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# Open Throttle for Rail

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Despite predictions of growth in the rail sector moderating, those in the industry and their supply chain partners continue to make bold moves, and are changing the way goods move around the country and halfway around the world.

Tracked over the course of the past four quarters (to first quarter 2013), the dynamics of the rail industry in the U.S. are fairly consistent with what's happening in the broader transportation economy.

Volume growth is positive, but modest, and the same can easily be said of freight growth as well.

“What it all boils down to is we’re in kind of a slow growth environment, and one that’s likely to stay that way through the balance of 2013,” explains Ben Hartford, senior transportation analyst with Robert W. Baird & Co.

And yet Hartford, who is as no-nonsense as an analyst can be, adds a tantalizing caveat, explaining that when one talks about growth rates, there’s the broad view and then there’s everything else.

For instance, if one looks exclusively at the expansion of the sector over the past three or four years, thumbing through page after page of government filings, it is clear the rail industry is not presently enjoying the escalation in growth it saw in 2010 and 2011, but — and this is a big but — what growth is occurring is happening against the backdrop of a healthier U.S. economy.

The other thing that has occurred in the rail sector over the past few years is the marked shift in the mix of commodities the nation's class one railroads handles.

Where once coal was the undisputed cornerstone of commodity traffic across the nation's rail networks, it has been an area of negative growth for the railroads of late, supplanted, from the perspective of growth, by automotive-related commodities (which have grown by double-digits over the past several months) and chemicals (which are currently up 10 percent).

This is due in part to the U.S. Environmental Protection Agency taking a stronger stance on the pollution caused by older, coal-fired plants, and also to the impact of hydraulic fracturing and directional drilling which has revolutionized the natural gas industry.

In 2012, the Energy Information Administration estimated 175 coal-fired facilities — slightly less than 10 percent of the nation's coal-fired capacity — would be shut down due to pending EPA emissions limits for power plants. Since then, advocacy groups like the American Coalition for Clean Coal Electricity have suggested more than 280 facilities in 32 states could be affected.

“Agriculture has been another sector experiencing a decline in volume on the rails, due largely to the drought last summer,” Hartford says. “But at the same time, intermodal continues to be a share-gainer relative to truck, and there, too, we've seen volume growth in the upper single digits.”

## **Turning Bullish**

A mixed picture to be sure. And yet some people are just naturally bullish. One of these is Don Seale, executive vice president and chief marketing officer for Norfolk Southern, a Class One railroad with direct connections — many of them on-dock — to 16 Gulf and Atlantic seaports.

“What we've seen in terms of import/export containerized freight over the last five or six years is a demonstrative shift in the percentage of business coming in through East Coast ports versus the West Coast ports,” Seale says.

“Six years ago, about 60 percent of the containerized cargo coming into the U.S. came in through Long Beach, Los Angeles and other western ports, and about 40 percent came in through the East Coast ports,” he continues. “That's changed, and I'd say we've seen a rather pronounced shift in all-water traffic, with a significantly greater percentage coming into the U.S. via the East Coast.”

This has been beneficial to Class 1 Railroads (A Class 1 is any railroad with annual gross operating revenues of \$256.4 million or more.) In addition to Norfolk Southern, these include CSX Transportation on the East Coast, BNSF Railway and the Union Pacific Railroad on the West Coast, and the Kansas City Southern Railway in the Midwest.

According to the Association of American Railroads, two Canadian companies with reach into the U.S. would be considered Class 1 railroads if they were headquartered in the U.S. — Canadian National (CN) and Canadian Pacific, as would two Mexican railroads, the Ferrocarril Mexicano and the Kansas City Southern de

Mexico.

While a similar bump in world trade volumes occurred ten years ago after a labor dispute resulted in a lockout of West Coast port workers in 2002, Seale says this time much larger and perhaps longer lasting factors are at work.

Of these, Seale says, none is bigger than the rapidly escalating cost of producing goods in China.

“If you look at the situation starting from 2008 and continuing up to today, the cost of production in China, from the perspective of the cost of labor, has gone up about 80 percent compared to a 10 percent increase in the U.S. during the same period. The increase in costs in China has occurred without a commensurate rise in productivity,” he explains. “These trends are expected to continue, with forecasts suggesting the average Chinese labor cost will rise 10 percent to 15 percent a year into 2015, at which time the labor cost curves will actually intersect and the cost of manufacturing certain goods will actually be higher in China than it is in the U.S.”

