Economic Impact of the Texas Forest Sector, 2009

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Sustainable Forestry Department

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TEXAS FOREST SERVICE
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HIGHLIGHTS 2009

- The Texas forest sector directly contributed $16.4 billion of industry output to the Texas economy, employing over 63,000 people with a payroll of $3.5 billion.
- Including direct, indirect, and induced effects, the Texas forest sector had a total economic impact of $23.7 billion in industry output, supporting more than 117,000 jobs with $5.9 billion in labor income.
- On average, every dollar generated in the Texas forest sector contributed an additional 44 cents to the rest of the Texas economy.
- Every job created in the forest sector resulted in another 0.85 jobs in the state.
- Texas forest landowners received an estimated stumpage revenue of $214.9 million.
- Secondary forest products manufacturing industries contributed two-thirds of the Texas forest sector's direct industry output and employed 75 percent of the forest sector workforce.
- The forest sector in East Texas directly produced $5.7 billion worth of goods and services, supporting more than 22,000 jobs with $1.2 billion in labor income.
- Eighty-two percent of the industry output from forestry, logging and the primary solid wood products industries was from East Texas.
- Nine of the top 10 counties in Texas whose local economy relies heavily on the forest sector are in East Texas.
- Texas forest products firms exported $1.4 billion worth of forest products to foreign countries in 2009.
- The recent recession had a profound adverse impacts on the Texas forest sector. Compared to 2007, the 2009 Texas forest sector direct industry output and employment decreased 17 percent and 19 percent, respectively.

INTRODUCTION

Texas has more than 63.3 million acres of forestland — 12.1 million acres in East Texas and 51.2 million acres across the rest of the state (USDA Forest Service, 2011). Of the 63.3 million acres, timberland accounts for 22.8 percent, or about 14.5 million acres, and the majority of it — around 83 percent — is located in East Texas. Figure 1 shows the forest coverage ratio across the state.

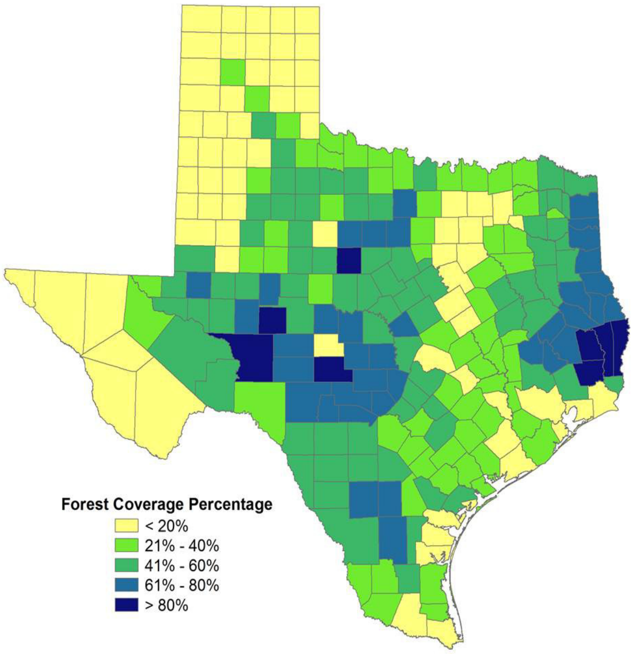


Figure 1. Forest coverage percentage in Texas

Individuals and family forest owners control the largest share — 7.9 million acres, or 66 percent — of timberland in East Texas. Corporate landowners and investors (Timberland Investment Management Organizations and Real Estate Investment Trusts) own 3.0 million acres, or 25 percent of timberland in East Texas. The remaining 8 percent is owned by federal, state or local governments.

Timberland in East Texas is dominated by two forest type groups: mixed hardwoods (43%) and yellow pine (44%). East Texas has an estimated 15.9 billion cubic feet of timber growing stock in 2009, 60 percent in softwoods and 40 percent in hardwoods.

