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Analysis: US intermodal 'golden age' far from certain

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As the intermodal industry assembles for the International Intermodal Expo in Long Beach, many of its participants are waiting for the industry to return to the halcyon days of consistently high growth.

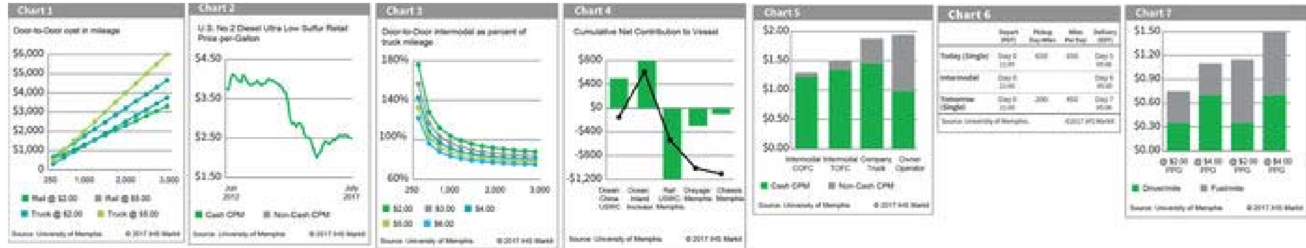
Intermodal's historical value proposition has been to look like truck and offer a discount to incent diversion. A traditional rule of thumb has been that intermodal is "truck + 1 (day)" with a discount of 5 to 15 percent. *Chart 1* depicts the overall value proposition. Intermodal has a higher fixed cost, but a lower cost-per-mile than truck. The slope of the cost function is driven primarily by the cost of fuel. The higher the price of fuel, the steeper the cost functions, and the sooner intermodal is competitive.

Where the two lines intersect, truck and intermodal cost the same to produce.

At $5 per gallon, intermodal's cost equals truck at 500 miles and the cost benefits increase steeply the longer the length of haul (LOH). At $2 per gallon, intermodal doesn't cost the same to produce as truck until 1,250 miles LOH, and the cost benefit doesn't increase significantly.

Chart 2 identifies intermodal's challenge over the last three years. Low fuel prices are anathema to intermodal, and although diesel prices have recovered from last year's lows, they're still down significantly from the previous normal of $4 per gallon.

Chart 3 displays the intermodal cost as a percent of truck. The higher the price of diesel, the shorter length of haul is required for intermodal to be cost-competitive. The shaded area represents the notional intermodal addressable market. It's bounded by an LOH greater than 500 miles and a 10 percent discount to truck. (Although some intermodal markets are less than 500 miles, in most cases, intermodal won't be viable because it's two to four times slower than truck.)



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Last year's Intermodal Expo, held after four consecutive quarters with lower year-over-year volumes, was somewhat downbeat. Volumes bounced back in the first two quarters of 2017, however. According to the Intermodal Association of North America, second-quarter volume was up 4.5 percent, with international volume rising 5.6 percent, and domestic volume up 3.2 percent. The two segments each represented 50 percent of total revenue.

The international market, driven by Asian outsourcing and double-stack transportation, was the growth engine for intermodal (and the majority market segment) from 1980 through 2006. For the past decade, international and domestic volumes have been equal.

Although international container volumes continue to grow, ocean carriers have been beset with extreme financial hardship, which has driven mergers, alliance restructuring, and even bankruptcy.

Chart 4 identifies ocean carriers' economic challenge. Whereas a port-to-port move generates a contribution to the vessel, the inland move is a clear loser. In this example, extending the line's delivery responsibility inland generates significantly more marginal expense than marginal revenue.

Although ocean carriers would prefer to remain in the port-to-port business, their past pricing practices have painted them into a corner, whereby their customers are unwilling to relinquish the inland transportation subsidy they have historically received. Past attempts to fully price inland intermodal have resulted in significant customer loss, which carriers aren't willing to incur.

There is also a great deal of static in the international volume data. Although the Panama Canal expansion has resulted in some West-to-East Coast cargo diversion, the major driver of East Coast growth has been the deployment of vessels through the Suez Canal.

Perhaps the most significant change has been the growth of transloading. With the requirements of omnichannel marketing, many retailers now take possession of imported goods on the West Coast for domestic distribution. Although they may forgo inland transportation savings, they can achieve a lower landed cost — through inventory deferment — to the point of sale.

Although the domestic market has many segments, it's primarily dry freight that competes directly with truckload. Over the past two years, the intermodal value proposition has been turned upside down. Truck has been faster and offered lower rates than intermodal. *Chart 5* explains this dichotomy. How can intermodal have (traditionally) lower costs than truck — but higher rates? The answer is that cash is king.

By its nature, almost all of intermodal's costs are cash-based. The intermodal service provider buys (or produces) transportation that requires cash payment. Trucking has certain costs that are accrued, but not necessarily paid out at time of transport. Whereas company trucks pay wages to the driver, they are notional to an owner operator who takes what (if any) margin is left.

The result is that owner-operators haven't been pricing at cash marginal cost. As *Chart 5* indicates, cash cost per-mile is lowest for owner-operators. Although the ability to price like that is indeterminate in length, it's been a factor for the past 16 to 18 months. That's going to change.

The mandatory implementation of electronic logging devices (ELDs) this December will be a game-changer. ELDs will enforce hours-of-service regulations that currently have a wide spectrum of adherence.

Chart 6 displays ELDs' service impact. Although owner-operators routinely offer fifth-morning service on transcontinental shipments, it can't be done legally by a single driver. Given all the factors, truck transit will increase by two days. Because intermodal service should remain the same, intermodal will go from "Truck +1" to "Truck – 1."

With this change, truck miles per day will fall by almost 30 percent. This will require the rate per mile to increase a corresponding amount just to maintain current earnings. Congestion and other safety regulations will further reduce the number of miles that can be driven in a day, while demographics and other safety initiatives may reduce the number of drivers.

All of this will increase the cost of drivers. *Chart 7* illustrates the possible impact whereby driver expense becomes more impactful than fuel. While a 100 percent increase in driver pay may seem incredible, it's being applied on a lower daily mileage.

The prospects for intermodal are strong, but there are a series of "known unknowns" that any futurist would be glad to discuss.

All the challenges to truckload drivers also will apply to drayage as well. What will happen to the significant owner-operator capacity?

- Will railroads be able to deliver reliable service?
- Will truck brokerage focus more on intermodal solutions to maintain their volumes and margins? Will brokers already experienced in intermodal have a sustainable advantage over pure arbitrage players entering the market?
- When will autonomous vehicles impact Class 8 trucks?
- Will international trade continue to grow, or will we see the multilateral postwar trade consensus collapse?

Considering these "known unknowns," the future is cloudy. Still, intermodal has shown remarkable resilience, flexibility, and growth since the 1950s. Many consider the immediate future to be poised for a new golden age of intermodal. Whether that becomes reality remains to be seen.

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