

DAY 2: CONCURRENT PANEL SESSIONS (PANEL 3A)

Financing Intermodal Development International

Daniel Smith, *The Tioga Group*, Moderator
Barry Ulrich, *Global Environment Fund*
Joseph Gurskis, *The Kingsley Group*
Robert Hart, *ABN-AMRO Bank*
J. Douglass Coates, *Manalytics International*

OVERVIEW

Daniel Smith

This session focuses on how to finance international intermodal development and projects. It has long been recognized that transportation infrastructure investments are engines of economic growth. The international transportation investment started out with railroad tycoons and entrepreneurs who made a lot of money in some places and went broke in others. As time passed, in much of the world the transportation infrastructure was nationalized and became an administrative function instead of an entrepreneurial one. This has occurred for the better part of a century and it is only in the last 5 to 10 years the pendulum has swung back. Today, private investment and public-private partnerships are becoming the norm in most of the world and certainly the preferred route for new projects, particularly the more difficult, more ambitious intermodal projects. This session focuses on the challenges of implementing this new and radical idea—intermodalism—in a new climate of public and private investment financing.

RAIL INTERMODAL PROJECTS

Barry Ulrich

Barry Ulrich is an investment officer with Global Environmental Fund and a board member of the railroads in

both Brazil and Argentina. Global Environmental Fund is an investment management company with some \$350 million under management in five funds, focusing on environmental infrastructure worldwide. Ulrich comes from a management consulting background with Andersen Consulting.

I will present a case study on our railroad projects in Brazil and Argentina, which are really in the infancy stage of implementing an intermodal program. Members of this audience come from different disciplines and hopefully will learn something from this. Some of you will want to invest. Some of you will want to sell us things. I will begin with a brief background on the rail systems and then move on to the intermodal program with a discussion of the current and future markets for the railroads, the challenges in implementing the program, and the plan to implement it through a business strategy.

Our investment is actually in a company called Americo Latino Logistico (ALL), which is a Brazilian holding company that directly owns 100 percent of Ferro Sud Atlantico (FSA), which is the Southern Atlantic railway in Brazil, and indirectly owns 80 percent of the Bapim Mes-sipamico (Bap-Messo) railroad in Argentina. The job of the management team at ALL is to grow the company both within the current markets served and through acquisitions in rail and ancillary services. ALL was acquired through privatization in 1997 and has been in operation for 3 years. Bap-Messo was acquired in June 1999. The combined network is a contiguous system; however, each system has a different gauge track and that presents a few challenges. The total network is 15 000 km. FSA is largely

in an agricultural-based area, although the management team there has done a nice job of reducing the seasonality of the agriculture and diversifying into other cargoes; Bap-Messo has a much more diversified cargo base. They both have ample opportunities to expand within these markets, but the natural layout of the railways presented a nice opportunity for the introduction of intermodal service.

I want to briefly talk about the performance we have had over the past 3 years and what we project for 2000. The revenues have grown fairly rapidly. In real terms (the real devaluation affects the U.S. dollars terms), volumes are very strong. We have been very pleased with the performance, which moved from single digits to the mid-30s last year, due in large part to employee reductions. We took on a staff of 6,500 and have basically reduced that by half. We are spending money on investments in the railroads, although not at the levels you see in America. This is a much different story, where we have single-digit market share and are targeting our investments to bring the market share up to where it should be and then investing in improvements in the railroads.

Our rail network spiderwebs through southern Brazil, goes into Argentina, and then spreads across to Chile. What is interesting is that we capture the entire MERCOSUR (Southern Cone Common Market) cargo flow between Sao Paulo and Buenos Aires with Porto Alegre, which is a key port. Eventually, we hope the line will stretch across into Chile, with the potential to take trucks over the mountains and into the Chilean market.

How large is that market? The marketing staff has developed some data for the route between Sao Paulo and Porto Alegre. We looked not at total container traffic but at the cargoes we think we can capture. There are 39.6 million tons (35 935 million kg) a year going between Sao Paulo and Porto Alegre, divided into bulk, clarified reefer (refrigerated products), and general cargoes. Currently, our railroad in Brazil has less than 1 percent of that cargo flow.

Right now, the route between Sao Paulo and Buenos Aires is quite a bit smaller, but that is likely to grow as the MERCOSUR trade pact takes effect. This market is estimated at about 4.22 million tons (3829 million kg) a year and, again, we capture no more than 3 percent of that cargo flow. Clearly, the market is there and is currently served almost entirely by trucks. This offers a great market opportunity; however, implementing the service is a big challenge.

