

US Transpacific Intermodal Today and Tomorrow

White Paper





Drewry US Transpacific Intermodal Commercial Solutions For International Supply Chains

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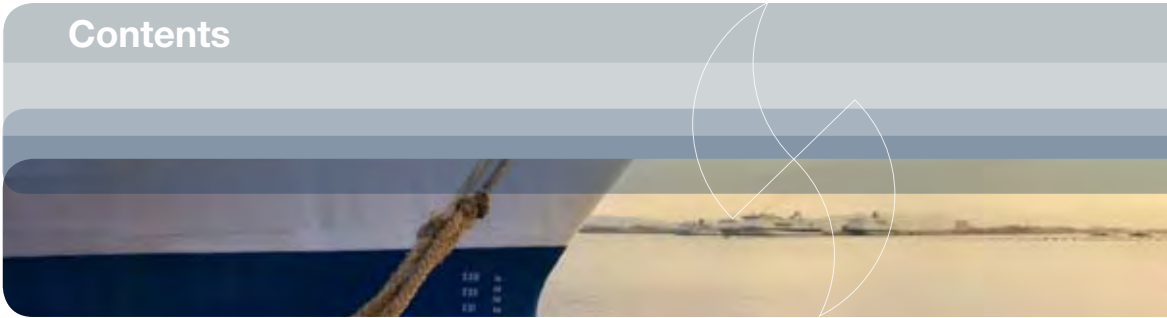
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Executive Summary

After years of dominating US maritime trade, the country's West Coast ports are coming under threat. Economic forces are combining to favour the growth of Gulf and East Coast ports for Asian trade.

A slowdown in volume growth along the US West Coast looks like the natural result of the credit squeeze. But several factors have combined to undermine the position of America's Pacific Coast ports – not least the complacency of the inland industry – and it is Drewry's opinion that these changes are structural and long-term.

Future growth in Asian trade to the US is more likely to benefit the Gulf Coast ports – served by the Panama Canal – and the East Coast ports, handling Southeast Asian cargo routed via Suez.

On the face of it, the West Coast looks healthier than ever. As far back as 1995, the transpacific already made up over half of all US container trade. This share had swollen further by 2007, to nearly two-thirds, and liner operators have spent the past decade and more building ever-larger container ships, mostly to serve this route.

In so doing, they were responding to changes in the terms of global trade, though it can be argued that they were also partly responsible for that change. In over-simplified terms, China produces and America consumes. This can only work

because of China's massively lower unit costs, which would be eroded without super-efficient container shipping. By building bigger ships, the shipping lines have created economies of scale that have magnified China's competitive advantage in manufacturing. By cutting the freight element of cif costs, they have encouraged the trade volumes they themselves depend on. In other words, the container shipping industry has helped to create its own virtuous circle.

It was inevitable that the good times would not last forever, and the credit crisis that has been building for the past year or so was bound to blunt cargo growth. Sure enough, trade appears

“It would be a mistake to blame the slackening in growth on the so-called Credit Crunch ”

to have hit a ceiling as a recession in the US – and possibly globally – becomes ever more likely. Anything that dents US consumer confidence is bound to hurt the Pacific container trade, but it would be a mistake to blame the slackening in growth on the so-called Credit Crunch. The reasons are far more fundamental than that. Even if growth continues as strongly as it has in recent years, any new trade will probably pass the West Coast by. Volumes are unlikely to decline, but the days of strong growth on the Pacific Coast are behind us.

The Drewry SWOT analysis

	Strengths	Weaknesses	Opportunities	Threats
USWC	Shortest sea route Fastest transit time Established trade route	No new capacity Terminal throughput limitations Totally dependent on Asia Stagnating overland links	Growing local markets	USEC/USG/Mexico/BC Panama Canal Weaker Asian exports
USEC	Closer to big cities Dominant in Europe trade	Longest transit times Time to complete dredging	All-water services via Suez	Unpredictable canal dues Rising fuel costs
USG	Closer to distribution hubs Dominates South America Lower development costs	Longer transit times Fuel costs	Bigger ships via Panama Canal from 2015 More room to expand	Unpredictable canal dues Rising fuel costs

Source: Drewry Supply Chain Advisors.

