

U.S. Merchant Marine and World Maritime Review

Introduction

Whatever happened to the typical short cycles in shipping markets? The industry seems to be defying conventional wisdom. There have been repeated forecasts of impending gloom by many respected analysts dating back to 2005 although the Naval Institute Annual Review has been an exception. It has been this author's position that any deterioration in global shipping markets in 2006 would be benign at worst. It is time to recalibrate the economic models and acknowledge better the impact of the forces of globalization on international shipping. Although traditional maritime economists may disagree, there are signs of an emerging paradigm shift in the sector. The boom that began in 2003 has now completed four years and is unlikely to slowdown in the near future barring unforeseen calamitous events.

2006 was on the whole a good year for the industry although it was a far cry from 2004, a spectacular year in which all major markets reached their peaks concurrently. Although the liner market in particular ended the year in the red, 2006 was an overall improvement from 2005. The fast growing Asian economies, in particular China and to some extent India, once again provided fuel for increased world economic activity and trade. China accounts for 65% of the Asian trade with the U.S. today compared to barely 11% in the early 1990s. Fourteen of the world's top 20 container ports are located in Asia. The fulcrum of world commerce, shipping and shipbuilding is now indisputably in Asia. This was proved further when the Asian countries offset the lackluster performance of the U.S. economy in 2006. All these developments lend credence to the basic arguments for globalization and world trade. This is not to say that there are no signs of economic malaise looming in the horizon. Indeed even in the U.S. there are signs of an emerging coalition of varied interests, united by very little in common but their ability to concoct ominous anti-trade potions for a vulnerable audience awaiting an alchemic cure.

The 2005 Annual Review observed that the usually nonchalant U.S. maritime sector was breaking out of its moribund phase and making a few stellar moves. This trend gained further momentum in 2006 with truly epoch-making developments that include a rejuvenated Maritime Administration, new security legislation, maritime academies brimming with confidence, and a marquee event at the Smithsonian celebrating 50 years of containerization, a classic testimony to American entrepreneurship and above all, resurgence in commercial shipbuilding! These and other major developments of the year are discussed next.

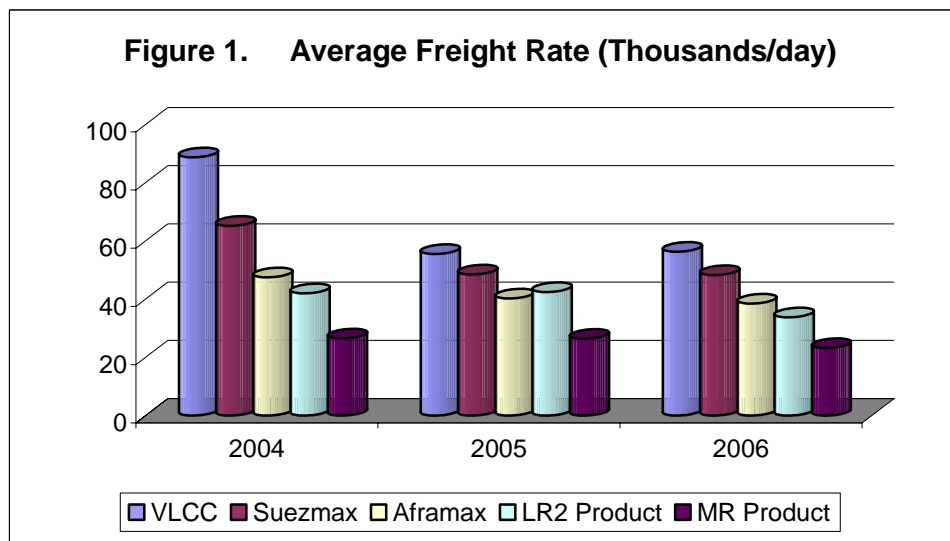
Market Developments

The world economy grew faster than predicted in 2006 despite surging oil prices. Although a record level of new tonnage was delivered in 2006 and the ship scrapings were understandably low, capacity utilization was exceptionally high. A good barometer of the prevailing market conditions is the status of the global shipbuilding industry. In general, new-building prices went up by as much as 17% in 2006 and most yards are

fully booked for the next three years or more. Furthermore, the price of second hand ships reached record levels during the year.