What challenges do we face? The first one is obviously infrastructure. The first step was to look at the system and ask, what do we have in place that can handle this kind of cargo? The answer is almost nothing. We have inadequate handling facilities at all the nodes in Sao Paulo, Buenos Aires, and Porto Alegre. We have a bottleneck at the transfer station between Argentina and Brazil as a result of the different gauges of track—each

car that comes through there has to be lifted up and a new bogey has to be put on. We have no trucks or agreements with truckers, and we have limited rolling stock suitable for this type of cargo. The good news for us and probably for those who would sell these services is that this is probably the easy part. This is an investment that we can do in a few years. It requires money, but it can be handled relatively simply through investment.

The flows go both ways between Buenos Aires and Sao Paulo. We collect in Buenos Aires by truck, take it to our handling station where containers are lifted off the truck, and put on our rolling stock in Sao Paulo. It follows the Brazilian tracks either to Porto Alegre or to the transfer station at Uruguaiiana, where all the cars are lifted up and new bogeys are put on. Then they go down the Argentine tracks to the handling station in Buenos Aires and are put on a truck and delivered to the end user—to the customer's plant in Buenos Aires. That is the ideal scenario; if only it were that easy.

The infrastructure is one challenge, but we face two bigger challenges that are specific to our situation. The first is customer perception. For decades, these railroads have been run into the ground by government management, and currently we have a market share in the single digits. Over the past few years, we have been very successful in winning over our traditional clients, regaining their confidence through reliable service. These are the people that even during hard times were continuing to use the railroads, but they now use it in much greater volumes. However, when we start to talk about intermodal service, it is a whole new set of clients—people who gave up on the railroads long ago—and winning them back is going to be a much harder task.

The second challenge we face is our relationship with the truckers and it is a war down there. They have dominated the traffic patterns for years and years and as we began to chip away at their market share, they reacted violently. Some of you may have read a few months ago about the truckers shutting down the highways to protest high fuel costs and what they perceive to be favorable treatment of the railroads in Brazil. Hence, our relationship with them is less than good and we need a good relationship with them because we are not planning on building a trucking company. This is but one aspect of the relationship with truckers that comes into play.

The other is a strange quirk and that is at the transfer station at Uruguaiiana. As I mentioned earlier, we spend a lot of time changing the bogeys on each car that comes through. However, this is really not the bottleneck. We have plenty of time to do that, because the customs agents prefer truck over rail and would just as soon see thousands of trucks go through before our trains go through. While the bogeys are changed, our trains sit for 3 days waiting for approval from the customs agent to go through. This is a relationship we need to address.

Those are the three main challenges we face and I am sure there are others, but I would like to shift the focus to our business strategy. Our railroads want to offer door-to-door service to their customers who could use that service between Sao Paulo and Buenos Aires. Our intention is to focus on high-value-added products. The particular markets that have been identified include food and beverage, metallurgical products, chemical products, paper and cellulose, and general cargo.

We are also going to focus on two high-traffic routes that I mentioned earlier, between Sao Paulo and Porto Alegre and between Sao Paulo and Buenos Aires. There are other places to go, but it does not make sense at this point. We want to make sure we have modern technology in our containers and bimodal system and we will be purchasing a number of RoadRailers in the near future. We need to invest in our intermodal terminals and we plan on developing an information system just to support this business line.

What is our implementation plan? The first step was completed in 1999, when we gradually reduced express service between Sao Paulo and Buenos Aires to just two trains a week. It was basically a loss leader. What it was designed to do was show our clients that no matter how many cars we have on these trains, no matter what the conditions are, they are going to go off on time and arrive on time. That went a long way to regaining the confidence of some of those customers.

For 2000, our intention is to keep increasing the departures between Sao Paulo and Buenos Aires and Porto Alegre. We have implemented Global Positioning System to track the express trains. If a train gets lost in the hinterlands, whereas before it took 4 or 5 days to figure out where it was, now we know immediately and work to keep the service on time. We also want to build an infrastructure of collection and delivery services. In the next couple of years we plan to make substantial investments, with the amount of investment declining in later years as we get our infrastructure in place. In the current year, we plan on investing heavily in the terminals, increasing the number of bogeys and purchasing RoadRailers both this year and next year. After that, it will primarily be investment to increase capacity, as we buy more rolling stock to handle the expected volumes.