The Drewry SWOT analysis

Historically the Asian gateway to the major consumption markets in the United States has been via the West Coast ports of Los Angeles/Long Beach, Oakland, Seattle/Tacoma and Portland. Growth in container traffic has been strong for both maritime containers and total intermodal (maritime and domestic) containers.

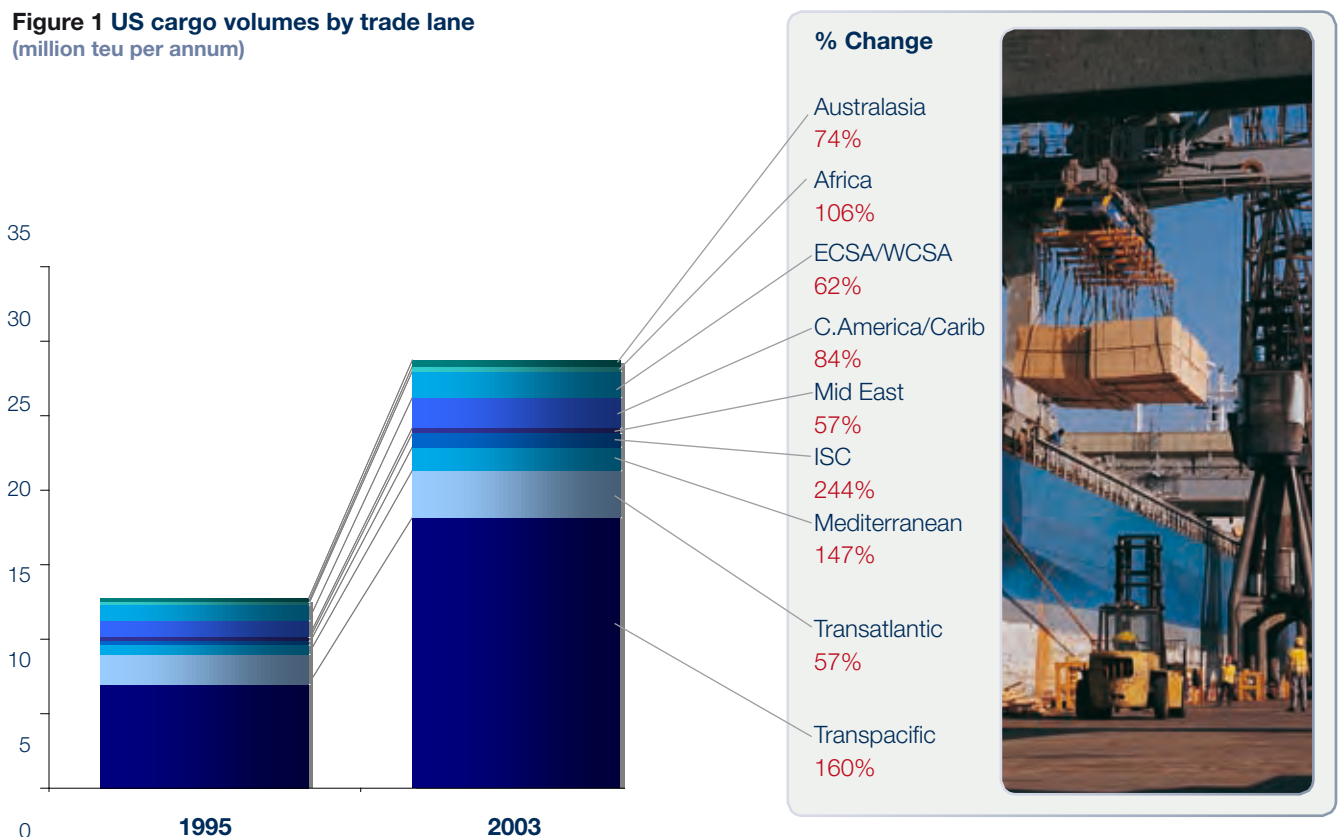
Not only have the West Coast ports been dominant for a long time, they have tightened their grip over the past decade (Figure 1). However, the top 5 US West Coast ports saw their combined box traffic fall by 1.1% in 2007, while the top 5 US East Coast ports increased their combined container volume by 4.9% last year, thereby increasing their market share at the expense of West Coast ports.

