

MARINE CONTAINER TERMINAL OPERATORS: THE EXTENT OF COMPETITION

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I. Introduction

Marine container operators are key players in supporting the growth of world trade and in port competitiveness. It is instructive to note that major global container terminal operators posted margins of 30 to 40 percent even though all major east-west trade lanes faltered and annual container volume fell by 12% in 2009. Yet, the behaviour and extent of competition amongst container terminal operators in Canada is ignored as authors on the subject have recently concentrated on the implications of Canada's gateway and trade corridor policy, . Understanding marine container terminal sector behaviour and competitiveness may be as important as the gateway debate (fuelled by the unbridled growth and capacity crunch projections) of the last few years.

Container terminal operators and their supporting distribution networks are complex, consisting of three primary units: 1. The port authority; 2. The terminal operators; and 3. The longshore labour. The first manages port development, the second manages terminal operations, and the third provides labour for ship cargo handling activity. Besides these primary or internal stakeholders, a second set of major players are external stakeholders such as railroads, dray truck carriers (i.e. trucks carrying containers in and out of ports), governments (i.e. Federal, state and local), shippers and local communities.[1] In such a complex business environment, the extent of competition may not be that transparent. Significant merger and acquisition activity that has occurred in the last few years along with national security concerns expressed in the US by the prospects of foreign ownership has heightened interest in the sector.

This paper begins by describing the marine container terminal industry. Given their global presence, first the major terminal operators in the world are reviewed. The world container traffic and container throughput at major Canadian ports and the market share of terminal ownership groups are then examined. Thereafter, competition of container terminal operators in Australia where it has been monitored for several years will be discussed. Based on this experience, the structure of the industry and occasional reviews of this subject we comment on competition and performance issues in the USA and Canada. Regulations that are likely to affect competition in this industry are briefly mentioned before the conclusion on productivity and regulatory framework is presented.

** The views expressed here are those of the author and are not purported to be those of the Commissioner or the Competition Bureau, Industry Canada.*

II. Marine Container Terminal Operators

In this section some background information will be provided such as definitions (port, port authority and marine terminals and marine terminal operators), major marine terminal operators in the world and major terminal operators in Canada.

1) Definitions

A 'port' in connection with marine activities is normally understood to mean a harbour or docks where ships load and/or unload cargo and where custom officers are stationed.

A 'port authority', In Canada, known as Canada Port Authorities (CPAs) are responsible for the business operations of the port within the policy framework set out by the *Canada Marine Act* (CMA) and further defined through Letters Patent established for each CPA. The term CPA used elsewhere and more generally is taken to mean an authority responsible for the overall administration of the property, terminals, and other facilities on the port complex.

A 'marine terminal' is an assigned area with equipment for loading and unloading ships, and space for staging cargo until it is loaded on the ship or transferred to other modes of transport. Most terminals are leased to marine terminal operators. The leases are typically for a long term (10 to 30 years).

A 'marine terminal operator' (MTO), in the U.S.A., according to the *US Shipping Act of 1984* is defined as a person engaged in the business of furnishing wharfage, dock, warehouse, or other terminal facilities in connection with a common carrier.[2] This definition, according to the Federal Maritime Commission, covers three sorts of MTOs: Public port authorities; Private terminal operators; and MTO Conferences. The first qualify as MTOs, because they own and maintain the docks and other facilities that ocean common carriers use and because they sometimes directly operate the terminals as well.[3] The second qualify, as these are companies that, typically, lease terminals from a public port authority (which act as landlord) and operate these terminals as a private business that serves ocean common carriers calling at the port. The third qualify, as these are regulated organizations, called MTO "agreements," of multiple MTOs (port authorities, private MTOs, or both), usually composed of MTOs operating in a single port, or of MTOs from several ports within a single state or across a multi-state U.S. coastal range. A major function of the terminal operator is stevedoring.

A 'stevedore' according to the *Concise Oxford Dictionary*, is a "man employed in loading and unloading ships." [4] Their function today extends to other

services such as storage, maintenance, repositioning of containers, movement of containers from wharves to road and rail transport links, these functions have gradually been included as stevedoring services.