In terms of financing, we anticipate this railroad being cash flow positive next year; and being equity investors, we know a little internal cash flow investing certainly will not hurt. The company has a large development loan from Banco Nacional de Desenvolvimento Econômico e Social (BNDES) available that it can draw on, and it has equity investors like us who are pleased with results to date and are willing to pump in a little more money. Obviously, we expect a big payoff. With regard to financial projections, we anticipate they will be very moderate at first but that by 2003 and 2004 we are looking for

about a 75 percent increase over current revenues and a similar increase in volumes in terms of tonnage. For those of you who may question these projections, if you take the total market share just in the two routes I discussed earlier and put 2 percent growth on it, we are looking to capture 4.5 percent of the total market. We think these are very attainable goals.

Finally, what will happen in the future? I have no idea. Hopefully, 3 years from now I can come back here and give you an update. But I can tell you this—I received the January numbers yesterday and it was evident just in intermodal volumes alone that the tonnage was double-planned and 20-ft equivalent units (TEUs) were greatly above plan. We experienced a much higher tariff than we expected, and what is happening there is that some customers between Porto Alegre and Sao Paulo are buying into this program and shipping some high-tariff cargoes through there. Hopefully, this will provide a nice base and continue on through the rest of the program. Thank you.

LOGISTICS INFRASTRUCTURE

Joseph Gurskis

Joseph Gurskis is Principal with The Kingsley Group, an international logistics and transportation consulting firm based in San Francisco. Gurskis leads the firm's rail practice and works out of Washington, D.C. He has more than 25 years of experience in transportation, both as a consultant and in rail management. He has done numerous consulting assignments in logistics, transportation strategy, asset management, and operations in the United States, Canada, Latin America, Australia, and New Zealand. He is just off several projects in Brazil and is here to talk about one of them on rail port and highway infrastructure. Before joining Kingsley, Gurskis was a consultant with Booz-Allen in its maritime and rail practice, and before that he was with SP and CSX. He has a B.S. in economics from Wharton and an M.S. in city planning from Harvard University.

I spent a good part of last year working on various logistics infrastructure development projects in Brazil and my presentation is on a model being developed in Brazil for investment in such projects. By way of background, there is significant change occurring in Brazil. Privatization began a number of years ago and is now nearly complete. This has brought about a change in perception and a change of approach in terms of infrastructure development and financing. The idea now is to balance public and private development. In the past, it

was primarily public, with almost everything (if not everything) owned by the government. Now, private sector companies must invest in the infrastructure. Brazil is focused on an integrated planning model—not onesie, twosie types of development efforts but basically integration of various investment infrastructure projects. As part of the change in Brazil, they are looking at what can be characterized as beneficial economic development. In the past, when the government invested, many times it was done for political reasons; now, it is being done for economic reasons. The focus today is on infrastructure projects that are going on in southeastern Brazil.

Brazil's logistics network and the transportation network continue to grow, particularly at the ports on the container side of the business. The port of Santos has the biggest container port in this region of Brazil; however, other ports such as Vitoria in the northern part and the port of Rio and the port of Paranagua are also growing.

There were basically five major railroads in the southeast: Ferro Centro Atlantico (FCA), which operates in seven of the nine states that are part of this region; MRS Logistica; Estrada de Ferro Vitoria-Minas (EFVM); Ferrovia Novoeste; and Ferrovias Bandeirantes. Only 3 or 4 months ago, FCA and EFVM came under the control of one company, a major conglomerate called Companhia Vale do Rio Doce (CVRD), which primarily focuses on iron ore. CVRD now owns and plans to integrate both railroads. The wagon or the railcar fleet is very heavily focused on moving bulk commodities, which traditionally have been the major product for these railroads. As far as intermodal capacity, there are platform or flatcars, but these are not really designed to handle containers. They are heavy flatcars used mostly for handling iron and steel slab.

With respect to the highways, most (80 or 90 percent) are not paved. Most of the major access routes are paved, but there is still a lot of roadway that needs to be paved and developed. This is going to be very critical as intermodal grows in Brazil.

A new port facility is being built at the port of Sepetiba, with planned growth of its container terminal. This really is the core of the development effort that I will talk about today. By 2020, this port is expected to handle about 4.5 million TEUs. The challenge facing Brazilians is how to invest in the infrastructure at the port itself and how to invest in the infrastructure that allows access to the port.

The solution that was arrived at was the development of what is called a special purpose company (SPC). This particular one is called CDSE (Companhia de Desenvolvimento do Sudeste), and it is bringing in investment basically from the major industrial stakeholders in the port and in movements to the port. It includes Sirhanna, a major fertilizer company; CVRD, a conglomerate primarily focused on iron ore; Mitsubishi, a shipper of

many things; Telemar, a major telecommunications company; Companhia do Unibanco, a major bank in Brazil; Companhia Siderurgica Nacional, a steel company; BNDES, a development bank; and Bechtel, which is looking at it as an investment opportunity through Bechtel Enterprises. These are the shareholders who have contributed capital to the SPC. The purpose of CDSE is to identify development needs and, in turn, spawn off other special purpose companies.

