

The effects of fuel costs on transportation



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Labor constitutes about 30 percent of costs for a carrier. DOT enforced maximum hours and safety requirements have led to a shortage of certified drivers. This has resulted in carriers paying drivers more per-mile and per-hour to compensate. Even with increasing driver benefits, there remains a shortage of 48, 000 drivers within the industry during 2015 with projections to rise to 175, 000 by 2024 (Novack 180). Labor costs are an important element of the motor carrier industry, which tends to have higher labor costs than other transportation methods. Increased truck size and non-unionized drivers have somewhat alleviated the rising costs of drivers.

Rising costs in fuel have led to innovations within the motor carrier industry to reduce the number of fuel costs. Fuel surcharges are commonly used by motor carriers to offset fuel costs. By passing fuel costs onto shippers based on a National Diesel Fuel Price Average published by the Department of Energy. This results in about 60 to 70 percent of increased fuel costs being recovered through this method (Novack 172). Adjustments to equipment have become one of the most widely used methods to offset fuel prices. Through modifications to mirrors, fairings, side skirts, and improved tire designs 1 to 6 percent improvements to aerodynamics and rolling resistance can be made. The cost structure of motor carriers is dominated by the variable cost of fuel (Novack 172).

Rising fuel costs for airlines has been a problem for airlines in the past because of the higher average prices of aircraft fuel. Within the industry, there has been a push for more fuel-efficient aircraft to compensate while also eliminating low-density routes to compensate. To

increase efficiency airlines have employed fleets of aircraft composed of varying aircraft sizes to improve efficiency. Larger planes service high demand routes while smaller, more efficient, aircraft service smaller lower-demand routes. A Boeing 747 consumes 3,411 gallons per hour. Using a cost of \$1.45 per gallon of fuel, the fuel cost per hour for a 747 is \$4,954.95 (Novack 242). This demonstrates the high operating fuel costs of airlines over water and motor transportation. Fuel and labor costs are important expense categories for airlines and have received much managerial attention. The low fuel cost of the late 1990s helped airlines improve their profitability; today, fuel prices have stabilized and are lower than they were five years ago. New technology and equipment have also contributed to higher efficiency within the airline industry. Higher operating efficiency and expanded capacity have also been introduced through new aircraft.

Fuel costs for railroads make up the second-largest percentage of expenses. However, railroads use highly efficient means of propulsion, and productivity and fuel efficiency have dramatically increased since the early 20th century. The Staggers Rail Act and the deregulation of railroads have contributed to the more than 100 percent increase in revenue per ton-mile. At the same time locomotive numbers have declined by 50 percent since the early 20th century. Much of the increase in fuel costs has been offset by more efficient locomotive designs. In 2015, \$6.67 billion was spent on fuel, showing a decrease of \$4.8 billion from 2014 level of \$11.4 billion (Novack 216). This decrease can be attributed to more efficient engines and the implementation of improved drag reduction features. High efficiency has led to railroads becoming more viable

for intermodal transportation, and as a result, have become the number one intermodal ton per mile carrier. As technology improves, railroads will continue to push towards greater efficiency. Computers are playing a larger role in every mode of transportation and railroads are no exception. Implementations of computers have led to ATACS and other advanced tracking systems. Computers also assist with brake control and power usage to ensure higher efficiency.

Rising fuel costs for water transportation would lead to much of the price increase being passed through to customers. Fuel surcharges and contract rates would become increasingly more prevalent to the water carrier industry much in the same way as the motor carrier industry, where fuel surcharges are common practice. 73 percent of the fuel consumed by water transportation is in the form of residual fuel oil. This form of oil is less refined as gasoline and diesel fuel which make up 11 percent and 16 percent of the fuel consumed respectively (Novack 264-265). Rising prices of oil may have less of an impact due to the industry's heavy reliance on cheaper less refined fuel. Even with higher fuel costs, the water industry will continue to be vital to transportation. Airlines and motor transportation will also suffer from the increase in price, but the water industry is vital for transporting heavy and large cargo across continents that cannot be transported by aircraft.

Fossil fuels are a limited resource that is the primary source of fuel for all modes of transportation. Rising fuel costs will have a significant impact on the service models of each industry as they adjust to the added costs. Most of the cost will be passed to customers, but the market will only bear so

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much. Airlines consume massive amounts of fuel and have the lowest cost to ton rate and use the most expensive fuel per gallon of the transportation methods.

Because of this, airlines may suffer the most from a price increase of fuel and would possibly result in airlines becoming a far more specialized form of transportation. Aircraft have the advantage of speed over the other forms of transportation, an advantage that will be null if the price of fuel goes up. Railroads and water transportation will benefit the most due to their high efficiency and cost per ton. Both methods also have the advantage of carrying cargo that is unable to be transported by aircraft or truck. This is vital and irreplaceable and as such will be less affected by an increase in the cost of fuel.

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