Moving Texas Exports
Examining the role of transportation in the timber, wood, and wood product export supply chain
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by

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The freight transportation system of a state has a direct and indirect impact on its international trade. The mode of transportation has a direct impact on the cost, efficiency, and reliability of moving export products to overseas markets. So too does the capacity of the transportation infrastructure. Freight infrastructure investments that increase system capacity could reduce travel times and costs, which can translate into increased economic productivity, as well as enhanced labor and market access. Better labor and market access, in turn, could contribute to increased economic competitiveness (3), which can result in increased exports. The Organization for Economic Cooperation and Development (4) reported that most countries with high-quality infrastructure rank high in the world index for overall competitiveness. Specifically, quality infrastructure is a key indicator of international economic competitiveness because it determines the scale, volume, and efficiency of international trade.

The objective of this series of papers is to describe the supply chains for six of Texas’ major export commodities and identify the role of transportation in the supply chain. The study examined the transportation concerns of exporters, transportation policies and regulations affecting the costs of exports, and infrastructure concerns. This is the second paper in the series and documents the role of transportation in the timber, wood, and wood product export supply chain and key transportation issues and concerns that were shared with the study team.

Introduction

In 2014, U.S. exports of goods and services amounted to $2.34 trillion, with Texas accounting for $289 billion of that amount (1). Furthermore, in 2013, Texas’ exports supported approximately 1.1 million jobs (2). There is no doubt that Texas’ transportation system—its roads, rail, ports, pipelines, airports, and border crossings—facilitates export trade.
Background

Forest land (i.e., forests and woodlands) covers 62.4 million acres or roughly 38 percent of Texas’ land area (see Figure 1) (5). Most of the productive timberland, however, is concentrated in the Piney Woods region of East Texas. Of the 14.2 million acres of timberland in Texas, 11.9 million acres is in East Texas (5). East Texas produces more than 70 percent of the state’s output of forestry, logging, and primary solid wood products (6).

Approximately 92 percent of the timberland in Texas is owned by private individuals, families, partnerships, corporations, forest product companies, and timber investment groups. The remaining timberland is owned by the government (5).

The total economic impact, including direct, indirect, and induced impacts,¹ of the timber industry in 2012 was $30.3 billion in industry output, 130,600 jobs, and $7.9 billion in labor income (6).

In 2011, timber was the ninth most valuable agricultural commodity in Texas (5). In 2012, Texas landowners received $229.7 million in stumpage revenue (6). The term stumpage refers to the amount that a logger will pay for each stump of standing timber to be harvested. In 2012, the Texas forest sector contributed $17.8 billion of industry output to the Texas economy and employed more than 59,400 people with a payroll of $3.8 billion (6). The total economic impact, including direct, indirect, and induced impacts,¹ of the timber industry in 2012 was $30.3 billion in industry output, 130,600 jobs, and $7.9 billion in labor income (6).

¹ Direct economic impacts are measured from the employment, salaries, and output that result from forestry, logging, and the manufacturing of primary solid wood products, secondary solid wood products, primary paper and paperboard products, and secondary paper and paperboards products. These activities, however, do not occur in a vacuum. The economic impacts associated with businesses that conduct transactions with the timber industry are called the indirect economic impacts. The spending of individuals’ personal incomes (salaries or wages) employed by those businesses responsible for the direct and indirect impacts produces economic activity of its own. Induced economic impacts are the impacts that result from the consumption from the employees of those businesses generating the direct and indirect economic activity.
In East Texas, 33 out of the 43 counties in the region count the wood and timber sector as a top-five manufacturing employer (7). Many counties in the region reported major economic generators involving wood products, such as lumber mills and shippers of wood byproducts (biomass), wood fuel (charcoal), and paper products. For example, Marion County reported five major shippers in the area, all related to wood: East Texas Forest Products, Blackburn Syrup Works, John Bradley Timber, Brooks Timber, and McDonald Lumber (8).