2) Major marine container terminal operators in the world

The major marine container terminal operators in the world are: Hutchison Port Holdings, APM Terminals, PSA and DP World. Together these companies account for nearly forty percent of the total throughput of global terminal operators. This ranking is not expected to change since there are no major companies left to acquire, partly because of the capital needed to buy or build new port facilities and the European Union's concern of the extent of the market share they control in northern European ports. DP World would have maintained its fourth rank if it had not decided to sell its recent acquisition of P&O Ports assets in the U.S. Table 1 below shows a list of the largest ten global terminal operators in 2005 and 2002.[5] Of these, SSA Marine is the largest 'US owned' terminal operator in the US. Carriers that own their terminals have an edge over competitors as they are always assured of berth space and have a greater incentive to make long term investments when compared to marine container terminal operators who lease terminals.[6]

"Despite a wave of consolidation among global terminal operators a few years ago, the business remains fragmented. The Big Four Operators -Singapore's PSA, Hong Kong's Hutchison Port Holdings, A.P. Moller- Maresk APM Terminals and Dubai based DP World - have a combined share of just under 30 percent of global container throughput."[7]

Table 1 - Global Marine Container Terminal Operators in 2002-8

Operator	Rank- 2002*	Rank -2005	Rank-2008	TEU's (m.)	M. share (%)
Hutchison Port Terminals (HK)	1	1	2	51.8	13
APM Terminals (Denmark)	3	2	3	40.4	10.1
PSA (Singapore)	2	3	1	40.3	10.1
P & O ** (UAE)	4	4		23.8	6
Cosco (China)	8	5	5	14.7	3.7
DP World (UAE)	7	6	4	12.9	3.2
Eurogate (Bremerhaven)	5	7	8	12.1	3
Evergreen (Taiwan)	6	8	6	8.7	2.2
MSC (Switzerland)	20	9	7	7.8	2
SSA Marine (USA)	10	10	10	7.3	1.8

Source: Drewery Shipping Consultants Ltd. * Hanjin was 9th. ** P&O Ports is now known as Dubai World.

3) Marine container terminal operators in Canada

The major marine container terminal operators in Canada are: Global Container Terminals Inc. (GCT), Dubai World, Australia's Macquarie Bank, Montreal

Gateway Terminal and Ceres Corporation. A recent operator is Maher Terminals of N.J. It is noteworthy that the Canadian marine terminal market is not dominated by the world's top operators. GCT is owned by the Ontario Teachers' Pension Plan (formerly owned by Orient Overseas (International) Ltd.

It operates Vanterm (76 acres) and Deltaport (100 acres). Dubai World operates Centerm Terminal (72 acres). Australia's Macquarie Bank Ltd. owns Fraser Surrey Docks, a container and break-bulk terminal (132 acres) on the Fraser River in Vancouver. It also owns South End Container terminal (72 acres) in Halifax. Montreal Gateway Terminal (MGT) owned by Hapag-Lloyd has two anchor terminals: Cast and Racine both in Montreal.[8] Cast terminals (62 acres) is operated by Cast Terminals Inc. and Racine Terminals (68 acres) is operated by Racine Terminals Ltd. MGT is owned (80%) by Morgan Stanley's infrastructure fund group which was recently acquired from TUI AG when it bought Anglo-Canadian carrier CP ships in 2005. Ceres Corporation operates Fairview Cove terminal (70 acres) in Halifax. Maher owned by Deutsche Bank operates the Fairview Terminal (59 acres) in Prince Rupert. It has a 30 year agreement with the Prince Rupert Port Authority.

III. Marine Container Terminal Operators and Container Throughput

Aside from the size of the initial capital investment, the success of container ports and marine container terminal operators depends on the volume of container throughput. In this section, world container traffic, container throughput at major Canadian ports and their market share shall be briefly described.

1) World container traffic

World container traffic is shown in the table hereafter. Over the period 1986-2006, it has increased from 59m TEUs to 417m TEUs, a 602% increase or an average growth rate of 30% per annum. As of July 12, 2007, the top five ship operators (APM-Maersk Line, Mediterranean Shipping Co., CMA CGM Group, Evergreen Line and Hapag-Lloyd) controlled 43.1% of the total TEU's. Of the total world container traffic, Canada accounts for more than 1% compared to 11% accounted for by the US. Empty containers have been estimated at 20 percent of all ocean container moves in the US, costing shipping lines in excess of \$11 billion a year.