Figure 2 seems to show continuing growth across the entire country, but a closer look at the data reveals some worrying

trends. The picture is dominated by the wild fluctuations in Portland and the impact of Hurricane Katrina (Figure 3), but these can distract attention from the rest of the country, where the graph shows growth rates starting to slacken. Apart from Los Angeles recovering from an uncharacteristically poor 2004, the picture is almost universally one of progressive weakness. Growth was weaker in 2005 than in 2004 and 2006 was weaker still. In 2007, the growth in container traffic of the top 20 US ports was an anaemic 1.3% and it is known that the slowdown continued into 2008.

The weakness of 2007 has already drawn much comment, but the data shows that the steam had already been going out of the engine for nearly three years. And none of this takes into account the impact of the much-vaunted credit crisis, which is sure to make things worse not better in 2008-9.

Figure 1 US cargo volumes by trade lane
(million teu per annum)



The Drewry SWOT analysis

Figure 2 Top 20 US Ports
(million teu per annum)

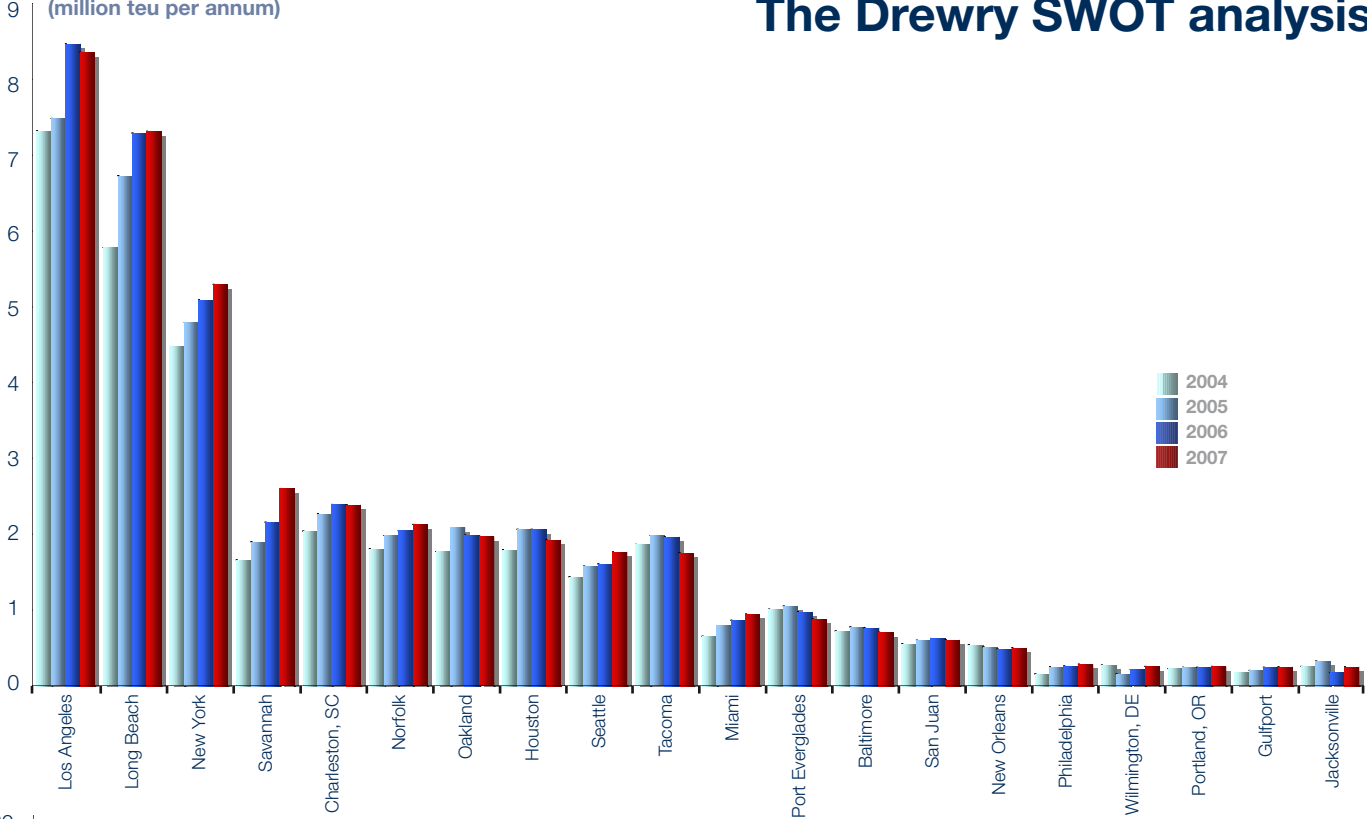
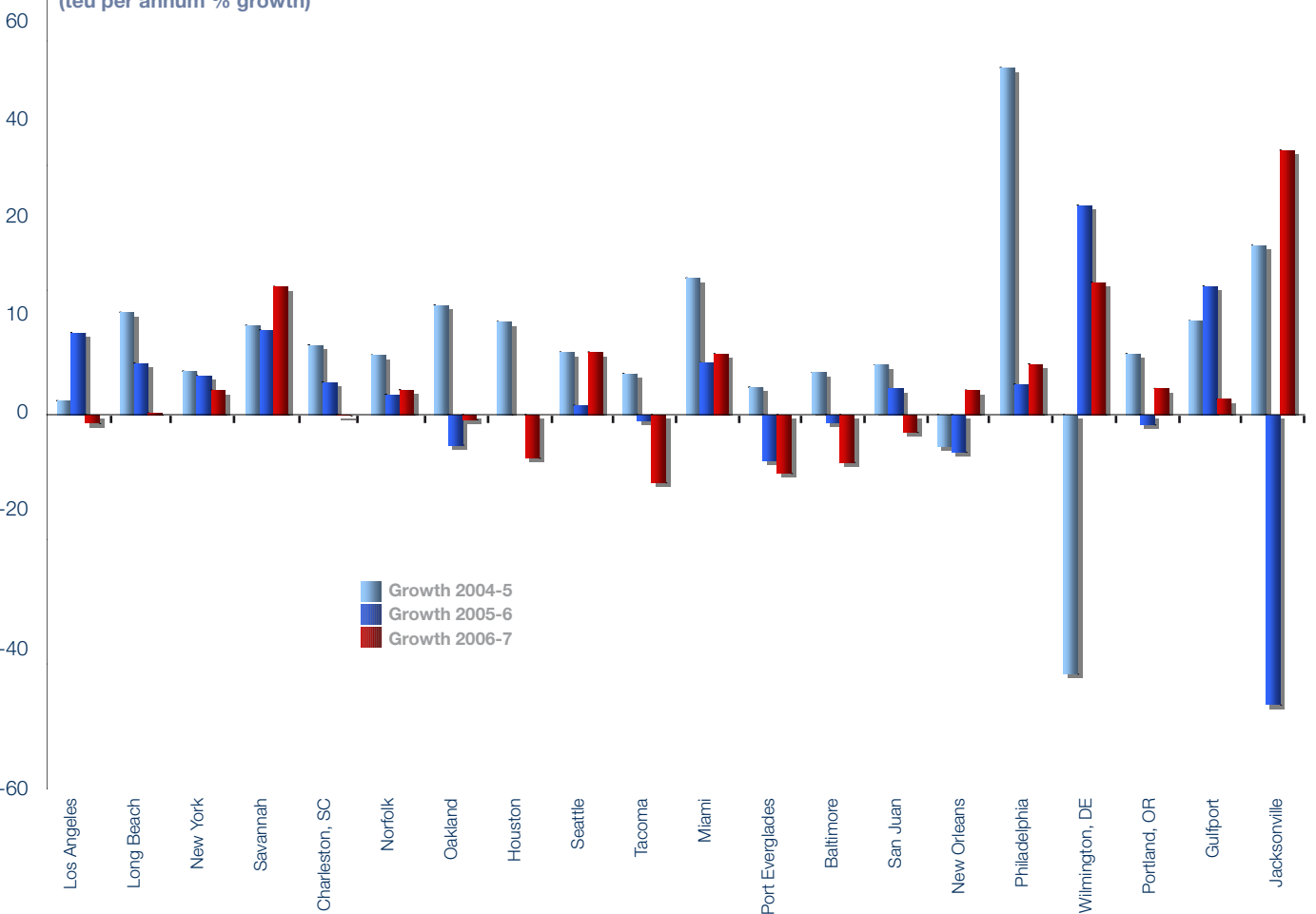


Figure 3 Top 20 US Ports
(teu per annum % growth)