In the face of these new realities, many companies are already re-shoring production to the western hemisphere, and that will continue.

The other result is a shift in production to India and other parts of Southeast Asia, moves that Seale says have begun to alter the world’s supply chains dramatically.

“When freight [bound for the U.S.] comes from that far south, it wants to come through the Suez Canal instead of the Panama Canal,” he says. He points out that the Port of Norfolk, Va., which has a draft of 50 feet, is already seeing 13,000 TEU (twenty-foot equivalent unit) ships originating in India, Malaysia and Sri Lanka.

Given its ties to the port — its Heartland Corridor extending to Columbus, Ohio originates there — Seale says Norfolk Southern “is well-positioned to participate in that developing trend.”

“We’re on dock at all of the terminals at Norfolk, and we’ve cleared 28 tunnels through the Appalachian coal fields to run double-stacked trains to our new intermodal terminal in Ohio, so we’ve connected the dots to create the shortest, cleared, double-stacked route from the East Coast to the Ohio Valley,” he continues. “And that’s just the Port of Virginia. We also have East Coast service at the Ports of Charleston, Savannah, and New York and New Jersey, so I would say we’re well-positioned wherever the freight wants to flow.”

Seale hastens to add that one shouldn’t think of cargo moving only in one direction from the East Coast ports to its new terminal in Columbus.

“We can handle it directly from the Port of Norfolk and take it to the facility, which is located at the [former] Rickenbacker Air Force Base, or we can handle business coming from Long Beach, passing through Chicago, and winding up at our facility. The same is true for our new terminals at Birmingham, Ala. and Savannah, Ga. We’ve got cargo going in from both directions at those terminals.”

## **Inland Connections**

Norfolk Southern has incorporated inland terminals in its operations since 1987, when it opened its facility at Front Royal, Va. The next addition to its network will be the inland port in Greer, S.C., currently under development by the South Carolina State Ports Authority.

The impetus behind the project is the BMW assembly plant, which is currently undergoing a \$900 million expansion of its plant at Greer, the fourth such multi-year, multi-million-dollar project the German automaker has undertaken since establishing its manufacturing campus in the Upstate of South Carolina in 1994.

In 2012, the facility became BMW's second largest assembly plant by volume. Last year the plant produced 271,065 vehicles, 73 percent more than in 2010. The current expansion is expected to be completed in 2015.

"As you can imagine, a lot of the auto parts that move into the facility come through the Port of Charleston and are currently moved by truck," Seale says. "That will be converted to double-stacked service from the new terminal currently under construction in Charleston to the new inland port at Greer. At the same time, we'll also be providing similar service to Michelin, and other customers in the surrounding market."

Chris Mazza, senior vice president of business development at IAS, a custom software provider for the logistics industry, sees developments like those in Greer as indicative that the trend toward more intermodal activity continues to grow despite the fact many of the ocean carriers who entered the space only a few years ago are now abandoning it to concentrate once again on the water portion of container moves.

"In our business, we focus primarily on the first and last mile of deliveries in the international container sector, and that entails a lot of collecting of data at rail ramps," Mazza says. "From that perspective, there's no question that intermodal activity continues to grow, and the vacuum left by some shipping lines getting less involved in intermodal is definitely being filled by others."

For some — but not all shippers who stuck their toe in the intermodal pool — the economics of the service in practice ultimately proved to be far different from what the economics were on paper.

"The problem was the imbalances, and having to bear the cost of those imbalances, of having to get the empty containers somewhere they could be refilled after the initial deliveries were made," Mazza says.

"Dealing with empty containers is what turned many moves that were winners into losers," he says.

The changing economics of intermodal is also playing a role in how railroads have been able to make the service a success — the example being Norfolk Southern.

"The traditional rule of thumb was that an intermodal move had to be 500 miles or above to make any sense financially," Seale explains. "That's been turned upside down and the avenues for doing that have been double-stacking and density. Those two factors have generated a capability for rail to compete with highway in shorter blocks of miles."

As an example, he points to the success Norfolk Southern has enjoyed moving cargo from Savannah, where it has on-dock service, to Atlanta, a distance of not quite 300 miles.

"We're running double-stacked service between those two points, but with the cargo discharge that comes in, we are able to achieve critical mass, if you will, and we're able to turn those assets and get the box back quickly to the port," Seale says. "That superior economics enables us to defeat truck competition, even in that short mileage block, and that's the same principle that will apply at the new Greer inland port."