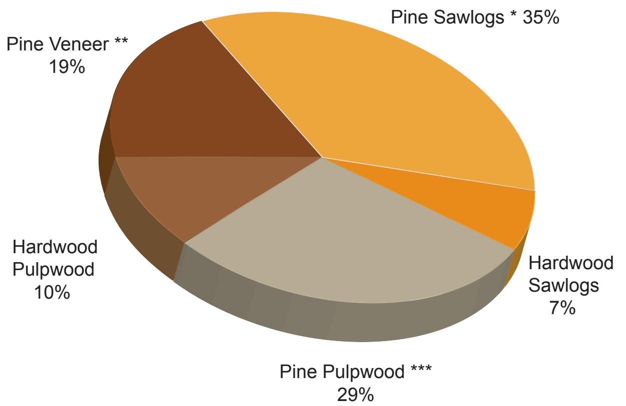
Outside of East Texas mesquite is predominant (44%) on forestland. However, oak forest types are the predominant group (58%) on timberland. Timber growing stock outside of East Texas is estimated to be 1.2 billion cubic feet in 2009, predominantly in hardwoods which make up 87 percent of the total. Only 13 percent is from softwoods.

Texas timber harvest declined for the fourth consecutive year in 2009, with a total harvest of 479.8 million cubic feet, an 11 percent decrease from 2008 (Li, Carraway, and VanderSchaaf, 2010). This was the smallest Texas timber harvest since 1975. The harvest level dropped 221.6 million cubic feet, or 32 percent from the recent high of 701.4 million cubic feet in 2005. Affected by drops in timber harvest and product prices, the stumpage values received by Texas forest landowners shrank 33 percent to $214.9 million in 2009 from $324.7 million in 2008. After adjusting for inflation, this was the lowest stumpage value since Texas Forest Service started to track the value of annual timber harvest in 1988.

Forty-two percent of the harvest was sawlogs for lumber production. Roundwood harvest for veneer/panel accounted for 19 percent. Roundwood harvest for posts, poles, pilings and paper products accounted for 39 percent (Figure 2).

In 2009, Texas mills produced 1.4 billion board feet of lumber, 2.0 million tons of paperboard, 2.0 billion square feet (3/8-inch basis) of structural panels and treated 46.2 million cubic feet of wood products. Primary mills generated 5.6 million tons (green) of mill residue, including chips, sawdust, shavings and bark while logging operations generated 2.6 million

2009 Industrial roundwood harvest
(479.8 million cubic feet)



* includes chip-n-saw
** includes panel roundwood
*** includes posts, poles and pilings

Figure 2. Industrial roundwood harvest by product, 2009

tons (green) of residue.

The forest sector makes considerable contributions to local and regional economies. In 2009, the wood-based industry continued to be one of the top 10 manufacturing sectors in the state. In 25 of the 43 East Texas counties, wood-based industries were one of the top two largest manufacturing employers. Texas was the second largest of the thirteen southern states in terms of direct employment in the forest sector and the third largest in industry output from the forest sector in 2001 (Tilley and Munn, 2007). Nationally, Texas ranked fifth in terms of total output impacts (including direct, indirect and induced impacts) from the forest sector in 2001 (Hodges et al., 2005).

This study evaluates the Texas forest sector's economic impacts on local economies in 2009, foreign exports, and the impacts of the recent recession on the sector. The impacts are further divided to capture variations across industries and regions. The multipliers published in this study can be used to assess the economic impact individual projects may have in the forest sector on the local economy.

DATA AND METHODS

The IMPLAN system, a computerized input-output modeling system, and associated 2009 databases from the Minnesota IMPLAN Group (MIG), were used in this study to estimate direct and total economic impacts of the Texas forest sector in 2009. The multipliers used in this study are Type SAM (Social Accounting Matrix) multipliers, which capture the total economic impact of economic sectors including direct, indirect and induced effects. The databases used by the IMPLAN system were compiled by MIG based on data from various U.S. federal agencies such as Bureau of Economic Analysis, Bureau of Labor Statistics, Census Bureau, Department of Agriculture, and Geological Survey (MIG, Inc. 2000). All values estimated here unless stated otherwise are in 2009 constant dollars.

The Texas forest sector is divided into six industries: forestry, logging, primary solid wood products, secondary solid wood products, primary paper and paperboard products, and secondary paper and paperboard products. Each industry includes several IMPLAN sectors as defined by MIG (see Appendix). Consistent with previous studies, IMPLAN sector 101 "Manufactured home (mobile home)" is excluded from the secondary solid wood products.