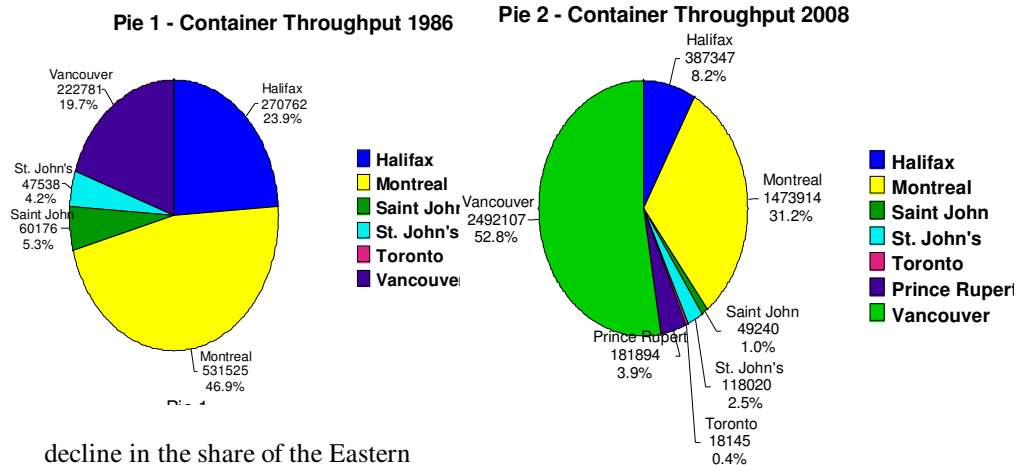
Table 2 - World Container Volumes 1986-2006

	1986		1996		2006	
		% ▲		% ▲		% ▲
Containers (TEU)	59.4	-	147.3	148	417	602

Source: Containerization International Yearbook

2) Container throughput at major Canadian ports

The first container port built in Canada was in Montreal in 1968. Halifax built the second in 1969 and Vancouver the third in 1970. Since this early period, important changes have occurred in the volume of containers and the ranking of these ports. For the periods 1986 and 2008, the volume of containers through Canadian ports increased from 1.13mTEUs to 4.720mTEUs an average of 14.4% per annum or about half the world growth rate. The volumes and share are shown in the pie-charts below. The pie-charts reveal four major changes: the increase in volume of containers through the ports; the emergence of new ports; a change in the rank of the major container ports; and a shift to the West Coast as the most important gateway for containers to Canada together with a



decline in the share of the Eastern seaports. For Vancouver, container volume has grown 1019% over the period 1986-2008 compared to an increase of 177% for Montreal and 43%

for Halifax. In Canada container traffic is highly concentrated with the top two ports accounting for 84%. [9] It remains to be seen if the new container terminal

in Prince Rupert will change this situation.

3) The market share of marine container terminal operators in Canada

The market share of the major marine container terminal operators is shown in the table hereafter. They are calculated by aggregating the TEU moving through the major terminals owned by various operators. The numbers reveal that GCT and MGT are ranked as the dominant operators on the West coast and East coast with a market share of 70%+.

Table 3 - Marine Container Terminal Operators in Canada (2006)

Operator	Terminal	TEU's (millions)	Market share (%)	Market share West Coast (%)	Market share East Coast (%)	Rank (2006)	Rank (2005)
GCT	Vanterm & Deltaport	1.34	39.6	77.47	0	1	1
MGT	Racine & Cast	1.16**	34.3	0	70.23	2	2
Macquarie	Surrey Docks & Halterm	0.235*	6.9	5.47	8.48	5	3
White	Centerm	0.295	8.7	17.05	0	4	5
Ceres	Fairview Cove	0.352	10.4	0	21.3	3	4
Total		3.382	100	100	100		

* Surrey - 94,651 TEU; Halterm - 140,000 TEUs (Estimated)= 234,651. ** The two other terminals Termont and Bikerdiré handled domestic containers (service to Newfoundland) or did not handle any container traffic.

IV. The Extent of Competition in the Marine Container Terminal Business

In examining the question of competition, we are concerned with competition among marine container terminal operator's rather than competition among ports which is a much broader. The former is concerned with competition among stevedoring companies, the latter would include: inter-port competition; intra-port competition; and intra-terminal competition. A few examples illustrate the difference: one port may be nearer to the destination than another and therefore may be more competitive, one port may have greater channel depth and may therefore be able to attract larger container vessels and may be more competitive than another, etc. The description of competition is briefly summarized based on the extensive monitoring and benchmarking done by the Australian Competition & Consumer Commission, Productivity Commission, etc. The conclusions on behaviour and performance in USA and Canada are large based on structural characteristics of the marine terminal container operators and descriptive reports or articles on the subject.