The mission of CDSE is to reduce the Brazil costs, which have basically hurt Brazil in terms of its ability to export various goods to other countries. In terms of developing or reducing the Brazil costs, the CDSE will be developing a logistics network plan for the region. It will be identifying, developing, and implementing priority projects. It will be structuring the financial and commercial models for these projects. And it will be seeking to attract and select investors and operators. The criteria for judging the investments in the projects include having attractive terms, because this is a private sector initiative. It is no longer a government initiative, so they are looking for high returns that will basically attract investors, attract off takers and users. The idea here is to go for off-balance sheet, nonrecourse financing—nothing on the balance sheet of the participants in the various companies.

The idea at Sepetiba is to develop a multimodal logistics center. There are basically three drivers that are pushing the idea of the creation and establishment of these centers. This focuses really on the container side of the business—the intermodal side of the business. First, the maritime industry is restructuring. There are going to be fewer and fewer carriers in the future and consequently fewer and fewer port selectors or purchasers of port services. Second, there are going to be larger vessels. Basically the larger vessels result in fewer port calls because of the time those vessels are out of service in ports unloading—this is down time and costs a lot of money. When they do make a call, there is going to be more cargo tendered at each call, and when they do make a call, they will be calling at places where there is a large industrial base. Because they will also offload cargo or bring on cargo from the hinterland, efficient access to that hinterland is also critical. The other key driver is a need to leverage the scale economies of the land transport network.

The port of Sepetiba, this multimodal center, is now looking at about 12 areas of investment. One is container terminals on the intermodal side; the other terminals are for ore export. Today, some ore is being exported through the port as well as a petrochemical product terminal; a liquid chemical terminal; agribulk terminal; roll on/roll off for automobiles; roll on/roll off for cabotage (basically the coastwise movements); facilities to handle and store frozen and chilled products; and an offshore oil and

supply base. Offshore exploration and offshore extraction are a big growth industry in Brazil and there will be a need for facilities to serve the offshore facilities.

The key element of this multimodal center is information. The idea is to link the whole supply chain through information. In this complex and this multimodal center, the plans are to have an information center that will be linking all the various stakeholders and all the various elements. Critical success factors of this multimodal logistics center in Sepetiba are an extensive economic base, very efficient port operations, a very efficient and extensive regional transportation network, and state-of-the-art information technology and telecommunications.

The basic game plan that was put together by CDSE was to identify projects that require and could very well be included in the portfolio for investment. There are also a number of projects being considered by others in Brazil. The work plan was to look at those projects, look at the prior studies, and look at the logistics clients—the customers and providers—and come up with an initial screen or an initial idea of infrastructure requirements. What are the needs? Based on forecasts of demand and analysis of the existing infrastructure, the goal is to come up with and identify infrastructure projects that are deemed to be critical to the growth of the southeast. Attention was also paid to basic service that is being provided by the transportation network, including labor issues, potential labor problems, the pricing of transportation, and so forth and how that could affect freight flow and economic regulation. Coming out of this all was project identification, a validation of projects that are on the drawing boards today that should be implemented, new projects, and refinements to the infrastructure support networks. The idea is to identify projects that reduce logistics costs, add value to products being shipped, provide a return to the investor, and have interests from off-takers or users.

A critical factor was to find necessary investment to improve access to the port. There are rail bottlenecks that have been identified as candidates for private sector investment, whether it is by the individual railroad itself or through a consortium of investors and other SPCs. One of the more critical ones is direct access to the port. Right now, the port is served by one railroad—MRS Logistica—and the idea is to introduce another railroad. The challenge is that MRS Logistica is a broad-gauge railroad and the railroads that interchange with it are narrow gauge. The idea is to build a third rail to access the port and provide access for FCA or to build an inland intermodal terminal further up by Japparee, where containers can be transferred to MRS Logistica and brought down to the port.

Another critical bottleneck is where the rail traffic comes down toward Santos, Sao Paulo, and then cuts north. There are huge conflicts with passenger operations, because this is a very heavily, densely operated commuter

line. There are only certain windows in which intermodal trains can operate. The proposal is to build a bypass that cuts around the congestion and cuts around the density of the passenger service and allows the intermodal trains to move up onto Sepetiba.

With respect to highway bottlenecks, fortunately the road network in the area is paved; however, the capacity is not that significant. The proposal in these areas is to introduce two additional lanes to improve a better flow for the truck traffic and also to improve the access directly into the port of Sepetiba. It is a very narrow two-lane road and as the port grows and the intermodal business grows, greatly improved access and wider lanes will be needed.

