

# CARRIER PROCUREMENT INSIGHTS

TRUCKING COMPANY VOLUME,  
COST AND PRICING TRADEOFFS—2009



## IN BRIEF

As a shipper of products, when approaching the transportation industry it is important to understand how your freight complements an individual carrier's network. Not all freight is attractive to carriers and this paper will introduce the primary influencers to price and volume commitments.



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## INTRODUCTION

As a shipper of goods, it is important to understand how asset-based transportation providers generate profits, manage costs, and view pricing decisions. This report details how motor carrier pricing decisions are made to ensure long-term business viability. The information detailed is critical for carrier procurement negotiations and to gain a perspective on how Third Party Logistics Providers manage and utilize contract trucking.

The 1980 passage of the Motor Carriers Act, which deregulated motor carrier pricing and operating territories, brought about significant changes to the trucking industry and the overall U.S. economy. In 1980, transportation costs accounted for 7.4% of U.S. Gross Domestic Product (GDP).<sup>1</sup> By 2007, increased competition among transportation providers and improved operating efficiencies drove U.S. transportation costs down to 4.8% of GDP.<sup>2</sup>

While motor carrier deregulation dramatically decreased overall U.S. transportation costs, it led to the failure of many trucking companies who could not adapt. Today, the few surviving, major pre-deregulation carriers and post-deregulation entrants who have grown into major carriers both have evolved to develop trucking company best practices for operating in a deregulated environment. These best practices include:

1. The ability to calculate operating costs at the shipment/load and customer account level
2. Understanding and attracting business that supports lower cost per unit operating costs through increased equipment utilization, productivity, and reduced empty miles
3. Enhancing profitability margins through selling value-added services such as expedited transportation, cross-border, intermodal, freight consolidation/mode conversion, and third party logistics services

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<sup>1</sup> Cass Logistics Ltd., 11th Annual "State of Logistics Report."

<sup>2</sup> Armstrong & Associates, Inc. 2007 estimates.

## TRUCKING COMPANY COST CATEGORIES

Trucking company costs fall into three categories or groups: variable, semi-variable, and fixed costs (see Figure 1). The trucking industry traditionally prices/contracts for services on an annual basis and has a one-year planning horizon. Therefore, variable costs are those costs that change in periods of less than one year, semi-variable costs that change annually, and fixed costs that have planning horizons greater than one year. The definition of each cost category is dependent upon the planning horizon— all costs are variable in the long term and fixed in the short term. Examples of each cost category are provided in the table below. For trucking companies, variable costs are approximately 65% of total costs, semi-variable are 15%, and fixed costs are 20%.

**FIGURE 1** TRUCKING COMPANY COST EXAMPLES BY COST CATEGORY

Cost Category	Cost Examples		
<b>Variable Costs</b> Change in < One Year 65% of Total Costs	Direct Labor (DL) Fuel Insurance Rented Equipment	DL Benefits Fuel Taxes Maintenance	DL Payroll Taxes Parts and Tires Purchased Transportation
<b>Semi-Variable Costs</b> Change Annually 15% of Total Costs	Supervisor/Dispatcher (SD) Purchased or Leased Equipment Auto and Travel	SD Benefits Advertising Licenses	SD Payroll Taxes Marketing and Sales Return on Shareholder's Equity
<b>Fixed Costs</b> Change in > One Year 20% of Total Costs	Management/Salespeople (MS) Building Leased/Purchased Depreciation	MS Benefits Utilities Overhead	MS Payroll Taxes Property Taxes

In analyzing new business, a trucking company should not develop additional business that does not cover its anticipated incremental costs. Incremental costs are the sum of variable and semi-variable costs and are those costs that change in one year or less and therefore match the standard account timeframe of a one-year transportation pricing agreement.

As a shipper of goods, it is important to understand how shipping and receiving practices, vendor and customer geographic locations, transportation lanes, and commodity mix affect the operating costs of the trucking companies you work with. By taking efforts to reduce your trucking company's costs, you can improve your carrier pricing.