1) Australian Experience

The Australian Competition and Consumer Commission (ACCC) has been

monitoring the container stevedoring industry from 1999. Their monitoring provides interesting results on competition, prices, costs and profits in the industry.

Structure: All the terminals - Brisbane, Burnie, Adelaide, Sydney, Fremantle and Melbourne - under the monitoring program have two stevedoring companies other than the ports of Burnie and Adelaide which have only one.[10] It is generally accepted that there are economies of scale in stevedoring. It is also believed that some economies arise from management and coordination of workforce and equipment. However, entry and exit costs are not generally considered large. Somewhat surprisingly, the Australian Productivity Commission (1998) was of the opinion that the cost of establishing a presence in the industry may not represent a significant obstacle to entry though other features may make entry difficult.[11] For example, the need to supply a large share of the market to operate efficiently, the exclusive and long-term nature of existing lease arrangements, and the need to establish a presence in several ports.

Behaviour: The results of the monitoring program in 2006, led the ACCC to question the intensity of competition in the stevedoring industry. "These results reinforce concern expressed in previous monitoring reports that outcomes in the stevedoring industry may not be consistent with outcomes that could be expected under effective competition." "In general, the existence of a duopoly in any industry raises questions regarding the degree of price competition and incentives to expand capacity. Where a duopoly has the ability to achieve rates of return which are consistently above those which might be expected in more competitive markets, this will not be in the long term interests of firms and individuals that rely on the services provided by the duopoly." It is also worthwhile noting that the potential for countervailing power is limited from price competition due to demand being relatively price-insensitive and due to contractual obligations. Further limits are the capacity of stevedoring companies and the need to provide service at several ports. The fewer the number of competitors, the greater the probability of collusive behaviour and its success. Not surprisingly, in August 2007, the Australian antitrust authorities filed charges against a number of terminal operators and executives for colluding on truck operations to suppress competition. In July 2009, the Federal Court approved a fine of \$3.8 million (to be equally paid by Patrick and P&O).

Performance: The ACCC notes the presence of record high levels of unit profit, the persistence of strong profitability, the increases in price, and the comparatively high rates of return on assets.[12] In addition, productivity levels (as measured by crane rate, elapsed labour rate and ship rate) have fallen, on

average across the five mainland Australian ports since the early 1990s. Given the structure and behaviour in the stevedoring industry in Australia these results do not bode well for port competitiveness or for expanding world trade during a period of economic recovery.

2) US Experience

The best known studies of MTOs in the US are *Improving Productivity in U.S. Marine Container Terminals* (1986) and the *National Marine Container Transportation System* (2005). We add to this with current information from port websites and information in trade journals.

Structure: The major ports - NY/NJ, Hampton Roads, Charleston, Savannah, Los Angeles, Long Beach, Oakland, Tacoma and Seattle - in the US have in general several container terminals [5; 3; 3; 1; 8; 7; 10; 5; 4]. Each of these terminals have at most one or two marine terminal operators and some of these terminal operators provide service to more than one terminal [6; 2; 1; 1; 7; 6; 8; 5; 3]. The largest three MTOs in the US are: APM, AIG (which bought P&O from Dubai Ports and MTC) and SSA Marine. Further, many of these operators have a presence in several ports (eg. SSA, MTC, APM, Eagle Marine) and most of these operators have committed investments in infrastructure and long term contracts with ports. These factors and the presence of economies of scale suggest that new entry may be difficult. A study in the US, reports that container traffic in the US is highly concentrated and is becoming more so with the top ten ports accounting for 85% and the top two accounting for 36%.

Behaviour: Given the market structure, price competition is limited. There has been an increase in merger and acquisitions in recent years. It has risen from two sources: existing shipping lines/terminal operators; and financial institutions. For example, in 1999, APM acquired Sealand Service and Dubai Ports acquired P&O; and in 2006 and 2007, financial institutions or Pension Funds acquired a number of terminals, eg. Deutsche Bank acquired Maher Terminals, Teachers Fund acquired two terminals in NY, AIG Global's purchased Dubai Ports World's US assets of P&O. Since the former are not new entrants, it has led to further concentration. Given the antitrust exemption to MTO's, one would expect collusive behaviour. For example, in NY/NJ all the ports, except Maher Terminals have formed the New York Terminal Conference. There is also a great deal of investment being undertaken by terminal operators to enable them to take advantage of the expected increase in containers from China.