The logistics information technology center concept is to link all elements of the supply chain. The trucking companies, the railroads, the ships, basically the carriers, will be linked to an information technology center, as would the airports, and also the customers—liquid bulk terminals, the grain silos, the port terminals, the warehouses, and the plants. The idea is that, through the information flow, the freight can be moved more effectively and efficiently, whether it is intermodal freight or bulk cargo, through the network and into the port for export.

Other improvements can be characterized as noninfrastructure type improvements. Even when the infrastructure is in place, there will still be a problem getting the freight to the port via rail, because there are not any efficient cargo wagons or container wagons like we have here in the United States. One of the proposals is to create a wagon supply company or wagon supply SPC, very similar to TTX (the former Trailer Train Company), and investors would provide the intermodal wagons to the railroads.

There also needs to be a change in railroad operating philosophy. The philosophy in the past has been and continues to be bulk. The limited intermodal service now is basically put behind the bulk trains. There has to be a change in policy before we start to see scheduled intermodal service and prioritization in the intermodal trains.

At the port itself, establishment of a port terminal railroad is needed. MRS Logistica currently serves the port; however, it is not doing an effective job serving a limited business at the port itself in the bulk operation. Hence, the proposal to create some type of port terminal railroad to which MRS Logistica can deliver the traffic and which could effectively shuffle the business throughout the port complex itself.

There is also a need to create intermodal marketing networks, which currently do not exist in Brazil. These entities would sell the intermodal service to the clients, to the customers.

The whole idea of integrated investment incorporates other industrial and development efforts, logistic elements, and services. These include services to ship owners and

land transport operators, container fabrication, storage and repairs, potential for steel pipe manufacturing for the offshore oil and gas, steel storage and distribution areas, general warehousing and distribution centers, automobile distribution centers, consolidation and packaging, facilities for imports of petroleum products and their storage and distribution, agri-industrial processing, chemical processing, a mini-steel mill, and a coal-fired thermo-electric power plant. Thank you.

TRANSPORTATION FINANCING

Robert Hart

Robert Hart has been Vice President of the Surface Transportation Group at ABN-AMRO Bank since October 1995. Since joining the bank, Hart has organized and established their presence and their activities in financing the shortline and regional railroad industry in North America. He has also performed advisory assignments for insurance companies, locomotive manufacturing, and rail equipment leasing. Before joining the bank, Hart served as Senior Vice President of Railroad Financial Corporation, where he participated in a variety of rail industry transactions totaling over \$300 million. Before that, he was with Illinois Central starting as Assistant Manager of Equipment Planning and finishing as Treasurer. He has frequently participated as a panelist and speaker on a variety of topics and earned his B.A. and M.B.A. degrees from Northwestern University.

Thirteen months ago, ABN-AMRO was engaged by the Brazilian Ministry of Transportation to be their financial advisor for a very large-scale project, a real dream project, if you will, of Brazil, the North-South Railway. This will certainly be a 21st century project and a very large project. It is a greenfield railroad project in an emerging market. The policy goal here is to have public and private financing come together to get it built and keep it operating. It is certainly going to have trailer-on-flatcar and container-on-flatcar aspects to it, but more important is the relationship the railroad will have with the highway, with the rivers, with the ports, and with other railroads, all of which will be key to its success. This will truly be an intermodal railroad.

The proposed alignment runs from Belem up on the Atlantic Coast, down to an area in the neighborhood of Brazilia. There is also an underdeveloped region called the cerrado, which is comparable to North American prairie. It has agricultural potential, with the Brazilians particularly interested in soybeans, but it has no effective transportation infrastructure.

As noted in earlier presentations, the Brazilian rail network has been privatized. All the rail concessions come in from the ports, through the coastal areas, into the hinterland, reflecting the historical development of the railroad. Most of the railroad properties are in the southeast, which is where most of the economy and most of the people are in Brazil. Our project will connect with FCA on the south and connect with Estrada de Ferro Carajas (EFC), which is a CVRD iron ore railroad, in the north. In so doing, we will create a Brazilian rail network.

This is an ambitious project: 2200 km, costing more than U.S.\$1.6 billion, of which 226 km have been completed—100 km were built about 10 years ago by CVRD with public money. CVRD is building the other 100 km, also with public money, and they have the concession on another 200 mi (322 km) that has been completed. The estimated construction period is 5 years.