Source: Journal of Commerce/PIERS/Drewry

The Drewry SWOT analysis

Rail Intermodal Activity		Table 1					
	2002	2003	2004	2005	2006	2007	
Rail intermodal activity							
Containers	8,588,822	9,472,518	10,283,491	11,057,610	11,801,146	11,933,480	
Trailers	2,345,508	2,424,407	2,639,545	2,584,262	2,432,928	2,145,466	
Total Rail Intermodal Volume	10,934,330	11,896,925	12,923,036	13,641,872	14,234,074	14,078,946	
Intermodal marketing company activity							
IMC intermodal Loads	1,345,072	1,309,474	1,306,237	1,165,015	1,135,582	1,137,938	
IMC highway Loads	1,065,379	1,225,683	1,046,222	1,022,538	898,554	921,205	
Total IMC Activities	2,410,451	2,535,157	2,352,459	2,187,553	2,034,136	2,059,143	

Source: IANA's Intermodal Market Trends & Statistics Report

Let down by the railroads

If the situation in the ports is troubling, the landside shows the continuing dominance of the container in the rail intermodal sector (*Table 1*).

Again, the situation looks superficially healthy. Containers are increasing their share of the intermodal mix – up to 85% of all rail intermodal moves in 2007, compared with 77% in 2002, which suggests growing integration of transport modes. But growing market share is not the same as volume growth. Containers got a bigger slice of the pie by standing still, because their growth has merely come to a halt while trailer liftings have actually gone into reverse.

This gives a clue to a key problem faced by West Coast container ports and their customers: the failure of the railroads as a transport partner. While this is a nationwide problem, for the West Coast it is particularly acute. A look at the population map shows that, beyond the immediate environs of the port

cities themselves, the American West is one vast, empty space. Most of America's population is concentrated east of the Mississippi, nearly 2,000 miles away, making high-volume distribution impossible without trains.

Users of the US rail system have faced a dramatic reduction in the total size of the system, even though railroads have increased their investments in recent years (*Table 2*). The numerous bankruptcies and mergers of US railroads have resulted in a situation where there are just two major US Western railroads (Union Pacific and BNSF) and two major Eastern railroads (CSX and Norfolk Southern).

This rationalisation has not, however, led to an increase in efficiency or better investment. The mileage of Class 1 track in the system is now less than half what it was in 1960. Faced with a tightening market and rising demand, the railroads have chosen to up their prices rather than invest in more capacity, in the mistaken belief that they had a captive market. The situation is exacerbated by domestic traffic – notably coal and food – which is also seeking to shift to rail, putting more pressure on supply.

This complacent attitude echoes that of the Panama Canal in decades gone by. Ironically, it is a rejuvenated, aggressive and

Shrinking US Rail System		Table 2	
	1960	2004	
Number of Class 1 Railroads	106	7	
System Mileage	207,334	95,830	

Source: National Transportation Library Rail Statistics

The Drewry SWOT analysis

Through rate cost comparison – Import Table 3

Destination	West Coast 8000 TEU Ship vs			
	East & Gulf 6400 TEU Ship		East & Gulf 8000 TEU Ship	
	20'	40'	20'	40'
Atlanta	\$595	\$580	\$665	\$720
Chicago	\$185	\$270	\$255	\$410
Cincinnati	\$185	\$120	\$255	\$260
Cleveland	\$85	\$70	\$155	\$210
Columbus	\$460	\$370	\$530	\$510
Dallas	-\$65	-\$255	\$1	-\$115
Detroit	\$85	\$220	\$155	\$360
Indianapolis	\$630	\$670	\$955	\$810
Kansas City	\$335	\$70	\$405	\$210
Louisville	\$885	\$670	\$955	\$810
Minneapolis	-\$15	-\$55	\$55	\$85
Memphis	\$260	\$70	\$330	\$210
Saint Louis	\$1,070	\$875	\$1,140	\$995

Note: Positive numbers favour East Coast and Gulf routing
Source: Drewry Supply Chain Advisors

