

## Guest Editor's Foreword

Ninety percent of world trade is transported by ocean transportation. World trade is transported as liquid-bulk (petroleum products), dry-bulk (coal and grains), break-bulk (dry non-bulk cargo on pallets), neo-bulk (loose cargo of common size as automobiles) and container cargo. During the first half of the twentieth century, the ocean transportation of bulk commodities advanced; ships were designed to transport coal, grain and petroleum products. However, the transport methods for dry non-bulk cargo changed little. All of this began to change in 1955 when Malcom McLean recognized that individual pieces of cargo needed to be handled only twice – at their origin when stored in a standardized container box, and at their destination when unloaded. He purchased a small tanker line, renamed it Sea-Land, and adapted its ships to transport truck trailers. The first voyage of a Sea-Land container ship left Newark, New Jersey for Puerto Rico on April 26, 1956; the first international voyage of a container ship (from the US to Rotterdam) occurred ten years later. The containerization of world trade had begun. In the years that followed, standardized containers were constructed, generally 20 or 40 feet long without wheels, having locking mechanisms at each corner that could be secured to a truck chassis, a rail car, a crane, or to other containers inside a ship's hull or on its deck.

In the first paper entitled, "Container Shipping and Ports: An Overview," Notteboom provides an overview of ocean container transportation. Container shipping lines provide ocean container transportation services that include, for example, transshipment-port, east-west trade lane, north-south trade lane, and around-the-world services. The lines have experienced poor financial returns in recent years – primarily due to vessel overcapacity. They have sought to improve their financial performance by lowering costs – using larger vessels and by co-operation, mergers and acquisitions. Containerships exhibit economies of ship size at sea. Co-operative agreements include strategic alliances and vessel sharing agreements. Container shipping lines are exerting greater demands on container ports and terminals to improve their productivity. Terminals may be common-user or dedicated (i.e., restricted to one or a limited number of lines). Many container ports around the world are managed on the landlord concept, where landlord authorities lease the port to private port operators. An outgrowth has been the significant increase in the number of ports managed by global terminal operators.

The second paper by Sjoström entitled, "Ocean Shipping Cartels: A Survey," surveys the literature on whether shipping conferences are cartels or institutions to prevent destructive competition. Shipping conferences are organizations of shipping lines operating on a particular route that set (possibly discriminatory) prices and sometimes pool profits or revenues, manage vessel capacity and offer loyalty discounts. In 2001 there were over 150 conferences in operation worldwide, but in recent years their number has declined and been supplanted by alliances. The argument that conferences are cartels is found in Marshall's (1921) *Industry and Trade* – conferences could act as monopolists because there were substantial scale economies in the industry that led to a small number of firms. However, the results from recent attempts to test whether cartel models can explain shipping conferences are mixed. Support by early models for shipping conferences as institutions to prevent destructive competition includes the argument that the demand and supply of shipping line services are inelastic which leads to highly unstable prices; therefore conferences can reduce risk to both carriers and shippers. One flaw to this

argument is that if shippers valued rate stability, they could write forward contracts. Tests of the empty core model for explaining that shipping conferences are institutions to prevent destructive competition have found a positive correlation between conference market share and output and conferences are more dominant when demand is more variable which are both consistent with an empty core and contrary to a monopoly model.

In the third paper, “Port Pricing Structures and Ship Efficiency,” Strandenes discusses port pricing structures to enhance shipping efficiency. The standard vessel scheduling procedure at ports is “first-come-first-serve,” which results in inefficient allocations of port capacity in that it does not reflect the waiting costs of vessels. Further, the procedure disregards the vessel operator’s willingness to pay higher port charges to reduce time in port. Existing port pricing structures are discussed and contrasted to proposed efficiency promoting port pricing structures – congestion pricing, priority pricing and slot auctions. Congestion port pricing reduces vessels’ time in port by the spreading out of vessel arrivals. Further, by increasing peak-hour port charges, shippers with a higher willingness to pay for port capacity will be allocated this capacity at peak hours. Priority pricing is a two-part tariff, where vessel operators pay an admission charge for access to a port and a priority charge that guarantees the priority, for example, the maximum time in port. Priority pricing is a method by which the port can differentiate its services, i.e., with respect to quality (for example, speed and reliability). Slot auctions are vessel scheduling procedures, whereby port capacity is allocated to vessel operators by their bidding for port time slots. Since vessel operators do not necessarily prefer the earliest available slot, the auctioning procedure must allow for this possibility. Further, for the procedure to be efficient, it must allow for a forward market in slots and the sell back of slots bought in a former auction.