## MARKET PRICING

The domestic transportation marketplace is very competitive and provides many opportunities for shippers to reduce transportation costs. Carrier pricing can also seem peculiar when certain trucking companies can offer significantly better pricing than others for the same service in the same lanes. This market-driven environment and its complexities are explored below.

Trucking companies tend to pay drivers an hourly wage or on a productivity formula for every mile driven and a fixed amount for each stop. Most other variable costs tend to occur for all miles driven or for direct activities performed in providing customers with transportation services. While pricing services to cover incremental costs is okay in the short term, all of a carrier's costs (variable, semi-variable, and fixed) plus some profit margin have to be generated for company viability over the long term. The historical rule of thumb has been that trucking companies who cannot maintain a minimum operating ratio of 95 ( $(\text{operating costs} \div \text{net revenue}) \times 100$ ) will not have sufficient profitability to recapitalize their trucking fleets with new equipment.

While costs incur for all miles driven in providing trucking services, for a given load, most full truckload carriers only charge customers for miles driven from the point of origin to the final delivery

point and for any interim stops in transit. This "one-way" truckload pricing is the accepted practice in the truckload marketplace, but it has little correlation with covering the total costs incurred by the trucking company. In some instances, such as short-haul (runs that take less than one day) or dedicated "milkruns" (multiple stop truckloads for one customer), carriers can get paid for all miles driven on a "round-trip" basis. However, the vast majority of truckload pricing is one-way, and round-trip pricing is seldom provided for runs over 500 miles.

**Carrier pricing can also seem peculiar when certain trucking companies can offer significantly better pricing than others for the same service in the same lanes.**

## LANE BALANCE

Since one-way pricing for truckload carriers is the accepted market pricing method, truckload carriers must either: 1) charge customers a high enough mileage rate to cover all costs from point A to point B and back or 2) find another customer with loads close to the destination to pay for the costs of transportation from point B back to point A (securing a “backhaul”). Due to competitive market conditions, a truckload carrier can rarely charge one-way pricing that is high enough to cover all of its costs plus generate a profit margin. Therefore, developing a truckload network with sufficient lane balance and minimal empty (non-revenue generating) miles in mid to long-haul lanes is critical in order to succeed as a truckload carrier.

To explain lane balance, it is easiest to first describe what a perfectly balanced lane would look like. For example, a Chicago, Illinois, company manufactures components for its customer in Miami, Florida. Each Monday, it ships a full truckload of components from Chicago to Miami. When the truck arrives in Miami on Wednesday, it is reloaded by the customer with a load of finished goods destined for its customer in Chicago. The carrier can charge the Chicago manufacturer for the miles to Miami and also charge the Miami customer for the miles back to Chicago. This lane is perfectly balanced (see Figure 2).

“Headhaul” is when there is more freight moving from one geographic region to another than is being transported back. Put another way, there is more freight in the market moving from point A to point B than from point B to point A.

**FIGURE 2** “BEST CASE” EXAMPLE OF A PERFECTLY BALANCED TRUCKLOAD LANE



**Making One-Way Pricing Work**

- 1 Charge enough to cover round-trip costs
- 2 Secure a “backhaul”

The transportation marketplace is very dynamic, and lane balances can shift throughout the year. Seasonal products such as produce from California and Florida can cause spikes in demand during specific parts of the year based upon growing seasons. These spikes can accentuate a headhaul lane imbalance, or, in the case of Florida, help reduce a backhaul lane imbalance problem. As a shipper, it is important to know when these shifts occur during the year. If you ship seasonal products such as produce, snow throwers, lawn mowers, yard furniture, camping equipment, and numerous others, your carrier relationships may benefit from pooling your freight with that of other shippers by using a third party

logistics provider (3PL) which is optimizing transportation across multiple shippers. This can “smooth out” your individual company’s seasonality impact on individual trucking companies and improve your pricing position during times of peak capacity demand.