Through rate cost comparison – Export Table 4

Destination	West Coast 8000 TEU Ship vs			
	East & Gulf 6400 TEU Ship		East & Gulf 8000 TEU Ship	
	20'	40'	20'	40'
Atlanta	\$410	\$320	\$415	\$460
Chicago	-\$40	-\$230	\$30	-\$90
Cincinnati	\$410	\$220	\$480	\$360
Cleveland	\$385	\$195	\$455	\$335
Columbus	\$285	\$195	\$355	\$225
Dallas	-\$115	-\$205	\$45	-\$65
Detroit	\$260	\$95	\$330	\$235
Indianapolis	\$585	\$470	\$655	\$610
Kansas City	-\$140	-\$330	-\$70	-\$190
Louisville	N/A	N/A	N/A	N/A
Minneapolis	-\$15	-\$180	\$55	-\$140
Memphis	\$335	-\$55	\$405	\$85
Saint Louis	-\$15	-\$230	\$55	-\$90

Note: Positive numbers favour East Coast and Gulf routing
Source: Drewry Supply Chain Advisors

soon-to-be widened Panama Canal that is about to take that not-so-captive market away, possibly forever.

At the Journal of Commerce conference in Savannah in June 2008, the Panama Canal Authority let slip that the new canal, to be completed ahead of schedule in 2014, should be able to handle ships of over 13,000 teu. Hardly any ships will be too

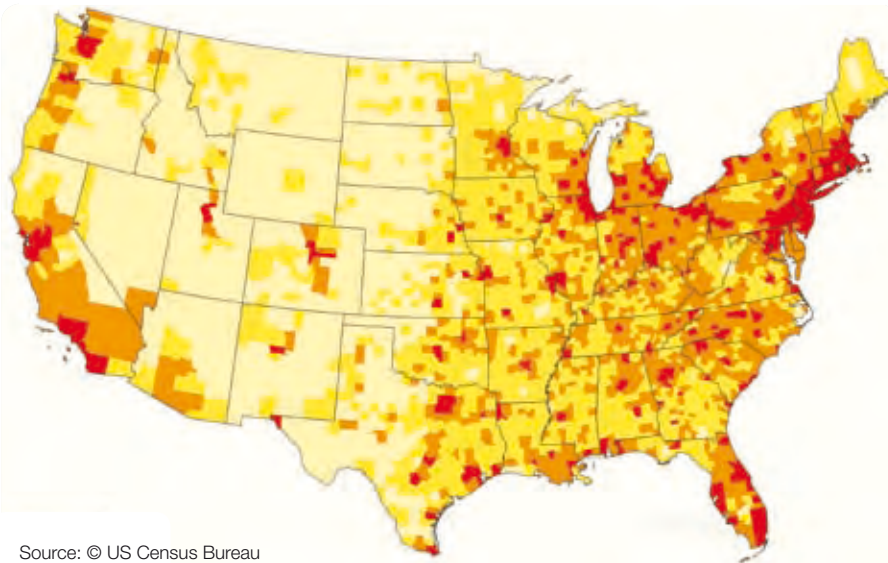
big for the Canal, making the term 'post-Panamax' redundant.

It seems like stating the obvious to point out that railroads are fixed assets while ships are moveable assets, but this fact seems to have been forgotten by the rail companies on whose services Long Beach, Oakland and the rest depend. Ports, being as immobile as railroads, will suffer in a similar way.



Change and the drivers of change

US population by density



Source: © US Census Bureau

Key

Population per square mile

■ 250 or more	■ 10 – 49.9
■ 50 – 249.9	■ less than 10

destinations in the Eastern US, all-water services via the USEC and Gulf are less costly than the West Coast intermodal routing.

Meanwhile, if ship sizes through Panama increase to 6,400 teu (up from the maximum 4,800 teu or so today), most places east of the Mississippi will fall out of the West Coast's sphere of influence. Push it up to 8,000 teu, and the "border" shifts across the Missouri

There is more to the story than stagnation in the West and a slowing world economy. There is dynamic change on other fronts, most notably through the expansion of the Panama Canal but also through the development of Suez as a route for Southeast Asian cargo. The opening of a third set of locks in the Panama Canal in 2015 (or possibly 2014) will remove an infrastructure constraint and create more transit capacity for Asia/US all-water container ships.

True, container services from Asia to the US West Coast will continue to be more cost-competitive than Asia-USEC or Asia-Gulf Coast in terms of landed costs, even if post-Panamax 8,000-teu vessels are employed after the opening of the enlarged Panama Canal. However, if Panama allows vessels of over 13,000 teu, as the canal authority suggested a few weeks ago, then these calculations will need to be revised.