Tanker Market

The tanker owners must be very pleased when they look back at 2006. It was a particularly good year for VLCC owners with respectable average freight rates (see Figure 1). The reasons for the ongoing VLCC boom include increase in sailing distances, their use for oil storage, and a slow rate of new delivery. There appears to be a shift in the timing of the VLCC peak rates. Typically, the peak rates were reached prior to the onset of winter whereas of late the weeks preceding the North Atlantic hurricane season has become the landmark. The tanker market is entering an interesting period with the impending phase-out of single hull tankers in 2010. One study estimates that an additional 40 VLCCs will be required by then to meet the demand.



Source: The Platou Report (2007)

Dry Bulk Market

In the dry bulk sector, the capacity utilization once again was in the mid-90 percent range with cap-size bulkers earning a respectable \$43,500 per day. The trade in dry bulk commodities such as iron ore, steel products and cement has gone up considerably in 2006. The most dramatic growth has been in the movement of iron ore to China and the export of finished steel.

Liner Market

The 2006 liner market was an interesting anomaly with ships sailing full while most carriers reported a decline in their returns. A.P. Moller-Maersk's liner division alone reportedly lost \$600 million. Although there was almost 16% increase in container carrying capacity during the year, bulk of the new tonnage was not activated until late in the year. Shippers used their market power and negotiated lower freight rates for their service contracts, directly resulting in lower carrier profits. To make it worse, studies have shown that liner vessel schedule reliability was off by as much as 40% and customer

service levels on a downward trend. One bright side however was that there was no peak season congestion problem during the year.

Container operators have outstanding newbuilding orders for close to 50% of the existing TEU capacity. Despite this, several carriers have declared their intention to reduce capacity in 2007 and raise the freight rates. Maersk has stated its intention to cut capacity by 10%, double its revenue in three years and also earn 25% of the market share. The economic arguments of liner operators appear to be out of sync.

There were several other highlights during the year. These include the delivery of the 6,655 TEU Hanjin Bremerhaven, the world's fastest container ship at a sea speed of 27 knots. Hanjin Lines plans to have a fleet of 8 of these ships. Emma Maersk, the world's biggest containership at 11,000 TEU was also delivered in 2006. According to HHI statistics, a 13,000 TEU ship will be 29% cheaper to operate than a 7,500 TEU ship considering capital, voyage and running costs. A recent Drewry Report considers 14,000 TEU to be the upper limit for these leviathans as diseconomies of scale would set in beyond that.

Cruise Market

Carnival Corp., the dominant cruise operator reported 2006 profits of \$2.28 billion, slightly higher than the \$2.25 billion recorded in 2005. This is despite an increase in their operating cost, especially the cost of bunker fuel. They will add more ships and increase capacity share by another 8%.

The passage of the Stevens-Leahy Amendment has come as a major relief for the North American cruise market. This gives U.S. citizens time until June 2009 to get their passport for cruising to the Caribbean and Bermuda rather than in early 2007. The 2005 Annual Review reported the emerging market for floating luxury condominiums aboard purpose-built ships anchored in strategic locations. This is now a reality and the Residential Cruise Line Ltd. has signed a memorandum of understanding with Aker Yards to build Magellan, the world's largest residential cruise ship.

The LNG Market

The LNG market reached a milestone on April 15, 2006 when Maersk Qatar, the 200th LNG ship entered the market. While it took 34 years from 1964 to build the first 100 LNG ships, the addition of the second 100 ships took only 8 years and all indications are that the 300th ship will be delivered in 2008. LNG trade volume reportedly grew by 15% in 2006. One study states that 40% of the projected doubling of global gas supply between 2005 and 2010 will be through LNG.

The U.S. Merchant Marine

The Jones Act Scenario

"Competition in the Noncontiguous Maritime Trades," a recently released Maritime Administration report acknowledges the presence of barriers to entry in the trade between mainland and Hawaii, Guam, Puerto Rico, and Alaska, and states that they are surmountable. Although Puerto Rico is still the leader in total import tonnage, Hawaii is

the largest recipient of inbound containers today. In general, the noncontiguous markets import four to five times more than their exports, and the rates are generally lower than what they were 15 years ago, documenting the impact of the *box*!

