Project Summary

Texas Department of Transportation

0-5538: The Value of Texas Seaports in an Environment of Increasing Global Trade

Background

The U.S. Gross Domestic Product (GDP) has increased dramatically in the past 20 years, enhancing the nation's role in the global economy. Texas seaports play an important role in both the state and national economies as export and import gateways for a wide variety of sectors of the U.S economy. In 2004 the Bureau of Transportation Statistics reported that 39.4 percent of the value of U.S. international merchandise was traded via waterborne shipping. At present, four Texas deep-water ports (Houston, Beaumont, Corpus Christi, and Texas City) rank in the top ten U.S. water ports by shipment weight.

The increase in international trade, oil prices, and population has further increased the demand for waterborne commodities. An increase in containerized imports from developing Asian economies has, at times, overwhelmed port capacity on the West Coast and led shippers to examine gateway alternatives, such as Texas ports. As ports become more congested and extend their hours of operations, the logistics of maintaining ports have become more complicated. The true cost of deferring maintenance is often not realized until the cost of corrective actions becomes high. The emergence of mega-containerships, the consolidation of shipping lines, and the growing size of distribution centers have all been positive developments for commerce. However, these developments make ports more vulnerable if they allow their infrastructure to stagnate.

It is vital to TxDOT to maintain an accurate picture of port impacts on the state and regional economies and an ability to review the economic impacts of Texas port operations and investment programs.

What the Researchers Did

A study was conducted by a joint team from the Center for Transportation Research and the Texas Transportation Institute to estimate the economic impacts of Texas ports using input-output (I/O) modeling. The study focused on economic impact methods, particularly as they relate to port activities. All those larger Texas ports that had commissioned a recent economic impact study shared the information with the research team, and the team conducted economic impact studies for the remaining ports using the IMPLAN model.

Research Performed by:

Center for Transportation Research (CTR), The University of Texas at Austin

Texas Transportation Institute (TTI), The Texas A&M University System

Research Supervisor:
Rob Harrison, CTR

Researchers:
Rene Allsup, CTR
Nathan Hutson, CTR
Jolanda Prozzi, CTR
Peter Siegesmund, CTR
Jim Kruse, TTI

Project Completed:
8-31-07

The researchers also applied a computable general equilibrium model called USAGE-ITC to estimate the national economic effects of maintaining Texas channels at their authorized depths. They also described a method to estimate container flows through Texas ports until 2020.

What They Found

As a group, Texas ports impact approximately 950,000 jobs and over $48 billion in personal income, and create $135 billion of economic value and over $5 billion of various taxes. The impact to the U.S. GDP of maintaining the authorized depth on the Texas Gulf Intracoastal Waterway (GIWW) and shallow draft ports exceeded $217 million annually. The impact on the GDP for deep draft channels exceeded $900 million annually. Recent trends (2001-2005) in Port of Houston activities have shown a sharp rise in container volumes. The volume of containers processed by Texas deep-water port terminals could change substantially by 2020 if new terminals are opened at other Texas locations.

What This Means

This study illuminates the value to the nation of keeping the Gulf Intracoastal Waterway open and fully dredged, in addition to the jobs, investments, and taxes also generated by the waterway activities. The cost of operating a vessel is broadly fixed, so moving less cargo increases the average cost for moving each ton of cargo. This raises the cost of serving the port. Industries could shift cargo to other ports, or shippers might use different vessels, or even modes.

It appears that general equilibrium modeling offers relevant complementary data to traditional I/O approaches, as well as insight on the national impacts of engineering, policy, and programming changes impacting U.S. ports. USAGE-ITC holds promise in producing improved estimates of the impacts of large single projects or U.S. trade policy changes. Finally, USAGE-ITC is also suited to evaluating non-maritime transportation policy problems and can be applied to other modes, including truck, rail, air, and pipeline transportation.

The research study findings suggest that a general equilibrium model can be used to evaluate the national impacts of maritime investments. The study outlines the process and provides results computed from a study of selected Texas shallow draft waterways and deep draft waterways. These results reveal positive, measurable economic impacts within an unusually robust framework and suggest that this method can provide effective analyses of many policy issues relating to U.S. waterways. The results strongly suggest that general equilibrium models in general, and the USAGE-ITC in particular, can be effectively applied to marine transportation policy questions. Moreover, the results developed with this approach can complement the substantial body of knowledge derived from the input-output methods now typically used to measure port impacts in the United States.

For More Information:
Research Engineer - Duncan Stewart, TxDOT, 512-465-7403
Project Director - Raul Cantu, TxDOT, 512-416-2344
Research Supervisor - Rob Harrison, CTR, 512-232-3113

Technical reports when published are available at:
http://library.ctr.utexas.edu/index.html

www.txdot.gov
keyword: research

Texas Department of Transportation
Research and Technology Implementation Office
P.O. Box 5080
Austin, Texas 78763-5080
512-465-7403