But the competitive position of the West Coast is not as good as it appears, because one needs to examine the inland factor to the consumption markets in order to make a valid cost comparison (*Tables 3 and 4 on previous page*). For most final

for 40ft import cargo, which is the most important element of the trade. Dallas remains in the West Coast's hinterland, which seems surprising until one considers that the ratio of sea miles (via Panama) to rail miles is the highest of any US destination, because the Panama Canal is so much further east than Texas (Colon is actually on the same meridian as Charleston).

If the Canal Authority fulfils its boast and succeeds in getting 13,000 teu ships through its new locks, then the US West Coast ports will be ejected from the Midwest market altogether. Denver, Albuquerque and El Paso will be the border towns – being halfway between the West and Gulf coasts, inland costs will largely cancel each other out. Also, the longer transit times will make it impossible for the East and Gulf ports to compete on service.

Time is money – but whose?

The importance of transit time will depend on the state of the economy. In good times, consignees want stock as fast as possible, and are prepared to pay for it. In bad times, slow transit times mean free warehousing at the lines' expense for goods that are slow to sell.

Change and the drivers of change

Panama Canal vessel limitations		Table 5	
	2008	2015	
Length	965ft (294m)	1200ft (366m)	
Beam	106ft (32.3m)	160ft (49m)	
Draft	39.5ft (12m)	50ft (15m)	

Source: Drewry Supply Chain Advisors

So the swing away from the West Coast is likely to intensify in the decade to come. With growing demand for rail services and no major increase in railroad capacity expected, intermodal costs are certain to keep rising, while all-water costs will continue to fall.

At this point, we ought to add fuel costs into the mix. Seafreight is considerably cheaper per tonne-mile than rail, so the natural conclusion is that all-water services will consolidate their advantage as fuel prices rise. Such a conclusion is certainly reasonable, but there are too many imponderables in the way. No one has yet devised a sensible model to predict oil prices.

“Intermodal costs are certain to keep rising, while all-water costs will continue to fall”

The fuel picture is further complicated by the regulatory environment governing marine fuels. The parallel campaigns to remove sulphur and CO₂ from bunkers will certainly result in costlier marine fuel, eroding some of maritime transport's cost advantage. In such circumstances, the level of cost advantage for all-water modes is impossible to quantify, and any predictions will be at best unreliable and at worst completely bogus.

Suez is tempting for load ports

While the US West Coast's position is likely to be eroded in its own backyard, it is also coming under pressure at the load port side. Now that the Suez Canal and the US East Coast ports are actively marketing an all-water route from Southeast Asia, costs are coming down here too. Drewry estimates that some

Vessel slot cost comparison for transpacific services		Table 6	
	USWC	Gulf & USEC	Cost Difference
Vessel capacity	8000 TEU	6400 TEU	\$630 per FEU
Vessel capacity	8000 TEU	8000 TEU	\$490 per FEU
Ships per loop	5	8	

Source: Drewry Supply Chain Advisors

Hong Kong cargoes would do better moving westbound via Suez instead of across the Atlantic, whereas the dividing line used to be at Singapore.

Such a routeing is likely to find favour with shipowners, because it provides more cargo opportunities. While transpacific vessels have only Alaska as a potential waypoint, a ship leaving Asia westbound will pass the hubs of Colombo, Salalah, Marsaxlokk and Algeciras on its way to New York. If utilisations start to fall away, alternative sources of cargo will be very welcome. They could make it possible to keep the biggest ships running on the route, whereas a failing transpacific market leaves operators with no choice but to downsize. The most expensive assets the industry has ever built could become obsolete.

Will Asia even be tomorrow's load centre?

In a White Paper published in November 2007, Drewry identified that China's competitive advantage over Mexico and Vietnam in the apparel business has been almost wiped out by rising labour costs, the appreciating yuan and long supply chains.

This creates the prospect of manufacturing sources being spread more widely. If manufacturing moves elsewhere in Asia, then the effect on West Coast ports will be less marked (although operators of super-post-Panamax containerships, which depend on concentrated volumes through a small number of ports, might suffer). The inexorable rise in bunker costs could tilt the economic balance decisively in Mexico and South America's favour. If Central America becomes more prominent, then West Coast ports might have trouble competing.