About 65 percent of Norfolk Southern's intermodal business is located in the U.S., making the Heartland Corridor, the Crescent Corridor running from Louisiana to New Jersey, the Meridian Speedway, spanning the 320 miles between Meridian, Miss. and Shreveport, La, and the Pan Am Southern Corridor, stretching from Albany, N.Y. to Boston, Mass., central to what Seale calls its "truck conversion activity."

"We are seeing significant movement by beneficial cargo owners to intermodal from the highways. It's the

typical people you would expect — Lowes, Home Depot, Target, Proctor & Gamble, Wal-Mart, etc.,” he says.

“In fact, as a result of that interest, even in the depths of the recession, we still managed to hold our own and actually gain share in the market,” Seale continues. “In 2009 our growth rate may have been flat, but truck shipments by comparison were down about 7 percent. And we’ve had double-digit growth in our intermodal volumes ever since.”

In the first quarter of 2012, he adds, Norfolk Southern’s domestic intermodal volume is up 9 percent.

“And we’re continuing to see a fairly insatiable appetite among those beneficial cargo owners to shift business from motor carriers to intermodal,” he says.

The pace of those shifts is bound to increase the second half of the year when the new hours-of-service rules for motor carriers go into effect on July 1, 2013.

Beginning then, driving will not be permitted if more than eight consecutive hours have passed since the driver’s last break of at least 30 minutes. But the biggest change will be in the reduction of hours a driver will be allowed to log in any seven-day period.

Under the old rule, a driver could work right up to his 70-hour limit, take a 34-hour restart, and then continue on his way until he accumulated 82 working hours in any seven-day period. The new rule limits the maximum number of hours a driver can work to 70 hours — period.

The change will also require that the restart period include two periods of 1 to 5 a.m., which could force some drivers off the roads for longer than 34 hours to get a valid restart.

“These changes are projected to reduce capacity in trucking by 3 percent to 5 percent,” Seale says. “As a result, our expectation for the second half of the year, particularly in light of continued modest improvement in the economy, is demand for domestic intermodal will ramp up at an even faster clip than in the first half.”

## **Not Just a U.S. Shift**

For some perspective on what’s going on in the U.S. rail sector, it is interesting to look at a recent initiative undertaken by CEVA Logistics in China.

Two years ago, as a result of customers’ requests for an alternative to traditional air, sea-air and ocean logistics, CEVA began investigating the viability of a rail link between manufacturers in Suzhou, China and end customers in Poland, Germany and the Netherlands.

“Early on, among the questions that had to be answered were: Does the market have enough volume for the round trip to make economic sense? What is going to go into the container in Europe for the return trip to China? Which route or routes make the most sense? And, from there, who are the appropriate rail operators to build up this service?” recalls Rotella Lo, CEVA Logistics’ transport director for greater China.

“With that, we then had to establish a security office at the border and begin the process of negotiating customs clearances and the like, because the service we’d be initiating would be going through at least five countries,” she says.

With a bit of shy laughter, Lo adds, “You see, we don’t go head-long, aggressively into something like this; we look and see, and do a lot of study.”

Initially, two routes were chosen: one to the south, and the other, which Lo describes as “CEVA-promoted” to the north.

“The reason we chose the northern route to start our new service is we found the southern route simply wouldn’t have enough volume initially for the back haul from Europe to China,” Lo says.

But that’s not to say CEVA rejected the southern route. Because of its proximity to Western China, a southern rail connection to Europe fits in nicely with China’s “Go West Strategy” for migrating manufacturing away from its crowded and ever-more expensive coastal region.

“The [local government] in the area has started to promote the service and partner with railway operators,” Lo says. “But right now, because of the volume coming back on the trains, the southern route is on a one-charter-per-week schedule, at maximum.”

The 11,000 kilometer northern route, meanwhile, is offering three scheduled departures for Europe per week and can be extended to originate in Shanghai, Tianjin, Shenyang, or Dalian, “allowing us to offer greater flexibility for our clients.”

Lo explains when clients asked for the new service back in 2011, their main concern was transit time to Europe, which can take as long as 36 days by sea.

“Some of them were also running into situations where they only had access to one ship a week, and if they missed it or couldn’t get on for some reason, they were in for quite a long wait,” she explains. “That left them to consider shipping their cargo by air, but that’s cost-prohibitive.”

CEVA conducted its trial run of the northern route rail solution during Chinese New Year, a period when millions of coastal residents rely on passenger rail to reach their ancestral homes for the holiday.