Domestic Shipbuilding

American shipyards now have a relatively busy schedule building commercial ships. This is a continuation of the trend that began with OSG's masterful move in 2004. U.S. Shipping Partners is a partnership spun off from Amerada Hess Corporation, and USS Product Investors LLC (USSPIL) is its newly created wholly owned subsidiary. USSPIL has signed an agreement with NASSCO, San Diego for the construction of nine 49,000 dwt double-hulled product tankers at a cost of \$1 billion. The first ship will be delivered in mid 2009, with others to follow at six to eight month intervals and an option to build five more. Financing for USS Product Carriers will come from US Shipping Partners, the Blackstone Group and Lehman Brothers and will include debt and equity financing. U.S. Shipping Partners will have the right to buy the new tankers at specified prices failing which USSPIL may sell them off in the open market. The ships will be based on a Daewoo design and is part of their global network business plan.

OSG's agreement with the Aker Philadelphia Shipyard to build 10 product tankers, announced in 2005 is undergoing legal challenge. AFL-CIO Metal Trades Department refers to this as "kit" ships akin to buying furniture from IKEA and questions their compliance with the provisions of the Jones Act. Aker representatives have refuted the allegations and argue that 7,500 tons out of the 8,000 tons of steel in a product tanker is being cut, bent, formed, welded, and erected in Philadelphia. Eight of these 10 ships have already been chartered and OSG has announced plans to build six additional tankers. The use of pre-fabricated sections is a routine practice in modern shipbuilding and non-adoption of such practices will not help the U.S. shipbuilding sector. One should also note that if new ships are not built for the Jones Act trade, there will be a greater diversion of traffic to the surface mode, compounding the anticipated logjams.

The litigious nature of the U.S. maritime sector was once again highlighted in 2006 when Matson Navigation announced its plan to upgrade three of its US-flag ships at a Chinese shipyard. The lawsuit was filed by the Shipbuilders Council of America and Pasha Hawaii Transport Lines against the Department of Homeland Security, the U.S. Coast Guard and its National Vessel Documentation Center as defendants. As per current federal regulations, a US-flag vessel can be rebuilt overseas if the work represents 10% or less of the vessel's steel weight. Interestingly, there is a demand for US-flag dry bulk tonnage but will any entrepreneur follow the Aker/NASSCO model in this sector?

A New Leader

OSG became the largest US-flag operator in 2006 with its \$455 million acquisition of Maritrans Inc. It is the second largest publicly traded oil tanker company in the world today. The company employs close to 3,800 mariners worldwide and will have 1,200 US mariners on its payroll once the new-buildings are delivered. It has a presence in all four major domestic trade routes. The only snag for OSG in 2006 was its pleading *mea culpa* to 33 felony counts. OSG will pay a record \$37 million fine, largest ever criminal

penalty for falsifying records and illegally dumping waste oil. The company has agreed to a three year probationary period and must undertake a comprehensive environmental compliance program.

Safe Port Act of 2006

Congress passed the SAFE (Safety and Accountability for Every) Port Act of 2006 on 9/30/06 and was signed into law on 10/13/06. It is a comprehensive legislation aimed toward enhancing port and maritime security. A major provision of the Act is the Port Security Grant program that provides \$400 million in funding each year for the next five years to be allocated on a risk-based approach rather than the controversial fair and equitable approach. Another important aspect of the Act is that it has finally codified cargo security programs such as C-TPAT and CSI introduced by Customs and Border Protection (CBP), and funding provided until 2010. Other main features include an automated targeting system to identify high risk containers and a mandate to develop container scanning in all major ports by the end of 2007.

The long awaited TWIC (Transportation Worker Identification Credential) program is in its implementation phase now. After testing the biometric readers in five geographic areas, the cards are to be implemented in the ten most risky ports by 2007 summer and in all ports by 2008. TSA has announced an ambitious agenda to issue TWIC cards to all port workers and drivers as mandated. There will be a user-fee of \$137.25 to cover the costs of issuing the card with a slightly lesser fee for those who have undergone a prior comparable threat assessment. Industry concerns over TWIC include cost and complexity, fairness over background checks, etc. It will cost close to \$1B over 10 years, with 40% of the costs occurring during the first year. As the cards have five year validity, cost will rise during the 6th year again. TWIC will not replace the security card and clearances that workers already possess. A convicted felony in the past seven years will result in the denial of TWIC and may lead to the forced exit of many truck drivers. Another concern is the likelihood of truck congestion at the gate.