Alternatives and solutions

Fundamental Market Factors

Table 7

- Cargo routing and gateway selection by shippers and consignees are primarily driven by costs
- Ocean carrier routing of cargo is driven by operational and cost factors
- Ocean carriers' charges have a lower cost per mile for all-water services
- Vessels are moveable assets
- Rail infrastructure is a fixed asset
- Today's railroad policies maximise profitability, not service, with price increases on a per-mile basis inevitable
- The operational capabilities of ports on the US East and Gulf coasts, and not the Panama Canal, will limit vessel lift capacity
- Divergent pricing strategies between rail and ocean carriers will drive more interior consumption markets to be served via all-water services at East and Gulf coast ports
- The US intermodal hinterland of US West Coast ports is under threat
- Completion of the "new" Panama Canal is scheduled for 2015, just seven years away.

There are several steps that West Coast ports can take if they want to hold on to their market, though the fundamental business trends are against them.

Port expansion (established ports and ports to be built)

This is the obvious step: increase capacity. However, the current environmental climate is against it. It is difficult to imagine any major port infrastructure project getting the go-ahead, given that ships are currently characterised as a major source of air pollution. Cynics might suggest that if Californians want cleaner air then they should get out of their cars. But the public sees a clear benefit to car ownership, whereas the social benefits of giant container ships are less obvious.

The dilemma for all the West Coast ports is that port activity is still mainly within city boundaries, making expansion of facilities

and improvement to transport links expensive and unpopular. The alternative – building a modern, new port out of town – would require the destruction of several miles of virgin coastline. Such a project – a sort of Pacific Maasvlakte – might just have been possible in the past, but it seems unlikely now.

Port terminal reconfiguration to increase throughput

Such reorganisation is a natural process, and will bring efficiency benefits leading to increased throughput. Capacity on the West Coast is idle for more of the day because nearly all terminals are dedicated to single users.

Congestion at Los Angeles and Long Beach reached near-disastrous levels in 2004, forcing the docks to extend opening hours from 55 hours a week (0700-1800, Monday-Friday) to 102 hours (0700-0300 Monday-Thursday and 0700-1800 Friday and Saturday). Oakland is said to be considering a similar move. That still leaves a potential 66 hours of "unused" time in a week, though it will be more difficult to persuade truckers or dockers to use those hours, while citizens and their elected leaders might be unhappy about seeing (and hearing) more trucks on the roads from 0300-0700 during the week and during the day on Sunday.

APL's experiment in loading 53ft containers – the largest permissible on US highways – could also improve efficiency, adding up to 20% more cargo per move.

Expansion of on-dock rail infrastructure and increased trackage to selected markets

According to the US State of Logistics report, quoted in American Shipper in June 2008, so many truck operators are going out of business that there will not be enough capacity to cope with an upturn, whenever it comes. That leaves the railroads to cope with the next increase in volumes.

However, a recent report commissioned by the American Association of Railroads predicted that railroads would need to invest \$135 billion in the coming three decades just to maintain

Conclusion

market share. With passengers and domestic bulk traffic being targeted, intermodal containers will find space increasingly hard to find. It is likely that intermodal costs will continue to rise as demand outstrips investment, and intermodal containers might struggle to find any space at all.

Importers must move distribution centres east

The above measures all are potential partial solutions in a trade lane that, historically, has expanded at a double-digit pace during the past 10 years, while 2007 had a modest growth rate of 1%-2%. Importers and suppliers of inland transport need to plan now to modify distribution channels to take advantage of East and Gulf Coast capacity increases, and the lower through cost for transport.

Conclusion

The changes we are seeing in patterns of trade are fundamental. While the present downturn and the recession that might follow will hurt everybody, the ports of the US West Coast will not recover so easily because their decline is part of a deeper malaise.

It would be wrong to overstate this problem. The West Coast ports are unlikely to go into long-term decline – certainly not those in California – and there should even be some growth as the economy recovers. But other ports will spearhead the increase in import volumes. Even if volumes grow, the West Coast's trade share will decline.

Taking all the above factors into account, Drewry expects that up to 25% of the US West Coast ports' present cargo base (primarily hinterland cargo) could be lost to the East Coast and Gulf ports in the decade to come. How much is replaced by new volumes depends on how strongly the economies of the Pacific Coast grow in the coming decade, and whether the centres of manufacturing shift to more or less advantageous areas. But without radical action, intermodal distribution to the Midwest and beyond will gradually die.



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