On the other end of the journey, the shipments arrived in a Europe that was then experiencing extreme cold temperatures as low as negative 38 degrees centigrade.

CEVA not only provided GPS tracking and visibility throughout the journey, it also provided specially insulated packaging materials to protect the products against extreme cold temperatures and, likewise, will provide packing to keep products cool in the container during the hot summer season.

“Before the trial, we were quite concerned with the schedule and flexibility, but when we tested it in pretty tough conditions — a time of year when passenger rail is more of a priority, we found the transit time and the service is quite good,” Lo says.

To shippers who traditionally rely on other modes, particularly sea-air transport of their shipments, rail is a totally new supply chain model. However, Lo says, the economics is undeniable.

“The transit time for a sea-air customer is between 21 and 25 days going from China to Europe, with the average cost of such a shipment is about 450,000 Yuan Renminbi (about US\$72,800) per container,” she says. “By rail the trip takes 23 days, but the cost per container can be lowered to between 68,000 and 85,000 Yuan Renminbi (between US\$11,000 and US\$13,750).

“So our rail alternative is cheaper than air and has a better transit time than ocean,” she says.

At present, the commodity mix on the northern rail route is divided between electronics and parts for technology firms, which move from east to west, and automotive components, which travel from west to east.

“In the beginning we had a lot of concerns because we were connected to so many countries and we wondered, ‘How can we possibly handle all of the security demands for such shipments and all the other things that go along with a trans-shipment operation,’” Lo says. “But the Chinese government has been very supportive of this initiative, meaning, among other things, that we’ve been able to have same-day customs clearance.”

Not surprisingly, another thing that’s helped facilitate the service is technology.

“One of the things we have at our disposal is a GPS function that can support a transit over a 30-day period,” Lo says. “This function allows us to monitor things like the open door alarms remotely, and provides us with full visibility for the entire route.”

Added, Anita Wei, marketing and communications manager for CEVA in Greater China, “We’ve already seen a lot of inquiries about the new service. We expect to see growing demand over time.”

## **Panama Paradox**

In light of all this activity, one might be inclined to wonder whether the Panama Canal expansion, which is slated to open in 2015, will be make the big difference people once assumed it would.

“The question I have is what the mix of traffic will be at the Panama Canal,” Seale says.

“One of the things Norfolk Southern is watching very carefully is export thermal coal,” he explains.

What the railroad is intrigued by is an acceleration of mining activity in the Illinois basin, an area encompassing all of Illinois and portions of southwestern Indiana and western Kentucky, where “steam coal,” a bituminous coal once widely used to propel steam locomotives, is being unearthed in abundance.

Some of this coal is already moving into the export market, destined for China, India and elsewhere, and Norfolk Southern believes this could be its next significant play once the new locks and deepened channels at the canal are open.

“I can definitely see where post-Panamax colliers could be loaded at ports along the Gulf of Mexico and then traverse the Panama Canal headed toward Asia with those cargos,” Seale says.

“Where everyone used to look at the Panama Canal as a container play only, in reality what we may see is a big increase in coal volume moving the other way,” he says.

But it is not just coal the railroad expects to carry to the gulf. Seale says liquefied natural gas — one of the very things that put a crimp in the domestic coal business — has a potential similar to the one he outlined for coal.

*Intermodal continues to be a share gainer relative to truck.*  
— Ben Hartford

“The administration has already approved a liquefied natural gas terminal in the Gulf to export about 1.4 billion cubic feet of gas per day to Japan,” he says. “We think we’re going to see more of these kinds of terminals permitted, and that, along with the improving economy, which creates more demand for electricity from utilities, is going to support higher prices for gas and coal.

“Not only will that improve the overall utility market, but it will stimulate the demand for moving these commodities,” Seale explains.

“Of course, the other benefit we’re seeing from all of the fracturing activity going on is we’re hauling a lot of crude by rail, as well as frac sand, pipe and drilling pads and waste water,” he says, adding, “To give you an idea of the potential of these markets, we handled almost 14,000 carloads of crude oil in the first quarter, and so far, for the year, we’re up 66 percent over what he handled a year ago.”

Robert W. Baird & Co.’s Hartford also believes the Panama Canal’s impact will be muted.

According to Hartford, the really big shippers inclined to diversify their ports of entry and railroad service providers, did so after the labor unrest of the early 2000s.