In 2011, total Texas timber product exports amounted to 59.4 million cubic feet. Texas mills processed 87.4 percent of the harvested timber, with the remaining 12.6 percent processed by mills in Arkansas, Louisiana, and Oklahoma (5). In 2012, Texas exported approximately $1.8 billion in forest products. Of those products, forestry and logging represented the lowest-value exports at $16.2 million and $57.3 million, respectively (see Figure 2). Considerable value is therefore added to Texas timber during processing and manufacturing. The largest forest export products (in terms of value) were primary paper and paperboard products ($574.2 million) (6).
Timber, Wood, and Wood Product Export Supply Chain

The timber, wood, and wood product supply chain begins at the forests in East Texas where logs are harvested and moved by truck to either a log storage and merchandizing yard or a primary processing mill:

- **A log storage and merchandizing yard** is a location where harvested logs are delimbed and cut into logs of standard sizes or higher-value log products. The products then go to the primary processing mill.

- **A primary processing mill** is a location where logs are cut into various lumber products, such as plywood, wood chips, and pulp.

Primary processing mills are usually located very close to the area of harvest (i.e., within 75 miles of the forest [9]) because transportation is a significant component of the price of the mill products (10). The cost of roundwood (i.e., the trunk of the tree that is cut), for example, is a function of the stumpage price, harvesting and processing costs, and transportation costs (11). Figure 3 shows the locations of primary processing mills in East Texas.
From the primary processing mill, timber is moved by either truck or rail to a secondary manufacturer or an export distribution center:

- **Secondary manufacturer** turns these lumber products into a range of wood and paper products, such as wood containers, wood flooring, wood windows/doors, wood trusses, manufactured homes, prefabricated wood buildings, paper, and converted paper products. Secondary manufacturers are typically located in larger metropolitan areas, such as Dallas, El Paso, McAllen, Houston, and Beaumont-Port Arthur (13), that are accessible by reliable transportation infrastructure. The products then go to the export distribution centers by truck or rail.

- **Export distribution centers** move products to, for example, Mexico (14), or one of Texas’ ports. In recent years, China has become an important export market for Texas timber and wood products (15).

Figure 4 illustrates the different components of the export supply chain.
Figure 4. Export Supply Chain for Texas Timber, Wood, and Wood Product.
Transportation Issues

Transportation is a major component of the timber, wood, and wood product export supply chain. This section of the document highlights a number of transportation concerns expressed by the industry that are believed to add costs to the timber, wood, and wood product export supply chain.

Overweight Regulations

Weight Limits

The federal government mandates the size and maximum weights of trucks in an effort to preserve (i.e., prevent damage to) the highway and road infrastructure. While industry clearly benefits from more productive trucks (i.e., heavier trucks), these benefits have to be balanced against the costs to rehabilitate and maintain a state’s highway and road infrastructure. Currently, federal regulations limit trucks to a maximum gross vehicle weight of 80,000 lb. Table 1 provides the legal axle weight limits for trucks operating on Texas’ highways.

Table 1. Legal Axle Limits on Highways in Texas.

<table>
<thead>
<tr>
<th>Axles</th>
<th>Non-interstate (Pounds)</th>
<th>Interstate (Pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Axles</td>
<td>20,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Tandem Axles*</td>
<td>34,000</td>
<td>34,000</td>
</tr>
<tr>
<td>Tridem Axles**</td>
<td>42,000</td>
<td>42,000</td>
</tr>
<tr>
<td>Quadrum Axles***</td>
<td>50,000</td>
<td>50,000</td>
</tr>
</tbody>
</table>

* Two consecutive axles extending across the full width of the vehicle at a spacing of 48 inches.
** Three consecutive axles extending across the full width of the vehicle at a spacing of 48 inches.
*** Four consecutive axles extending across the full width of the vehicle at a spacing of 48 inches.