RESULTS

STATEWIDE IMPACTS

Due to the depressed housing market and recession, the direct industry output of the Texas forest sector decreased to $16.4 billion in 2009 (Table 1). Value-added accounted for 35 percent, or $5.8 billion, of the industry output. Note that value-added is the contribution of industries to the state's output, also known as Gross State Product (GSP). It equals industrial output minus intermediate inputs.

Employment of the Texas forest sector decreased to 63,411 workers with $3.5 billion of wages, salaries, and benefits in 2009. The sector's average labor income (including wages, benefits, taxes paid to the governments on behalf of employees, and proprietor income) was $55,626 in 2009, 8 percent higher than the state average across all sectors.

The impacts of the forest sector are transferred to other sectors of the economy through purchasing inputs from other sectors in the state as well as household spending with subsequent rounds of additional spending. Including direct, indirect and induced effects, the Texas forest sector contributed $23.7 billion in industry output to the state economy in 2009. Value-added was $10.0 billion, or 42 percent of the total industry output. The Texas forest sector generated 117,165 jobs and created $5.9 billion in labor income. These impacts were estimated based on Type SAM multipliers for output, value-added, employment and labor income in Table 1.

On average, every dollar generated in the Texas forest sector contributed an additional 44 cents to the rest of the Texas economy. Every job created in the Texas forest sector resulted in another 0.85 jobs in the state economy.

IMPACTS BY INDUSTRY

Economic contribution varied across industries in the Texas forest sector. The secondary solid wood products and secondary paper and paperboard were the

Table 1. Direct and total economic impacts of the Texas forest sector, 2009

Sub-industry	Industry Output (million $)	Value-Added (million $)	Employment (jobs)	Labor Income (million $)
Direct Impact				
Forestry	594.48	312.68	1,987	113.94
Logging	471.46	183.54	3,609	164.94
Primary Solid Wood Products	1,668.39	644.01	7,041	379.33
Secondary Solid Wood Products	4,995.28	1,985.13	33,139	1,395.59
Primary Paper & Paperboard Products	2,515.25	806.91	2,990	375.75
Secondary Paper & Paperboard Products	6,136.73	1,821.04	14,645	1,097.83
Total	**16,381.61**	**5,753.31**	**63,411**	**3,527.38**
Total Impact				
Forestry	750.35	412.86	3,886	178.31
Logging	710.46	311.47	5,525	238.21
Primary Solid Wood Products	2,472.24	1,051.32	13,157	626.79
Secondary Solid Wood Products	7,819.17	3,681.28	53,238	2,299.58
Primary Paper & Paperboard Products	3,458.51	1,317.69	9,795	667.54
Secondary Paper & Paperboard Products	8,457.51	3,182.43	31,564	1,872.66
Total	**23,668.24**	**9,957.05**	**117,165**	**5,883.08**
SAM Multiplier				
Forestry	1.26	1.32	1.96	1.56
Logging	1.51	1.70	1.53	1.44
Primary Solid Wood Products	1.48	1.63	1.87	1.65
Secondary Solid Wood Products	1.57	1.85	1.61	1.65
Primary Paper & Paperboard Products	1.38	1.63	3.28	1.78
Secondary Paper & Paperboard Products	1.38	1.75	2.16	1.71
Total	**1.44**	**1.73**	**1.85**	**1.67**

largest two industries in the Texas forest sector (Table 1). The secondary paper and paperboard industry produced the largest industry output while the secondary solid wood products produced the largest value-added, employed the most labor force, and generated the highest labor income in the forest sector. The majority (52%) of the forest sector workforce — 33,139 workers — was employed in the secondary solid wood products industry. The secondary paper and paperboard industry employed 14,645 workers, accounting for 23 percent of the total direct employment of the forest sector.

Primary wood products industries (solid wood products and paper and paperboard) fell in the second tier. The forestry and logging industries each accounted for about 5 percent of the total industry output. Figure 3 shows the direct economic impacts of the forest sector by industry. The size of the bubbles represents the magnitude of industry output.