Performance: Regarding prices, the US ports (Los Angeles and Philadelphia) recorded major increases in relative charges for container handling compared to ports in Australia, Tilbury, UK and Hamburg, Germany for the period 1997-2002, according to the ACCC. Further, the relative charges are much higher at

these two US ports than ports mentioned above. Regarding productivity, the best US terminals are not as productive as the most productive foreign terminals. Further, the West coast ports are lagging behind those on the East Coast.[13] The difference in productivity stems from the work rules and attitudes towards the introduction of technological improvements by the different labour unions on the two coasts. Regarding profitability, the limited information on persistence of high profits [20% range] is consistent with the structural characteristics of the industry.[14] It is too early to tell if the anticipated financial returns will materialize in the wake of the global economic slowdown.

3) Canadian Experience

There has been very little research on terminal operators in Canada other than the Pacific coast. Most of the recent publications have concentrated on containers and port infrastructure. Information described here has been collected from port websites and studies on containers.

Structure: The major container ports in Canada - Vancouver, Montreal and Halifax - in general have few container terminals [4 (Vanterm, Deltaport, Centerm, Fraser Surrey Docks), 2 (Cast and Racine) and 2 (South End Container and Fairview Cove). Each of these marine terminals have one operator. Like Australia and USA, these operators have committed investments in infrastructure and have long term contracts with ports. Unlike these two countries, the presence of operators in other Canadian ports is absent (except Macquarie), however, the operators in two of the three major ports control more than one terminal resulting in substantial market share and concentration on the West coast and East coast, respectively. This suggests that entry by new firms may be difficult because capital required for entry and sunk costs may be fairly large depending on terminal size.

Behaviour: Given the market structure, competition among operators with regard to prices is generally non-existence or weak. This observation was also confirmed in a recent report "Container terminals in Canada, ... are essential services with little competition." [15] The last few years have witnessed a substantial degree of merger and acquisition activity. The Ontario Teachers' Pension Plan acquired GCT which operates Vanterm and Deltaport. DP World acquired P&O Ports Canada which operates Centerm Terminal and Australia's Macquarie Bank Ltd. acquired Fraser Surrey Docks and Halterm. There is limited competition between terminal operators but there is no evidence of any collusive behaviour. However, joint ventures have appeared. For example, Port Metro Vancouver (formerly the Port of Vancouver Fraser Port) formed a joint

venture with APM Terminals and SNC-Lavalin that will create a 200-acre container terminal. A great deal of investment has recently been undertaken by terminal operators.

Performance: Regarding productivity, container terminals in North America lag behind most of the large container terminals in Asia. Most of these terminals have round the clock shifts compared to the two shifts in Canada and no container terminal in Canada is open for more than 12 hours a day generally, partly because of the fact that the costs for the midnight shift is very high. Labour problems, port capacity and rail reliability and accountability have been identified as some of the factors contributing to the lagging productivity performance. Regarding profitability, the attraction of institutional investors such as Ontario Teachers' Pension Plan, Australia's Macquarie Bank Ltd. suggests a reasonable rate of return.

4) Global Experience

The global network effects of increased horizontal integration of marine terminal operators across the globe merit consideration. There are several issues. First, terminal operators could offer terminals of call combinations as one package to shipping lines. Second, terminal operators could practice cross-subsidization between terminals. Third, terminal operators are forming worldwide partnerships between shipping lines and in some cases are owned by the latter. Fourth, terminal operators are gaining wider control of parts of the supply chains through vertical integration. Fifth, barriers to entry into the industry continue to increase (eg. raising rivals costs or reducing rivals revenue). Finally, the regulator is being faced with new challenges.

A recent article calls attention to: horizontal integration in the market; vertical integration and the changing role of port terminals in supply chains; entry barriers in the business; and challenges to the regulator. It states "...the industry structure has become sufficiently concentrated to raise a fundamental question about whether market forces are sufficient to prevent abuse of market power. EU competition law has already affected Hutchison's expansion within North Europe, and it is likely that any future moves by PSA and DP World will also be carefully scrutinized by regulatory authorities." [16]

V. Regulations that Affect Competition among Marine Container Terminal Operators

Exemptions from competition laws and the nature of the competition laws in each country affect the extent to which firms in an industry can be expected to compete with one another. For example, if the firms are given a complete exemption, they

may collude on price and service or they may abuse their market power, etc. and in some countries prices may be a matter of concern. The scope of the exemption will also determine the extent of competition. For example, agreements between a shipping conference and a terminal operator may not be given an exemption whereas marine terminal operators at a port may be given an exemption. Since the application of competition laws to marine terminals is not uniform throughout the globe, the extent to which they are granted an exemption will be described.