The DHS has ruled in favor of radiation scanning and submission of better data in lieu of container seal regulation and smartbox technology. CBP has started a 10+2 initiative whereby 10 data elements are to be submitted by importers or their agents 24 hrs prior to vessel sailing and two data elements by the carrier. As part of the Secure Freight Initiative per the SAFE Port Act, three foreign ports—Port Qasim in Pakistan, Puerto Cortes in Honduras, and Southampton will test all US-bound containers for radioactive substances using X-ray machines. All three facilities are operated by DP World, the terminal operator that came under considerable scrutiny in early 2006! The ports of Salalah, Busan and Singapore are expected to join the program shortly. The US will contribute \$60 million for the installation of the equipment, each scanner costing about \$500,000.

However, smartbox technology is not going away. Savi Networks has developed RFID readers to track containers. Reportedly, they have the technology to monitor 80 of the 500 container terminals worldwide and provide supply chain visibility. IBM has developed the Secure Trade Lane system which involves installing sensors inside

containers that will track the box, its contents and their integrity via satellite. A new ISO standard for electronic seals was also drafted in late 2006.

The CSI program is now active in 50 major ports worldwide which accounts for 82% of all inbound U.S. cargo. CBP completed 2,052 validations in the C-TPAT program in FY 2006. It has tightened the C-TPAT rules, raising the minimum security requirements of supply chain partners. New Zealand is developing a C-TPAT program very similar to the US version which could result in mutual recognition. Some foreign nations like China do not allow US validation teams in their country as a result of which CBP has to use 3rd parties. Presently, 330 C-TPAT members that import only from China cannot go beyond Tier 1, the lowest level of C-TPAT benefit. Some question the benefit of the whole program as found by a University of Texas survey of the National Industrial Traffic League (NITL) members. The respondents were also dissatisfied with the MTSA and ISPS Code. NITL is now building a computer program to calculate the added cost of security which can be used by any company.

The shift toward risk-based approach in allocating port security grants has not solved all the complaints. DHS classified all U.S. seaports into four tiers in 2006. Tier 1 ports have the highest priority and include the ports of New York and New Jersey, Los Angeles, Long Beach and Houston. Tier 2 ports include Seattle, New Orleans, Baton Rouge, Chicago and Beaumont, TX. There are 14 ports in Tier 3 and 78 in Tier 4. Tiers 1-3 are eligible for \$140 million and Tier 4, \$24.4 million. Grants are awarded to the riskiest ports first based on what is left over and at the Tier 4 level, no grant could be for more than \$2.5 million. This classification has placed Savannah, the fastest growing port on the East Coast at Tier 3 level and Oakland, the 4th busiest port in the nation at Tier 4, much to their chagrin!

Other Policy Developments

The tonnage tax provision has been extended until 1/1/2011. It was enacted first in 2003 as part of the Job Creation Act. In 2004, this author cautioned against considering it as a panacea for the U.S.-flag woes. According to recent statistics, the U.S. oceangoing fleet has gone down to 187 in June 2006 from 196 in 2004. Although tonnage tax system provides some income and capital gains tax relief, there are other operating expenses that play a major role in a ship owner's choice of flag.

Some observers and trade media have expressed their concerns about the absence of a more aggressive national transportation policy to deal with the growing intermodal bottlenecks. The U.S. Department of Transportation has a new Secretary who has a strong background in highways and congestion mitigation issues. Furthermore, the new Maritime Administrator is aggressively reorganizing the agency to deal with potential problem areas. The 2005 SAFETEA (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users) allocates \$285 million over six years to the Federal Transit Administration for the construction of ferries and ferry terminals. There seems to be a coordinated effort to integrate federal highway spending with short sea shipping initiatives. The Maritime Administrator has expressly stated his plan to involve the agency in port development activities, by no means its traditional forte. The

agency's stated goal of facilitating transportation regardless of the flag of the ship or its ownership is a bold step in the right direction. However, the concern as to whether we will be ready for the anticipated doubling of trade volumes in 15 years remains very valid.

A related development is a renewed effort to exempt truck ferries in the Great Lakes from the controversial Harbor Maintenance Tax provision. Prior efforts in last Congress did not even result in a vote. Hopefully, there will be greater attention this year to the HMT issue. As advocated by this author in 2002, a comprehensive review of the provision is long overdue. HMT fund reserve has now reached \$3.8 billion while the Corps of Engineers receive only \$700 million annually from those funds. There is a genuine concern that critical channel maintenance projects and deep draft construction projects have been delayed or postponed indefinitely because of inadequate funding. There was an unsuccessful move in California and Washington to impose a user-fee per container. Both efforts were perceived as trying to milk the transportation industry and met strong industry resistance.