Overall, the secondary solid wood products has the highest SAM multipliers in industry output and value-added while the primary paper and paperboard has the highest SAM multiplier in employment, indicating local economies benefited slightly more from these industries than other industries in the forest sector. Every dollar generated in the secondary solid wood products industry created an additional 57 cents to other sectors

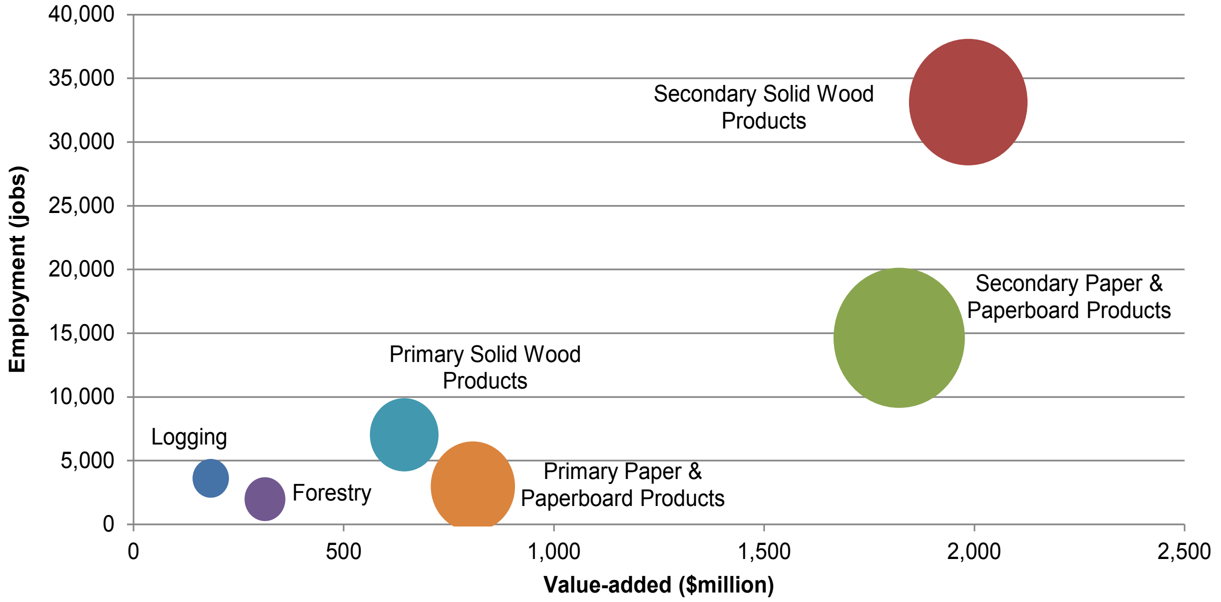


Figure 3. Direct economic impacts of the Texas forest sector by industry, 2009

in Texas. Every job in the primary paper and paperboard industry created an additional 2.3 jobs in Texas.

IMPACTS BY REGION

The economic impacts of the forest sector varied substantially across the state's seven regions: Northeast, Southeast, North Central, Northwest, South, West and West Central (Figure 4).

Table 2 shows the direct economic impacts of the Texas forest sector by region. The impacts also are presented by industry for Northeast and Southeast Texas due to the fact that local economies rely heavily on forest industries in this area.

In absolute terms, North Central Texas had the greatest direct economic impact in 2009. The forest sector in North Central Texas contributed 43 percent — $7.0 billion — of the industry output and employed 40 percent of total workers — 25,434 people — in the Texas forest sector. This is mainly due to the concentration of secondary forest products and primary paperboard firms in this region. Including direct, indirect and induced impacts, the forest sector in this region had a total effect of approximately $10.1 billion in industry output, $4.3 billion in value-added and employed 47,522 people.