“And if you think that way, then your expectation has to be that what change we experience is going to be on the margins,” he says. “Will we see a degrading of the rate of intermodal activity emanating from LA/Long Beach? I don’t think so. The L.A. basin is such a large consumption base to begin with that it’s only going to make sense to continue going there. And if you’re there already, it only makes sense to continue making intermodal moves into Chicago from L.A.

“Again, there could be some impacts on the margins, but I don’t think the Panama Canal will be a game changer for the railroads,” he says.

“The thing about all the domestic intermodal projects we’ve seen in recent years is that every one of them was designed for a specific purpose: diversion of containers from truck to rail,” Hartford continues. “And we see that trend continuing, particularly in the east, which is half of the total intermodal bucket.”

“I think an annual growth rate close to 10 percent is definitely achievable going forward,” he says.

## **A Role for Automation**

As part of expanding and upgrading its intermodal operation, Norfolk Southern has deployed automatic gate technology at each of its terminals. This, Seale says, has enabled the railroad to reduce motor carrier dwell at its facilities from 35 minutes to 23 minutes.

“Now, that doesn’t sound like a lot, but when you’re talking about over 3.5 million shipments a year, that 12 minute reduction adds up to a lot of savings in terms of cost and efficiency,” he says.

“Not only is automation allowing us to turn those drayage units faster, it’s allowing us to do so with fewer people on the ground at each terminal, so it’s a service plus cost management technology,” he says.

While the volume of coal as a moving commodity may be down at the moment, it still represents 25 percent of Norfolk Southern’s total revenue, and that business has also seen its share of upgrades in the technology department.

The main component of that effort has been the implementation of a Commodity Transportation Management System.

“The simplest way to describe it is as an automated, supply chain support system for unit train planning, monitoring while en route, scheduling the unloading of the coal and returning the empty train set to the mine to be refilled,” Seale says, adding, “That’s a product our shippers and receivers are using with great gusto.”



Norfolk Southern has also used technology to design and simulate its service, and determine when it needs to extend existing sidings or install or add new ones.

“We’re also using an automated dispatching system that optimizes the dispatching of trains and train ‘meets’ to enhance the management of capacity we have on the rails and the level of service we provide to our customers,” Seal says.

Finally, among myriad other initiatives: the LEADER, or Locomotive Engineer Assist/Display and Event Recorder. LEADER is software through which an engineer can measure performance against a perfect run over the same tracks on which they are operating.

The program shows braking, fuel burn and other criterion handled in a perfect scenario and allows the engineer to compare and contrast against those metrics in real time. It was developed jointly between Norfolk Southern and New York Air Brake, a manufacturer of railroad locomotive air brake systems.

“So you can see, we’re big users of technology, and it’s an integral part of our effort to generate \$100 million in productivity cost savings this year,” Seale says.

Ben Hartford says Norfolk Southern’s technology efforts are symptomatic of what’s occurring across the railroad sector.

“When you look at these investments industry wide what you see is they all generally boil down to improving the fluidity of the respective railroad’s network and improving asset velocity,” he says.

“Put another way, they’re basically looking for a way to handle more volume with the same amount of capacity, and I think, when it comes to the railroads, that’s where the opportunity is... Does the shipper benefit from better service? Sure. But it’s really about the railroads running their networks more efficiently and therefore more profitably. They can then argue for more capital spend for network improvements that enhance them even further.”

Looking forward, Hartford offers his perspective on one potential threat to railroads, and one potential development that could benefit them greatly.

“Frankly, I think the biggest threat to rail — and one that’s ever-present — is that the Surface Transportation Board, the industry’s governing body, could become more activist and become a more explicit advocate for shippers, taking their side more frequently in rate cases, and so on,” he says.

“If this were to happen, that would by definition reduce the return profile for the railroads and therefore impede the capital investments they make,” he continues. “On the other hand, I think the single biggest change that could possibly occur in regard to railroads is a change to the interpretation of revenue adequacy.

“Revenue adequacy is the framework through which railroads are deemed to be pricing their services appropriately,” Hartford explains. “And the primary criterion for determining this is looking at whether railroad is earning a sufficient return on the basis of historical costs.

“Personally, I think that’s the wrong way to look at it. But if the railroads can get the Surface Transportation Board to change its interpretation from an historical cost perspective to a replacement cost perspective, I think you’d get a truer idea whether or not they were earning an appropriate return. I would argue they are not and this would be an important and necessary step toward rectifying that situation,” he says.