Greening of U.S. Ports

The IMO is to meet in London in April 2007 to consider stricter air-pollution regulations for ships. There is a concern that the IMO may settle for the lowest common denominator. The Natural Resources Defense Council has identified port operations as a major source of air pollution (see Table 1) and named all top American ports as major polluters. The U.S. Maritime Administration is making a concerted effort to form a coalition that includes port authorities as well as government agencies and the private sector to identify pollution reduction mechanisms and develop funding to support the program in U.S. ports.

Table 1. Nitrogen Oxide and Particulate Matter Emissions from a Container Port

	Onsite Operational & Employee Vehicles	Trains	Cargo Handling Equipment	Heavy Trucks	Ships
%NOx Emissions	1	4	23	40	32
%PM10 Emissions	<1	2	24	31	43

Source: "Harboring Pollution: The Dirty Truth about U.S. Ports," Natural Resources Defense Council

Major developments are happening in California which may soon replicate in other parts of the country. A new state law went into effect on January 1 according to which vessel operators must use low-sulfur diesel in their auxiliary engines within 24 miles off the coast, and may extend this to 40 miles. Maersk Line voluntarily opted to use low-sulphur diesel fuel for their main engines within 24 miles of the California coast. The Port of Long Beach is now placing a hood on the smokestack of bulk ships. The Ports of Los Angeles and Long Beach are also allocating \$6.3 million to modernize or replace their harbor trucks. They are also promoting cold-ironing, viz., operating ships with shore-side electrical power to avoid emission. The Port of Los Angeles hopes to have 13 berths

equipped with electrical power for ships at berth in five years and major carriers are responding favorably. Ports seem to be looking for ways to improve the environment whenever a contract or lease is renegotiated which is to be admired.

Technology

Horizon Lines, the leading domestic container operator, has given new meaning to the term “supply chain visibility” by installing active RFID tags on 500 containers in its Alaska service. The combination of these tags with a GPS system, also being implemented by the company in some of its services, will provide unprecedented real-time information. Besides being a good business investment, this will also enhance maritime security.

It appears that the once revered LORAN-C will soon follow its more illustrious older sibling Morse code. The land-based LORAN-C navigation system operated by the USCG is expected to be decommissioned shortly. This venerable electronic aid to navigation has certainly helped this author many a times during an era in which Satnav and GPS were not far beyond fanciful imagination.

Seafarers

The Maritime Administration has established manning agreements with four companies to employ and train US officers and mariners aboard LNG vessels that will call LNG terminals in the country. This is a welcome development for many reasons, one being the shortage of properly trained LNG personnel for safe and secure operation. Equally important, there is increasing concern about the decreasing number of STCW-certified deep-sea mariners in the country. The new initiative will assist the nation in rebuilding its vital maritime human capital. The agency released a web-based Mariner Outreach System (MOS) in 2006. It will help facilitate contacting the merchant mariners in a national sealift emergency and also allows the mariners to review their USCG credentials.

USCG Blacklist

The USCG maintains a blacklist of flag states whose ships undergo increased scrutiny while in U.S. ports. Portugal, Russia, and Sweden were added to that list in 2006 which already included Brazil, Cambodia, Honduras, Mexico, St. Vincent and the Grenadines, Ukraine, Venezuela, Antigua and Barbuda, Croatia, Cyprus, France, Gibraltar, Italy, Malta, Malaysia, the Netherlands, and Panama. Belize, India, and Turkey were removed from the list in 2006.