Australia: In Australia, the precise scope of the exemption under *Part X of the Trade Practices Act 1974* to marine terminal operators is unclear. The first issue is whether the exemption to shipping conferences agreements covers terminal charges. The second issue is whether the exemption applies to collective rate setting to container terminals inside and outside the confines of a port or the limits of the wharf to ocean cargo. The third issue is whether the exemption applies to the collective negotiation of stevedoring contracts by conferences as a block. The ACCC's recent charges (against P&O and Patrick) to fix the prices of stevedoring services from shared facilities indicates their view on the subject. Given the existing practices and the need to ensure consistency with intermodal transport and door-to-door rates, the Productivity Commission recommended that Part X be clarified to provide an exemption to cover all the above issues.[17]

Canada: In Canada, marine terminal operators are subject to the competition laws. These marine terminal operators or agreements between marine terminal operators and shipping conference are not granted any exemption from the application of the competition laws either directly or through the *Shipping Conferences Exemption Act*. The removal of the exemption also applies to stevedoring services after 1973 when the *Competition Act* was amended to apply not only to articles but also to services. The business of stevedores and ports are both subject to the competition laws.

USA: In the United States, antitrust immunity does not apply to agreements between shipping conference and marine terminal operators (section 7 of the *US Shipping Act of 1984*). This Act, however, does provide antitrust immunity to marine terminal operators and ports. This immunity was retained in the *Ocean Shipping Reform Act of 1998* (OSRA), despite opposition to the immunity by the FTC.[18] However, there are FMC regulations that apply to two particular MTO activities: The publication of MTO rates, regulations, and other practices in MTO Schedules, (formerly called "MTO tariffs"); and Agreements among MTOs, or between MTOs and ocean carriers, to discuss, fix, or regulate rates or other

conditions of service in foreign commerce.

VI. Concluding Remarks

Marine container terminal operators are key players in ports, competition and world trade. The business is global and the leading operators are striving to dominate the market. In 2009 major global container terminal operators posted margins of 30 to 40 percent in face of very difficult container shipping markets. Container terminal operators have controlled their fixed costs and when cargo volumes drop so do terminals' variable costs for labour. Where barriers to entry are high, facilities are modern, high productivity, and little or no local or regional competition create a recipe for steady profits. Discussions with Neil Davidson of Drewery Shipping Consultants suggest that Canadian container terminals are much like most ports around the world. i.e. competition is relatively limited for local cargo, and often oligopolistic in nature. A key difference impacting the degree of competition in Canada is for the longer distance intermodal cargo which has a choice of a number of port gateways in North America."

A review of this service industry indicates that:

First, the lack of improvement in productivity and the price increases indicates that these outcomes are not consistent with those expected under effective competition. Further, the lack of competitive behaviour is not only a matter of concern because it affects terminal productivity and efficiency but also because it affects the international competitiveness of exports. Furthermore, it not only affects the ability of ports to compete but also the capacity of ports.[20] As noted by the ACCC "In general, the existence of a duopoly in any industry raises questions regarding the degree of price competition and incentives to expand capacity." [21]

Recommendations to increase productivity indicate the need for research on: operating a second shift each day and eventually round-the-clock operation; shifting to 40 foot containers or larger containers; increasing the speed with which a container moves through a marine terminal, including resolving trucking and labour concerns; linking the terminal gate and the container yard electronically; automating the flow of data and increasing the use of information technology; and employing better labour practices among all concerned parties. Second, there is lack of uniformity in antitrust regulations that apply to container terminal operators among jurisdictions. First, it affects the extent of competition. Second, it suggests that there is no consensus on whether the antitrust exemption provides any social benefits and whether antitrust immunity should continue. In addition, if one believes that marine terminal operators between neighbouring

ports compete, other regulations that affect costs such as Coast Guard regulations and Canadian Border Service Agency could affect competition. In addition, the rapid transformation of the industry is posing unique challenges for the regulator. “The regulatory framework has to cope with a very dynamic container terminal industry characterized by consolidation, the emergence of global networks, vertical integration and a wide range of partnership arrangements between terminal operators and shipping lines. These developments are putting existing regulatory frameworks to the test. They are also urging the regulator to revisit concepts and procedures about assessing the use and abuse of market power and our notions on relevant geographical markets and relevant product markets.”[22] Recommendations to improve the regulatory framework suggest further research is needed on: consultation among various jurisdictions on the need to remove antitrust exemptions; examination of various regulations that affect cost; and examination of whether the regulatory framework is appropriate including the feasibility of increasing competition and facilitating entry.