Ergas, Soon and Fels in the fourth paper, “Exclusive Licensing in Harbour Towage,” investigate whether exclusive licensing of the right to provide harbour towage services in ports can provide a superior outcome to open competition. Regulation of harbour towage in Australia, European Union, US, Canada, New Zealand, Singapore and Malaysia are discussed. Arguments for and against the introduction of exclusive licensing of harbour towage are evaluated. In addition, a case study of Australian harbour towage is provided. Costs inherent to exclusive licensing in harbour towage which cannot be easily avoided include those associated with: contractual design; enforcement, bidding parity problems and distortions in the timing of investments; and exclusive licence timing issues. The investigation concludes that the assumption that any increased entry promoted by exclusive licensing is a net gain is questionable when the incentives of the licensor are realistically considered. Further, whether there are any real and sustainable benefits to consumers from exclusive licensing in harbour towage is still open.

The fifth paper by Brooks entitled, “The Governance Structure of Ports,” discusses global port management governance models. The discussion begins with the World Bank Port Reform Toolkit administrative models – Service Port, Tool Port, Landlord Port and Private Service Port. For the Service Port, ownership and service provision are predominately public; for the Tool Port, ownership is public with some port operations provided by private operators; for the Landlord Port, the owner maintains ownership of the port while the infrastructure is leased to private operating companies; and for the Private Service Port, ownership and service provision are in the hands of the private sector. Port governance has also been classified in terms of regulator (for example, licensing, vessel traffic safety and customs), landlord (for example, port

security, dredging and development) and operator (for example, towage, cargo handling and pilotage) functions. The global governance of ports has changed dramatically over the past two decades due to port devolution programs – the transfer of port functions and ownership from a federal government to another entity. If the entity is in the private sector, the devolution program is privatization. In the UK various Associated British Ports were sold to private enterprises. The sale or privatization of UK ports has been criticized for low sale prices (subsequent trading in port shares revealed that the ports were sold for between 5% and 25% of their real market value) and government's too drastic abandonment of port regulatory functions.

Cullinane, Song, Ji and Wang in the sixth paper, "An Application of DEA Windows Analysis to Container Port Production Efficiency," investigate the efficiency of container port production using Data Envelopment Analysis (DEA) and a sample of the world's major container ports. Panel data are advocated in favour of cross-sectional data. When time is not considered as in cross-sectional data, the traditional DEA cross-sectional approach for investigating port production efficiency may produce misleading results. Panel 1992-99 data are used to overcome this problem. The investigation concludes that the production efficiency of container ports can fluctuate over time and substantial inefficiency exists in some container ports at some point in time. Most container ports exhibit constant returns to scale. Some ports in the sample that are measured to be relatively highly efficient do not invest actively over time, while there exist low efficient counterparts that invest actively in port equipment or infrastructure in order to be competitive in the long-term. Thus, port competition and competitiveness may have a direct impact on the relative production efficiencies of container ports. Differences in the relative efficiencies may be due to differences in port governance, location attributes and the level of port competition.

In the final paper, "Wage Differentials of Intermodal Transportation Carriers and Ports: Deregulation Versus Regulation," Talley investigates occupational wage differentials among transportation carrier and inter-related industries under carrier economic regulation and deregulation. The regulation and deregulation of transportation carriers may affect not only the wages of carrier workers but also the wages of workers of inter-related industries, i.e., industries that provide supplies and services to the carriers. Occupations of two intermodal transportation carrier (railroad and truck) industries and one inter-related (the port) industry are utilized in the investigation; occupations include railroad engineers, truck drivers and dockworkers. Wage differentials for US truck drivers versus dockworkers and rail engineers versus dockworkers are estimated for carrier (railroad, truck and shipping) regulation and deregulation periods utilizing 1973-97 individual employee data from the US Bureau of the Census' Current Population Survey. The wage-equation estimation results suggest that the union real wages of rail engineers, truck drivers and dockworkers were comparable in the regulation period; in the deregulation period the union real wages of rail engineers and truck drivers declined relative to those of dockworkers – negative union hourly wage gaps of 6.9% and 22.7%, respectively. The primary reason for the widening in the wage gaps among the occupations in the deregulation period appears to be the relative change in bargaining power; for railroads and truck carriers there has been a shift in bargaining power from unions to management and for dockworkers the shift has been from management to unions.

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