Two other elements are critical. First, there is going to be an interregional railroad bridge linking the south and the north. There is very little traffic right now in the immediate zone of influence in the railroad. The ability of the railroad to connect in the north with other modes and other railroads and in the south with other modes and other railroads is a crucial link in the intermodal network. Second, this will be a public-private financing partnership.

The potential market available to the railroad is estimated at 45 million tons, primarily ores and metals, forest products, and so forth. It is a long-haul market, which is favorable to the railroad. Marketing consultants expect the railroad can get a 30 percent share and, as is typically the case in other parts of the world, the major competition or the mode that is currently used is trucking. They truck almost everything and what they do not truck moves via coastal shipping. What is regarded as a bulk commodity in North America moves by truck in Brazil.

The project has been modeled, in effect, as a traffic diversion deal. If the railroad involvement in the modal chain results in a lower cost than the next best alternative, the traffic diverts to FSA. The construction is over 5 years and has been broken down into nine segments to be constructed as the model predicts traffic to divert. The overall existing market is expected to grow 4 percent per year and this does not include tapping into any of that agribusiness potential referred to earlier. The model factors in a higher unit transportation cost in the early years to reflect the fact that it is going to be a light-density operation until the network is completed. For modeling purposes, the project period is 20 years.

Regarding the finance plan, we are looking for government financial participation of about \$254 million and private equity of \$400 million, with debt from local and international sources filling out the balance of the funding requirement. The internal rate of return to the

equity investor is over 20 percent, and at this point the goal is to enhance that to a higher level. Project cash flows have also been modeled.

In implementing the financial plan, the single biggest obstacle to raising capital, to finding the financing, is risk. There are various ways to deal with the question of risk and I will talk briefly about an approach we use on a day-to-day basis in analyzing the credits that are submitted to the bank. When you are providing capital, whether as an equity investor or as a lender, you are worried about not getting your money back and then you are worried about not getting the kind of return that you expected. Therefore, the big questions you ask are pretty straightforward: What is the deal? What are the risks in the deal? Why should we do it despite the risks? In other words, are the risks being mitigated or managed in such a way that the return is attractive enough for us to put our capital into this project?

Within these big thematic questions are subquestions to be considered when developing a project and outlining a financial strategy and you really should have answers to all these questions: Who is the borrower? What is the lending rationale—in other words, what is the money for and why? What is the primary source of repayment? In a railroad project, you would say it is the free cash flow that is being generated from operating the business. What happens if Plan A fails or is underperforming and there is insufficient or no free cash flow? What is the secondary source? Perhaps it would be assets, real estate, or something else. You always want to have a second way out or at least have some notion of it. Another question is one that always interests me as more of a railroad-transportation person than as a banker—what are the business and strategic risks that are involved in the project? This requires that you look at the financing risks and the structural risks. Banks, very simply, never want to be structurally subordinate to another funder. Development risks, construction risks, operating risks—these are just a sampling of the risks we have to analyze and determine how to mitigate as part of the implementation program for the financing for FSA. This is a pretty standard allocation.

Let me use a hypothetical example to illustrate the typical risk factors that go into an international railroad project—specifically, a north-south intermodal railroad project. For example, the carload railroad would be EFC, which is the iron ore railroad mentioned earlier, similar to the old Burlington Northern that has a lot of coal business coming out of the Powder River Basin. It could also be more of a traditional type railroad like the Wisconsin Central. Let's assume that both of these railroads are hypothetical and that they exist in the nation of Fredonia. Both railroads are going to have the same exposure to the macroeconomic risks of Fredonia. What is their growth rate in gross domestic product, inflation,

and so forth? Both railroads are going to have the same exposure to the transportation market, although the intermodal railroad may have a little bit less risk there because of its market reach, because of its intermodal relationships with truckers, and so forth, which might get it into a broader market than the carload railroad. The carload railroad is probably going to have greater commodity concentration risk, because it is involved in bulk commodities. It might be involved only in grain or perhaps coal. The intermodal railroad, again because of that greater reach, is probably going to have less exposure to individual commodity concentration risks. For the same reason, it is going to have less exposure to shipper concentration risks. As a general rule, you do not want to get overly involved with a railroad that has a high degree of concentration in any one commodity or with any one shipper because your fate, meaning your loan, depends on what really happens to somebody else, not necessarily the borrower. You can mitigate that risk with some things, such as take or pay contracts; but generally speaking, you tend to avoid concentration.

The intermodal railroad is going to have more competitive risk. It is going to be in an aspect of the market that has, for example, the natural trucking haul or a single mode haul. It is going to have to take traffic away from that natural mode and bring it on to its intermodal railroad. It is going to have greater operating risks because it is complex and you have multiple parties involved. That means more things could go wrong, which in turn means management becomes more important. Therefore, execution risk or management risk is greater.