Bibliography

1. Leach, Peter T., APM Terminals says new facilities alone won't keep up with rising volume, *The Journal of Commerce*, October 30, 2006, pp. 12-14.
2. *Container stevedoring*, Monitoring report no. 8, ACCC, Nov. 2006, p. 33.
3. *International Benchmarking of Container Stevedoring*, Australian Productivity Commission Report - (2003).
4. *Review of Significant Ports in South Australia*, Dept. for Transport Energy and Infrastructure, 2008.
5. Terminal Operators and Their Role in US Port and Maritime Security, CRSReport for Congress, April 20, 2006.
6. Maloni, Michael and Eric C. Jackson, “North American Container Port Capacity: An Exploratory Analysis,” *Transportation Journal*, Summer 2005, 44, 3, p. 2.
7. *Pacific Coast Container Terminal Competitiveness Study*, Hanam Canada Corporation, March 2008.
8. Fung, K. M., Cheng, K. L. and Qiu, D. L., The Impact of terminal handling charges on overall shipping charges: an empirical study, *Transport Research*, Part A, Vol. 37, 2003, pp. 703-716.

Endnotes

1. See 6 in Bibliography, p. 2.
2. See US Shipping Act of 1984, section 3(15).
3. A marine container terminal is an assigned area with facilities for loading and unloading containers of various types of vessels. Typically a marine terminal will also be where containers are received, stored, and later distributed to sites outside the port. Containers requires adequate crane service and appropriate storage areas.
4. *The Concise Oxford Dictionary*, Fifth 1964, p. 1261.
5. Leach, Peter, T., Pedal to the Metal, *The Journal of Commerce*, July 31, 2006, , p. 22.
6. Leach, Peter, T., Money talks, *The Journal of Commerce*, January 2007, pp. 38-40.
7. Drewry, “Top global terminal operators will control a third of world capacity,” www.tdctrade.com/shippers/vol26.
8. Besides the two mentioned the others are Termont and Bikerdike. According to Transport Canada “...Empire Stevedoring handled the majority of the domestic traffic on/off Oceanex vessels at the Bikerdike complex. Termont, a joint venture between Cerescorp and Logistic, had no regular lines calling in 2005 but has since acquired two MSC services, as well as acquired MSC as a partner.” Besides the four mentioned, the port also owns four other ports: two multipurpose terminals, a grain terminal and a terminal at Contrecoeur.