States may grant special use permits to commercial vehicles for being oversize/overweight on the non-interstate highway system. In Texas, timber haulers can apply for an annual timber permit to move unrefined timber, wood chips, or woody biomass on vehicles with a gross vehicles weight of up to 84,000 lb. The permit allows a weight of up to 44,000 lb on a tandem axle. The permit does not allow for timber trucks to exceed the Texas legal size limits, and the timber trucks cannot operate on the interstate system.
**Overweight Permit Fees**

The annual timber permit fee is $900 in Texas and can only be used to transport timber, wood chips, or woody biomass in timber harvest counties (16) (as listed in the Texas A&M Forest Service Harvest Trends report). The most recent version of the Texas A&M Forest Service Harvest Trends report is for 2013 and lists 43 counties in East Texas (7). Before permit issuance, the trucking company must file a timber permit bond of $15,000 or an irrevocable letter of credit with the Texas Department of Motor Vehicles (18).

**Neighboring States**

Industry has expressed concern about neighboring states allowing higher gross vehicle weights for timber trucks under lower permit fees. Louisiana, which borders East Texas, has a $10 annual harvest season or natural forest products permit. This $10 annual permit allows trucks that haul forest products in their natural state on the non-interstate system to have a gross vehicle weight of 86,600 lb (and 40,000 lb on a tandem axle). Louisiana also allows a gross vehicle weight of 83,400 lb (and 35,200 lb on a tandem axle) on the interstate system with the harvest season or natural forest products permit (17). The timber trucking transportation costs are therefore lower in Louisiana and have resulted in a number of mills locating in Louisiana to take advantage of the lower truck transportation costs.

**Enforcement**

Similar to the concerns expressed by the cotton industry, log haulers find it challenging to determine the axle and gross vehicle weight of trucks transporting logs from the field because there are no scales in the forest. Industry also noted inconsistencies in the enforcement of weight regulations by local enforcement agencies (18).

**Container Capacity**

Timber products (e.g., wood pulp or wood pellets) “weigh out before they cube out”. In other words, the weight limit of the truck is reached before the truck is fully loaded. This results in the container capacity being used less optimally on the transportation leg to the port (last mile) (18). Industry said that costs would be less if containers destined for export markets could be heavier.

**Designation of IH 69**

The proposed 1,600-mile IH 69 corridor would connect Michigan, Indiana, Kentucky, Tennessee, Mississippi, Arkansas, Louisiana, and Texas. In Texas, the corridor starts at US 84 (in Joaquin) and US 59 (in Texarkana) and extends to Laredo and the Rio Grande Valley (see Figure 5). Congress has designated the highway as a High Priority Corridor and a Future Interstate Highway. IH 69 is needed in Texas to accommodate the growing population and associated traffic demand along the corridor, support economic development, provide a safer travel option, and provide more capacity for hurricane evacuations (19).
The truck weight limits associated with the designation of IH 69 in East Texas are of concern to the timber industry. This route is currently the main artery for timber movement from East Texas. Once IH 69 is designated, the timber industry will be bound to the 80,000-lb federal gross vehicle weight limit for combination vehicles with five axles. The industry will have to move less timber on the trucks, which will increase costs.

The industry wants the Texas Legislature to request an exemption for the movement of timber along highways that are destined to become part of IH 69 (currently signed portions of US 59, US 77, US 281, and SH 44). The state would have to request that the single-axle weight, tandem-axle weight, gross vehicle weight, and bridge formula limits set forth in federal law not be applied to the segments of IH 69 for the operation of any vehicle that could have legally operated on that segment before its designation as an interstate. For Texas to allow timber (or other) vehicles to exceed the 80,000-lb limit and travel on the interstate system, the state must request an exemption through the U.S. Department of Transportation. Louisiana currently permits such an exemption for vehicles that transport sugarcane during the harvest season (21). While the timber industry would not be bound by the federal interstate requirements if permitted an exemption, it would still be bound by existing state axle-weight requirements (21).