The intermodal railroad is also going to have more exposure to regulation and legal issues. It is not going to be regulated only by railroad regulations, but it is going to be affected by port regulations or trucking regulations. Most importantly, especially in Latin America, it is going to be tied up in all the issues related to the flow of paperwork. When cargo goes from one mode to the other, it is liable to be inspected each and every time a transfer occurs. There is certainly no door-to-door bill of lading or anything like that; therefore, the risk of the intermodal railroad increases.

Capital spending requirements are going to be greater for the intermodal railroad. Not only does it have to build the car shops and the locomotive shops that any railroad has to have, but it also has to have its intermodal exchanges, the terminal facilities put in place to deal with the intermodal exchange. Information is more important on the intermodal railroad, so there is a greater risk associated with that. It is serving a segment of the market in which shippers want and demand service and want to know where their goods are. Hence, there is going to have to be more investment in information on the intermodal railroad. Both types of railroads are going to have

the same exposure to the political and currency risk issues in Fredonia.

Back to our project—we thought it would be an interesting real-world test for the benefit of our client, who really wants to have private sector involvement in this, if we could take advantage of some of our contacts and go into the private sector, give them the information memorandum about this project, and then survey and interview them about their assessment of the risk and return ratio in this project. We did just that and the answer we got back is that the issues they really focused in on were the capital cost estimates or the cost overruns. Naturally, they also focused in on the normal market and competitive risks.

However, what the investors really want is a government policy that creates a nurturing environment for this project. Obviously, they want government financial support; that is a given. If I do not have that, I do not have 21 percent return, and I think that is a marginal return right now. I would like more, but I want to be sure the federal level in Brazil is working with the state level and that they take steps or create policies or incentives to break through some of the barriers and reduce the risks outlined for my intermodal railroad. That is what we need and that is what we have communicated to our client.

In conclusion, there is a lot to be said for this project. As expensive and as risky as it is, it does have the long haul that favors rail economics. It is going to create or at least facilitate a Brazilian rail network. It has scope and scale and is going to provide transportation to 20 percent of the country. It is going to be in an area where agriculture output is expected to double. It has a reasonable capital structure at this point. And it has a decent, albeit not a great, return to the investor. Thank you.

INTERMODAL PROJECTS IN ASIA

J. Douglass Coates

Doug Coates is President of Manalytics International, a transportation consulting firm based in San Francisco. His clients have included major warehousing and distribution firms, major ocean carriers, retailers, and manufacturers. Before coming to Manalytics, he was President of American Consolidation Services, which many of you know is the logistics arm of American President Lines. He was President of Miln Truck Lines, President of ITEL Rail, and held marketing and operations positions in ocean shipping and trucking and container leasing. He holds a degree in industrial engineering from Pennsylvania State University and an M.B.A. from Wharton.

I will talk today mainly about intermodal developments in Asia and how the projects are financed. With respect to Asia and with reference to what is happening in Europe and America as a counterpoint, Manalytics has conducted several projects in Asia for various clients—rail and ocean carriers, ports, shippers, and bankers—and this varied experience gives us some difference in terms of view, balance, and perspective. We can look at some of the tradeoffs of what things make sense and what do not and what drives success in looking at intermodal projects and investments.

First, let's talk about fundamental drivers in intermodal needs relative to Asia and the developmental and finance opportunities there.

- First and foremost, the international flows are the dominant trade. Naturally, there has been historical trade around villages, but the export trade is Asia's basic business transaction and provides the vast majority of hard currency to the countries. Import-export is a real driver and a real factor from the standpoint of looking at intermodal opportunities and financing. With the recent financial crisis in Asia, the need for cash, the need for foreign trade and development has never been more of a key, so you have countries trying to be competitive in export, trying to be competitive in terms of world markets. This means that government and industry line up. The government really wants rail to be effective. They want their individual manufacturers and shippers and people who are involved in the local community to be effective because it really means the livelihood and the whole economy is stable if you have incoming cash from exports.

Certainly from the standpoint of the North American experience, which is largely domestic, and even from Europe where most of the countries look internally first, only now, with the changes in the European Union, has this changed. Asia, on the other hand, has really been import-export for a long time.

- Second, intermodal developments in Asia focus around ports. International moves tend to be by ship, whether you are talking about large mother vessels, feeder vessels, or even barge and inland waterway moves. Ports are the dominant contact point from the standpoint of interchange between modes. What that means to a rail project is that the handoff, the connections, have to be very good between rail and port.