9. *America's Container Ports: Delivering the Goods*, March 2007, BTS, p. 3.
10. The container throughput at Brisbane, Burnie, Adelaide, Sydney, Fremantle and Melbourne in millions of TEUs were: 0.77, 0.19, 0.19, 1.4, 0.45 and 1.9.
11. *Container stevedoring*, Monitoring report no. 8, ACCC, Nov. 2006, pp. 50-51.
12. The average rate of return on assets from 2001-2006 was 23.52%. It was significantly higher than the average rates of return for the top 200 companies listed on the Australian Stock Exchange and higher than overseas operators tracked. TEU unit revenue, unit cost and unit revenue in nominal terms from 1998-9 to 2005-6 were: 1.37%, -14.38% and 93.56%. In real terms these were: -22.39%, -32.62% and 52.3%.
13. East coast ports average 35 to 50 terminal container lifts per gang hour whereas West coast average 24 to 27 and European ports average 50. See Leach, Peter, *New Money*, The Journal of Commerce, March 5, 2007, p. 44. See *Improving Productivity in U.S. Marine Container Terminals*, Dan Rayacich and Frank Nolan, 1986; and Australian Productivity Commission Report - *International Benchmarking of Container Stevedoring* (2003). "US terminals 'have done great things when it comes to improving gate productivity and the entrance and egress. They've done well in improving rail access, but when it comes to yard and the unloading and loading by cranes, there's still a lot more that can be done.'" W. Coffey, (former executive in Sea-Land Service Inc.) See JOC, March 5, 2007.
14. "...APM Terminals has been a standout performer with a profit of \$99 million on sales of more than \$2 billion last year [2006] while its liner division lost money." *Investors flock to terminals*, American Shipper, August 2007, p. 65. "The return on investment in terminals is greater than ocean shipping by a long way." Davidson said. "Terminal operators can look for a 15 percent or more internal rate of return on any projects, depending on the risk. The typical profit margin target is 20 percent, which is dramatically different from the liner shipping business, which has more downs than ups." See Leach, Peter, T. "Pedal to the metal," *The Journal of Commerce*, July 31, 2006, p. 22.
15. "See Reference 7 in Bibliography, p. 84. It also states "The shipping company representatives we contacted said their primary concerns with respect to Canadian terminals are relatively little competition between terminals in Canada and delays in environmental permits for terminal expansion. These issues affect their schedule reliability, customer service and costs. Inadequate competition may give rise to market allocations and price discrimination. On the other hand the need for larger ships, better terminal equipment, and state-of-the-art information systems is behind the trend toward consolidation of shipping services." See p. 4.
16. Notteboom, Theo, The changing face of the terminal operator business: lessons for the regulator, ACCC Regulatory Conference, Gold Coast, Australia, 26-27 July 2007, www.itmma.ua.ac.be
17. Though section 10.14(2) states that the exemption provided by this Subdivision extend to: "(ii) activities that take place in Australia within the limits of a wharf appointed under section 15 of the Customs Act 1901" subject to (a) not shown here; there appears to be uncertainty whether this may be interpreted as terminal-to-terminal transport, and if so, whether terminal-to-terminal rates are allowable other than as a component of door-to-door rates which are granted an exemption under (a). See *International Liner Cargo Shipping: A Review of Part X of the Trade Practices Act*, Productivity Commission, Report No. 9, September 15, 1999, pp. 145-149.
18. The FMC noted that retention of the antitrust immunity provisions dealing with marine terminals, or their removal, requires a value judgement that balances all regulatory concerns. These include economic analysis, antitrust policy, state and federal regulatory responsibilities, and established industry practices. The FTC rejected the FMC's reasons. It held that MTO immunity is unwarranted unless "there is compelling evidence of the unworkability of competition or a clearly paramount social purpose. This had not been established, therefore the case for antitrust immunity collapses. The above opinion was supported by the DOJ view that the Supreme Court dictum and the conditions that led to the granting of antitrust immunity are no longer prevalent, therefore MTO's should operate in a more competitive environment.
19. "Terminal operators enjoy a level of profitability year after year that liner companies can only reach

in the best of times at the height of the container shipping cycle. The return on investment in terminals is greater than ocean shipping by a long way,” Davidson said. “Terminal operators can look for a 15 percent or more internal rate of return on any projects, depending on the risk. The typical profit margin target is 20 percent, which is dramatically different from the liner shipping business, which has more downs and ups.” p. 22 [see reference in footnote 5]. A number of acquisitions have already occurred. Deutsche Bank of Germany acquired Maher Terminals and Peel Ports, AIG purchased Port Newark Container Terminal and DP World’s US ports, Ontario Teachers’ Pension Fund purchase of two terminals in NY and two terminals in Vancouver, PSA’s investment in Hutchison, Australia Macquarie Bank’s purchase of Halterm and Fraser Surrey Docks, TUI purchased Morgan Stanley’s infrastructure fund, etc. One observer notes that “I think there will be further consolidation among port operators, because the amount of business moving through the ports is growing and the amount of capital required to build new terminals and keep the port infrastructure up is endless as far as the eye can see. Just as the liner shipping industry has consolidated, I think the port industry will move right along with it. If there was a Big 10 a couple of years ago, I think there will be a Big Four or Five in the port industry.” See reference in footnote 5, p. 23.

20. One factor that determines stevedoring capacity at a terminal (which affects the level of throughput) is the size and skill of the labour force employed at the terminal. Stevedores have direct control over the amount and type of equipment used in stevedoring, the size and skills of the labour force and use of new technologies employed. In the medium term, the application of new technologies by stevedoring companies (in use of space) can affect capacity.

21. ... Approaches to capacity management have the potential to lead to substantially different market outcomes in terms of the degree of competition associated with the provision of stevedoring services. ... This in turn can increase the efficiency of stevedoring services provided at a port. *Container stevedoring*, Monitoring report no. 8, ACCC, November 2006, p. 33.

22. See reference in footnote 16.