East Texas had about 35 percent of direct in-

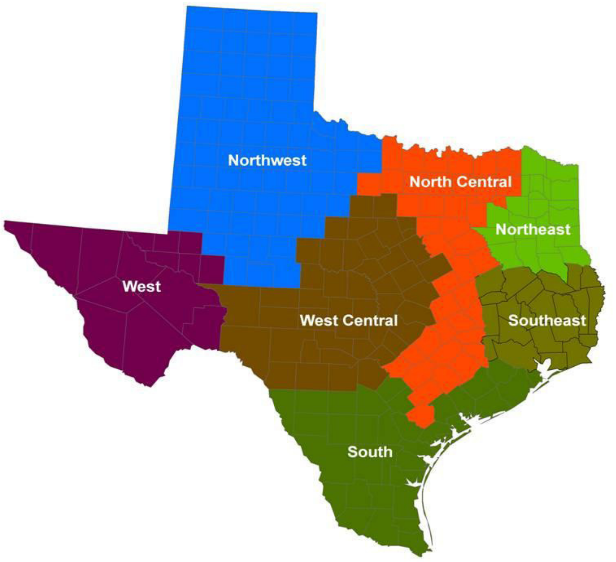


Figure 4. Regions in Texas

dustrial output ($5.7 billion) and employed 35 percent (22,061) of total workers in the sector, mainly from the solid wood products and logging industries in the region. Nearly three-quarters of all forestry and logging industries and the great majority of the primary forest products industries in Texas reside in East Texas. The output from the primary solid wood products in East Texas accounted for 89 percent of all primary solid wood products manufacturing in Texas. The forest sector in East Texas had a total economic impact

Table 2. Direct impact of the Texas forest sector by region, 2009

Sub-industry	Industry Output (million $)	Value-Added (million $)	Employment (jobs)	Labor Income (million $)
East Texas	5,666.52	2,055.54	22,061	1,245.39
Northeast	1,771.88	577.06	7,950	361.15
Forestry	85.84	45.07	457	13.89
Logging	195.77	79.02	1,442	70.93
Primary Solid Wood Products	381.27	124.36	1,797	64.07
Secondary Solid Wood Products	403.10	160.63	2,934	118.04
Primary Paper & Paperboard Products	490.13	119.57	667	57.03
Secondary Paper & Paperboard Products	215.77	48.42	652	37.20
Southeast	3,894.64	1,478.48	14,111	884.24
Forestry	225.38	117.70	721	37.52
Logging	259.42	97.21	2,062	87.46
Primary Solid Wood Products	1,098.81	436.73	4,448	273.16
Secondary Solid Wood Products	670.95	299.10	4,261	192.73
Primary Paper & Paperboard Products	1,159.43	374.02	1,362	175.02
Secondary Paper & Paperboard Products	480.64	153.71	1,256	118.35
North Central	7,026.74	2,485.57	25,434	1,513.31
North West	554.61	217.95	1,873	103.02
South	614.01	187.36	2,989	134.42
West	360.06	91.27	1,499	68.72
West Central	2,159.66	715.62	9,556	462.52
Total	**16,381.61**	**5,753.31**	**63,411**	**3,527.38**

of $8.2 billion in total industry output, $3.4 billion in value-added, and 40,990 jobs to the state economy.

West Central Texas produced $2.2 billion worth of goods and services from the forest sector in 2009. The region's share of the total Texas forest sector's industry output, employment, value-added and labor income was around 13 percent. Most of the outputs in this region were from the secondary forest products industries. The remaining three regions (Northwest, South and West) played minor roles in the Texas forest sector.

Nine of the top 10 counties with local economies relying heavily on forest sector were from the East Texas area. Cass, Sabine, Jasper, Polk, and Newton were among the top counties whose local economy relies heavily on the forest sector. In 2009, 42 percent of Cass county's direct industry output and 22 percent of

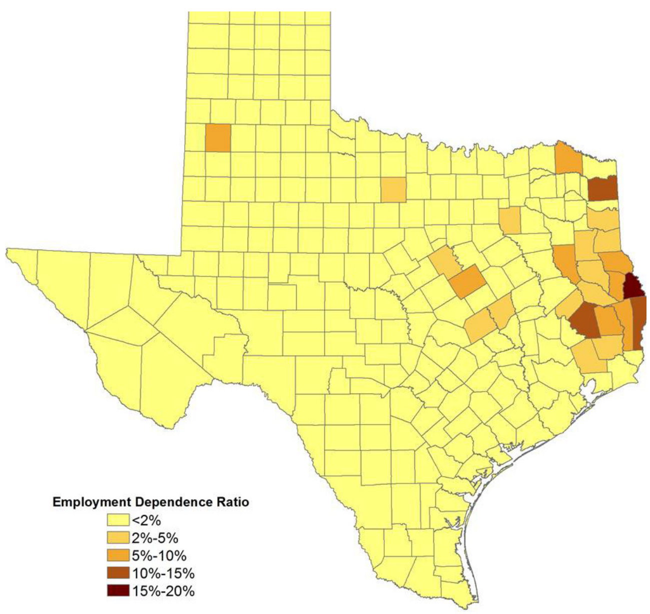


Figure 5. Forest sector employment as a percentage of total employment by county in Texas, 2009