You are not talking about an inland move that goes from Chicago to Memphis or Chicago to Atlanta. You are talking about rail being part of an international connection, and the port-rail combination becomes part of your economic and financial analysis. We are in the process of completing a project with the Malaysian railways, and even though a lot of our work is focused on the performance of the railroad itself and how it does in terms of intermodal needs and serving customers, the

ports and the connection to international winds up being the major driver for success in the investment and infrastructure of the railroad.

- Third, specific trade flows and sourcing locations are continuously changing, a factor that cannot be underscored enough in Asia. If you look at the end customer of any transportation system, if you look at the people who are the manufacturers or retailers or people who are the beneficial cargo owners, who are moving something from A to B, they are really looking for more and better places to source, they are looking for new markets. The K-Mart, Reebok, and Gap of the world are always on the lookout for the best sourcing location, the best combination of price, quality, items that meet current demands, and that is ever-changing. That puts a lot of pressure on an intermodal system. It puts a lot of pressure on a transportation infrastructure because you have to be able to meet these changing requirements.

Certainly with the Internet and electronic commerce now taking place, this is not going to slow down. Instantaneous information on what is available, who makes the best gloves, who makes the best pipe wrenches, all these kinds of things are now available through the Internet and this means that sourcing locations and markets are changing rapidly. If your system is too brittle, you are not going to be able to make an adjustment to those changing flexibilities. There are strong parallels here to military logistics of the new millennium in anticipation of regional conflicts, with short lead times and a focus on flexibility in logistics and equipment. This flexibility on the commercial side is showing up in inland patterns, in ports (new ports, like Fuzhou, are focused on a single dominant commodity like footwear, while development at ports such as Tientsin and Harbin is driven by agriculture), and ships (large 6,000-TEU ships versus fast ferries and feeders in the Internet age). Looking at the end customer, at what really drives development and trade flows, it is very important in evaluating the finance and economics of intermodal projects to understand the underlying driving forces from the standpoint of trade.

- Another important factor in Asia is the fact that, for the most part, it does not have a developed highway network. This differs from Europe and obviously North America. Projects done in Bulgaria, Croatia, and Romania show trucks to be very tough competition and often an obstacle to rail developments. Whereas in remote areas of Europe, the roads are adequate for trucks to be carrying the freight, this is not the case in Asia, which really does not have a truck network that has been built up over time. Asia does have inland waterways, but this mode is not consistent with today's shorter order cycles and reduced inventory levels. This has to change, but the change will not be easy. In Asia, the highway infrastructure option simply does not work. What happens when vessels the size of the *Regina Maersk* arrive in port?

- Most of the intermodal and inland rail connections in Asia have developed in the past 5 to 8 years, even though containerization in Asia is 30 years old. Compare this with Europe, where there is a 30-year history in intermodal development. Most of the large intermodal projects in Asia have taken place in a 5- to 8-year time frame, including OOCL's Hong Kong Express into China; the Butterworth train to Penang and Malaysia; the Delhi-Bombay Express in India; and the north-south fast train connecting Kaoshiung, Keelung, and Taipei. This suggests to many that the door is open to a lot more intermodal development.

China's intermodal spending falls short of the requirements for such a vast market for exports now and for imports and domestic moves in the future. China certainly offers development opportunities; however, there is always a question of how much is being spent on intermodal. How much is committed and spent and how much is actually put into place requires considerable investigation if one is to understand what is really being done there. In any case, a lot of improvements are needed and those with know-how, resources, and stamina can make this a viable opportunity. At the end of the day, a combination of truck and rail are needed.

In conclusion, the lessons of intermodal in Asia are few but important. The key to success is understanding the flexibility and quick response requirements of the Asian supply chain in the day of the Internet and shortened order cycles. The port and the international nature of intermodal in Asia are key—success in import-export is the reason any Asian government will stay in power. The tradeoffs and the balance between these complex factors are key, and understanding the impact of change cannot be understated, as indicated by the recent Asian economic crisis. In looking for individual intermodal development opportunities in Asia, keep in mind that (a) intermodal needs to tie to ports and (b) there needs to be quick response and flexibility to meet changing needs for order patterns, order cycles, sourcing locations, and end markets. Any investment has to be viewed from the standpoint of the interaction with ports and ship patterns—large ships, small ships, all the different feeders that are involved, all the new configurations that the lines are coming up with. Even though you are looking at a railroad, all those factors need to be worked into your final ingredients.

On the subject of import and export, and the subject of risk, you also have the question of what happens with international trade. What happens with the balance of trade? How much import versus how much export? How does that work into the economic analysis of the individual investment you are looking at? In looking at opportunities, potential investors and developers must consider all these factors and do their homework. Thank you.