Global Issues

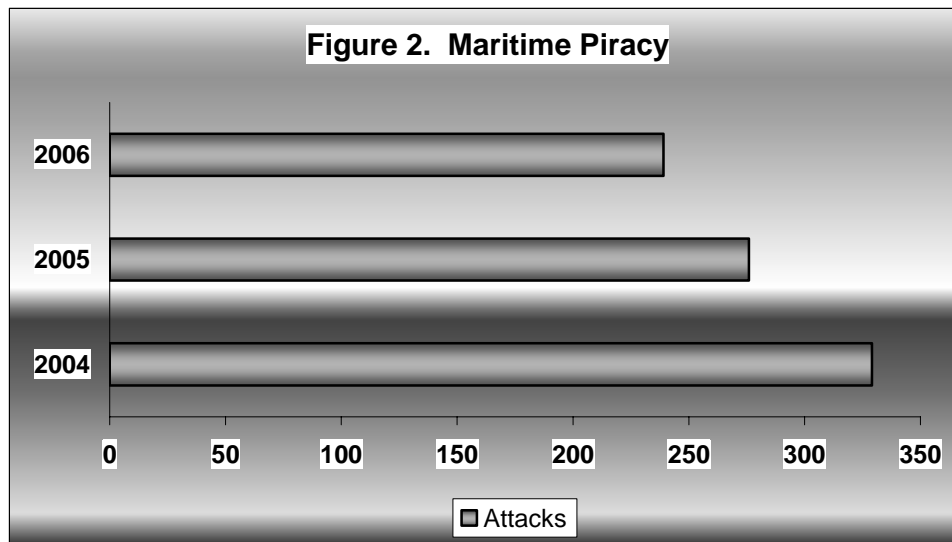
Anti-trust exemption: EU Review of regulation 4056/86

EU Competition Directorate has ruled to eliminate liner conference anti-trust immunity, ending their collective ratemaking capability. Price-fixing and capacity regulation will not be allowed in EU trades after Oct., 2008. During the ensuing 2 year window, EU will publish guidelines on the application of competition rules to ocean shipping in general. European Liner Affairs Association is hoping that EU would approve its compromise proposal to allow carriers share information on rates and capacity despite vehement

opposition from The European Shippers Council. Major carriers have already positioned themselves for the post-conference era.

Maritime Piracy

The International Maritime Bureau has reported a systematic decline in maritime piracy for the first time ever since it began keeping accurate records (see Figure 2). However, kidnapping and violence have increased in their severity. While attacks in the Malacca Strait and off Indonesia have declined, Bangladesh now has the dubious distinction of being the fastest growing piracy-prone area. Another new dangerous area is off the Port of Santos in Brazil.



Source: International Maritime Bureau, 2007

The Asia-US Supply Chain

It is estimated that 80% of the containerized U.S. imports from East Asia enter through the west coast ports. The resurgence of all-water movements to the east coast through the Panama Canal began in 2002. However, maximum ship size that can transit through the canal is limited to 5,000 TEU. In addition, the canal may reach its maximum capacity utilization by 2009. The intermodal option to facilitate seamless movements to the east coast has a fast cycle time but the costs are high and the international rail rates are predicted to go up by \$650 in 2007 when contracts are renegotiated. That makes the Suez Canal option more attractive especially as there are no ship size restrictions. However, when cargoes originate from Hong Kong or further north, the distance is longer and more ships are required to maintain the frequency desired for today's supply chains. Canal transit, whether through Suez or Panama, is not cheap. As an example, Emma Maersk, the largest container ship paid \$653,421 for its first transit through the Suez despite the canal's aggressive pricing to make it a viable option for carriers. The Panama Canal transit dues have also gone up from \$32 per TEU in 2004 to \$49 in 2006, and will rise to \$72 in May 2009.

Panamanians approved a national referendum in Oct. 2006 to widen the canal which they hope to accomplish in 2014, the canal's centennial year. The \$5.25 billion project is

expected to quadruple annual earnings to \$6 billion per year, generate jobs and provide economic prosperity. The widened canal will be able to accommodate ultra large container ships carrying 12,000 TEU. The new lock will be 400 feet longer, 70 feet wider and 20.5 feet deeper compared to the current locks. The expansion will be financed through loans and higher transit fees. The industry response to this has been generally positive and expects this to change the dynamics of liner shipping considerably.

Although there are no delays or rail congestion at the east coast ports, there are draft limitations that preclude the birthing of large containerships. Only Norfolk and Halifax in Canada can accommodate ships drawing more than 49 feet today. Furthermore, the all water rates are going up especially as contracts are renegotiated. So, a fourth option emerged in 2006 for transcontinental container movements in the U.S. Shippers are now transloading cargo from their marine containers into 53 ft domestic trailers. The trailers have higher cubic capacity, with seven of them carrying the same volume as 10 FEUs. Using trailers will also help the shippers avoid the anticipated 40% increase in international intermodal rail rates. This will have added benefits from a supply chain and logistics perspective, enhancing its potential value to the end customer.