For example, Chicago to Miami is traditionally a headhaul lane. Therefore, it is easier for a trucking company to develop business from Chicago to Miami than to find loads from Miami back to Chicago. Because of this headhaul lane imbalance, per mile truckload rates from Chicago to Miami tend to be higher than from Miami to Chicago. Trucking companies have discounted market rates from Miami to Chicago in order to develop business. Miami to Chicago is a “backhaul” lane since it has less volume than Chicago to Miami. Backhaul lanes have less volume and lower rates than headhaul lanes; this is a basic function of market supply and demand (see Figure 3).

**If you ship seasonal products, your carrier relationships may benefit from pooling your freight with other shippers by using a third party logistics provider.**

**FIGURE 3** HEADHAUL VS. BACKHAUL



## THE VOLUME PARADOX

Trucking operations are much different than a manufacturing environment. In manufacturing, an increase in the number of additional pieces in a manufacturing run directly results in reduced costs per unit. So is additional load (shipment) volume better for a trucking company? The answer is maybe, but it is absolutely contingent upon providing ample profit margins to the trucking company by covering costs and balancing trucking operating lanes. Shippers with large volumes in headhaul lanes can worsen a trucking company's lane imbalance problem and therefore will receive higher prices from carriers versus shippers with large volumes in backhaul lanes which can improve a carrier's cost situation.

According to Marty Nordlund, senior executive vice president of specialized services at Werner Enterprises, one of the nation's largest transportation and logistics companies, "Load volume isn't as important as how well a piece of business fits with our headhaul and backhaul markets. A shipper's pricing is most contingent upon the lanes that need to be filled in our network and how well their volume matches Werner's backhaul needs. Lots of volume does not reduce the price."

Chris Baltz, senior vice president of yield management and strategy development for Arkansas Best Corporation and ABF Freight System, Inc., another one of the nation's largest trucking companies, also emphasized the need for potential business to match its company's operations. "It is much more important how well a piece of business fits our operating network. The lanes involved, type of freight (density, pallet configurations, and inherent liability of the commodity), and nature of the shipment tenders (size of shipments and number of shipments per pickup) can be more important than the actual total volume the customer offers," said Baltz. "Volume is important, but only up to a certain point, where the economies flatten out. The specific point where 'diminishing returns' happens can vary greatly by customer due to a large number of factors including pickup location, lanes involved, and the number and location of the final delivery points."

From our earlier discussion of trucking company costs and from the feedback from the carrier representatives above, it is obvious that increased volumes of loads/shipments at pricing levels that do not cover a trucking company's incremental costs in a given year, and total costs over the long term are detrimental to a trucking company's longevity. In these situations, the less volume from the customer, the better off the trucking company is. Eventually, all freight must pay its own way.

**Shippers with large shipment volumes in headhaul lanes can worsen a trucking company's lane imbalance problem and therefore will receive higher prices from carriers.**



In trucking operations, lane balance is a major driver in market pricing levels and determines how well a trucking company will be able to generate sufficient revenues to cover costs and generate profit. For example, the dry van truckload rate paid to a carrier for a load from Chicago to Miami (a headhaul lane) may be \$1.80 per mile plus a \$.21 per mile fuel surcharge. Because of trucking company capacity and supply and demand differences, the rate the trucking company is paid from Miami to Chicago (a backhaul lane) is only \$.96 per mile plus a \$.21 per mile fuel surcharge. At 1,340 miles each way, the total charges inclusive of fuel are \$2,693.40 from Chicago to Miami and \$1,567.80 from Miami back to Chicago. The total revenue for all 2,680 miles in this “best case” perfect lane balance example is \$4,261.20 (see Figure 4).