**Condition and Funding of Rural Connectors**

The first transportation leg of the timber export supply chain (from the forest to the log storage and merchandizing yard or to a primary processing mill) is exclusively conducted by truck. These first miles are predominantly on county roads and farm-to-market/ranch-to-market roads. The condition and funding of these rural connectors and the farm-to-market/ranch-to-market road system are of major concern to the industry. These roads were never designed for the number or weight of current truckloads and therefore are deteriorating. The perception exists that available highway funding is prioritized to address metropolitan mobility needs at the expense of maintaining and improving rural connectors (22). Industry feels that it is critically important that funding be prioritized for these first miles to ensure an efficient timber export supply chain.

These roads were never designed for the number or weight of current truckloads and therefore are deteriorating.
Rail Capacity Constraints

Inadequate rail capacity is a growing concern for the timber industry in Texas. Timber, wood, and wood products are bulk commodities, which are typically more cost-effectively transported by rail. However, inadequate rail capacity impacts the efficiency of the timber export supply chain, resulting in additional travel time and cost. This inadequate rail capacity is primarily:

- In East Texas.
- Serving the Port of Houston (i.e., the Port Terminal Railroad Association).
- Linking to secondary manufacturers in major metropolitan areas (e.g., Dallas/Fort Worth).
- Crossing into Mexico (resulting in rail bottlenecks).

Inadequate rail capacity and service result in transportation by truck, which is typically more expensive than rail.

Union Pacific Railroad (UP) has said that Texas’ rail network is an important component of the company’s rail network. UP’s commitment to addressing rail capacity concerns in Texas is evident from the fact that the company invested $3 billion of its private capital in the state between 2009 and 2014. UP has also entered into public-private partnerships to address rail capacity issues. The Tower 55 Reconfiguration project in Fort Worth is an example of a public-private partnership benefiting Texas’ freight rail network (23).

To address rail border issues, UP has made considerable investments at the Laredo gateway. For example, UP installed an improved signal system on the Laredo subdivision to allow trains to proceed to and from the border more efficiently (28).

Shipping Line Frequency

Timber and wood products are typically shipped using port-to-port liner services. A lack of scheduled liner services to timber and wood product export destinations at some of Texas’ ports can have a significant impact on the competitiveness of the export supply chain because exporters must pay for climate-controlled storage at the ports. Certain wood products, such as wood pellets, are very sensitive to moisture and require higher levels of storage standards. Some Texas ports are able to provide such storage, but occasionally exporters must construct their own storage facilities to properly maintain the integrity of the wood pellets (11).

Port Gate Congestion

Concern has been expressed about congestion at the Port of Houston gates, resulting in waiting times of two to three hours. Congestion affects the number of dray trips a driver can make in a day and ultimately the cost of the drayage operations (i.e., last-mile delivery) (24). However, the Port of Houston Authority said that since it resumed responsibility from APM Terminals for the terminal gates, congestion issues have largely been resolved (26).

1 A segment of the railroad system designated by the railroad for administrative and operational purposes.
Key Findings

The following are the key findings from this research:

- Compliance with overweight regulations is problematic in the forest. Also, more lenient overweight regulations and lower permit fees in neighboring states (specifically Louisiana) put Texas at a comparative disadvantage in terms of the cost of transporting timber.
- The designation of IH 69 in East Texas is of concern to the timber industry. This route is currently the main artery for timber movement from East Texas. Unless the state requests an exemption, the timber industry will have to comply with the 80,000-lb federal gross vehicle weight limit for combination vehicles with five axles.
- The deteriorating condition and funding of rural connectors (first mile) are a major concern for timber exporters, specifically for moving lumber from the forest to the log storage and merchandizing yard or to a primary processing mill.
- Inadequate rail capacity is a growing concern for the timber industry in Texas.
- A lack of scheduled liner services to export destinations at some of Texas' ports can significantly impact the competitiveness of the export supply chain because exporters must pay for climate-controlled storage at the ports.
- Congestion at port gates affects the number of dray trips a driver can make in a day and ultimately the cost of the drayage operations.
References


22. Personal communication with Texas Farm Bureau, January 26, 2015.
23. Email communication with Union Pacific Railroad, October 7, 2015.
25. Personal communication with Port of Houston Authority, June 24, 2015.