Given the open-ended nature of Strategic

# Data

# Results

# Discussion

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1. So long as the political relationship between the respective countries allowed, of course. [↑](#footnote-ref-1)