At a solid operating ratio of 90 ((operating costs ÷ net revenue) × 100), the costs for this load would be \$3,835.08 and the operating profit would be \$426.12. It is important to note that carriers traditionally must maintain an operating ratio of 95 or lower in order to continue growing and recapitalizing their fleets. Using our general cost category breakdowns, 65% of the cost associated with these loads, or \$2,492.80, is variable. Semi-variable costs account for 15%, or \$575.26, and fixed costs account for 20%, or \$767.02.<sup>1</sup>

**FIGURE 4** COMPARISON OF HEADHAUL VS BACKHAUL PRICING

Lane	Cost Per Mile	Fuel Surcharge	Total Charges
<b>Headhaul</b> Chicago to Miami	\$1.80	\$.21	\$2,693.40
<b>Backhaul</b> Miami to Chicago	\$.96	\$.21	\$1,567.80

<sup>1</sup> In this example, it is assumed fuel surcharge is a pass through revenue for the carrier.

Now that we have established a “best case” perfectly balanced lane example for two loads, what would happen if the trucking company had the same load from Chicago to Miami, but was unable to secure a backhaul load from Miami to Chicago and had to run those miles empty? The trucking company’s operating cost is still \$3,835.08; however, it would only generate \$2,693.40 in revenue. Its total loss for the load would be \$1,141.68 and the operating ratio would be 142. Even if we just considered the incremental costs (variable and semi-variable), they would total \$3,068.06, and the load would fall short of breaking even on its annual costs by \$374.66. In this example, the best thing the carrier could do is not handle the load. Imagine if the carrier handled ten loads from Chicago to Miami without backhauls. Its total loss would be \$11,416.80. In this “worst case” example, increased volumes could drive the trucking company out of business.

As the “worst case” example details, trucking companies must manage business in particular lanes and work on maximizing average load (shipment) revenues and minimizing load (shipment) costs. Profitable trucking companies spend great efforts in managing this dynamic relationship.

In reality, for our example truckload run, if a truckload carrier cannot secure a backhaul load out of Miami to Chicago, it will work on securing a backhaul load from other points along the return route in order to generate some backhaul revenue. These could include a load from Atlanta to Chicago or Atlanta to Gary, Indiana (see Figure 5). In the second case, the total revenue for a 690 mile backhaul from Atlanta to Gary at \$1.25 per mile plus a \$.21 per mile fuel surcharge would be \$1,007.40. This would bring the total revenue for both loads to \$3,700.80.

**Trucking companies must manage business in particular lanes and work on maximizing average load revenues and minimizing load costs.**

**FIGURE 5** EXAMPLE OF CHICAGO TO MIAMI HEADHAUL LOAD AND ATLANTA TO GARY BACKHAUL LOAD



The delivery in Gary would add 78 miles to the total route and increase the variable cost component for the entire run from \$72.44 to \$2565.35. The semi-variable costs of \$575.26 and fixed costs of \$767.02 would not change. The new total costs would be \$3,907.63, and the incremental costs would be \$3,140.61 for both loads. By adding the Atlanta to Gary backhaul load, the trucking company will generate \$560.19 over its incremental costs. On a fully allocated cost basis, it would still lose \$206.83, but in this example, the trucking company could take on more business at these rates in a given year and use the incremental profits to develop some higher revenue generating loads with origins closer to Miami and destinations closer to Chicago.

While we focused on a simple truckload route example to show the relationship between lane balance, costs, and volume, major trucking companies must optimize these relationships daily across thousands of loads. To help in this task, they utilize transportation management software such as TMW, ICC, or Infor/RoutePro, which are designed to match loads with routes and maximize the utilization of their fleets and transportation networks.

**Trucking companies also work with 3PLs to secure backhaul loads or gain compatible network business. The visibility to multiple carriers' lanes and balance needs provides 3PLs with information that they can use to reduce carrier network costs, which can also reduce costs to their customers.**

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## SUMMARY

While it may look like a straightforward industry to an outsider, the trucking industry is very dynamic. The visibility to multiple carriers' lanes and balance needs, provides 3PLs with information that they can use to reduce carrier network costs and can use to in-turn, reduce costs to their customers. From our examples, we have identified that an increase in the wrong type of business that does not fit with a trucking company's operations can have a detrimental effect. As a shipper of goods, it is important to consider these tradeoffs and reflect upon how your freight fits in an individual carrier's network.

### ABOUT ARMSTRONG & ASSOCIATES, INC.

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