Schedule Reliability and Customer Satisfaction

Contemporary supply chain management places customer satisfaction on a very high pedestal. Ironically, despite the direct involvement of many liner operators in third party logistics services, the carriers earned very poor schedule reliability ratings in 2006. A Drewry study found that more than 43% of the ships arrive late by one day or more, 12% being late three days or more. Among the 63 international liner operators, only 16 had an on-time arrival record of 60% or higher. Even the trans-Pacific trade, the route with the highest service reliability, had ten weekly services with less than 30% on-time arrivals.

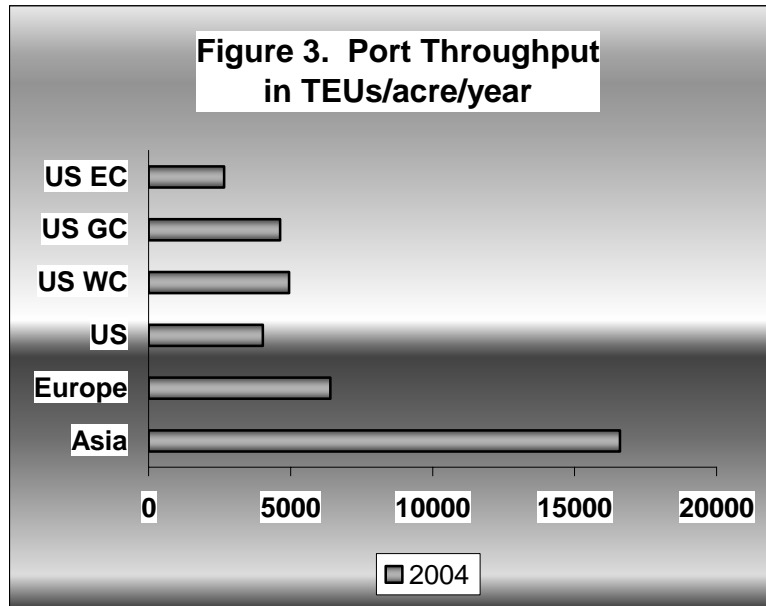
Terminal Investments

Container terminals have now become the darling of the investment community. Fund managers are giving them high priority because of their ability to generate steady cash-flow and high internal rate of return. A number of major ownership transactions occurred in 2006 and early 2007. AIG Global Investment Group, the asset management and private equity unit of AIG, the world's largest insurer agreed to buy DP World's port terminals in the U.S. for reportedly around \$1.5 billion. The Ontario Teacher's Pension Plan paid \$2.4 billion to buy four N. American container terminals from OOIL, the parent company of OOCL. The price agreed in this case is a record 28 times the projected 2007 earnings. Deutsche Bank's acquisition of Maher Terminals and Australia's Macquarie Bank's terminal acquisitions in Halifax, Long Beach, Oakland and Seattle are other spectacular examples. Unfortunately these investment decisions have raised the entry barriers in this vital sector to unprecedented levels. None of the carriers other than Maersk have a sizeable presence in the container terminal market today.

Port Productivity

The productivity in American ports continues to lag far behind that in major Asian and European ports (see Figure 3). Furthermore, the 5 year compound annual growth rate in port throughput is almost twice as high in major foreign ports that export cargo to the

U.S. Thus, there is a fundamental disequilibrium that leaves the U.S. ports and infrastructure on the receiving end, perpetually trying to catch-up. With the anticipated doubling of container trade from 2008 to 2020, the equivalent of a Port of Virginia will have to be built every year for the next 15 years. There has to be a new thinking when stevedoring contracts are renegotiated in this country which now imports about 25,000 containers a day. New contracts should seek flexibility in work rules similar to those in Asian ports and remain open 24x7x365. Shippers must be willing to bear the costs associated with these productivity improvements.



Source: Vickerman, JoC Asia-East Coast Maritime Conference

Outlook

2006 was another year of relative happiness and all indications are that the trend will continue at more or less the same level in 2007. The liner market returns are likely to remain sub-par. A welcome development in 2007 will be the maturing of maritime logistics through the integration of shipping operations and management with logistics and supply chain concepts and principles. The time is ripe and the Drewry study quoted earlier has provided added ammunition. Although initial temptation might be to look only at container movements through this new prism, one hopes the vision will be broader and encompass all sectors of maritime activities as colleges and academies create advanced programs in Maritime Logistics.

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