labor income were from the forest sector with 12 percent of the workforce employed in the sector. Lamar county (North Central) was the only county outside of East Texas on the top 10 list. Figure 5 shows the extent of local economy's dependence on the forest sector by looking at the percentage of employment in the forest sector to total employment by county in Texas.

FOREIGN EXPORTS OF THE TEXAS FOREST SECTOR

Texas forest products firms exported $1.4 billion worth of forest products to foreign countries in 2009, about 9 percent of the forest sector's total value of industry output. Primary paper and paperboard was the largest forest products export industry, shipping $458.9 million worth of products to foreign countries (Figure 6). The value of foreign exports by the secondary solid wood products industry in Texas totaled $391.4 million in 2009. The secondary paper and paperboard and the primary solid wood products exported $361.6 million and $150.9 million, respectively.

East Texas was the largest contributor to exports, accounting for 43 percent of the total value of Texas forest products foreign exports in 2009 (Figure 7). North Central Texas was the second largest, exporting $552.24 million worth of forest products internationally. These top two regions accounted for 81 percent of the total forest products exports of the state in 2009. West Central Texas was a distant third, accounting for 12 percent.

The remaining three regions together contributed 6 percent of the total forest products exports, or $91.2 million.

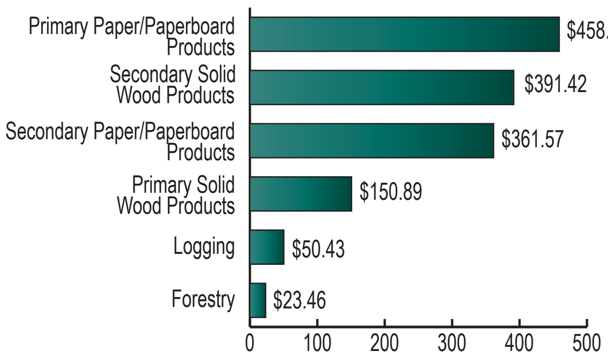


Figure 6. Value of Texas forest products foreign exports by industry, 2009 (in millions)

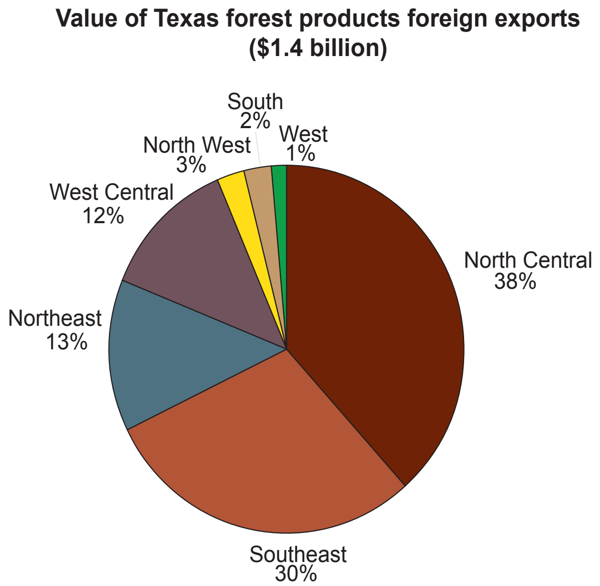


Figure 7. Value of Texas forest products foreign exports by region, 2009

IMPACTS OF THE RECENT ECONOMIC DOWNTURN TO THE TEXAS FOREST SECTOR

Forest products industries were among the hardest hit by the recent housing market slump and recession. Home construction, especially single-family house construction, is the largest market for solid wood products, followed by residential repair and remodeling. More than 40 percent of the lumber and structural panel products is consumed in housing construction each year.

From a peak of 2.1 million units of housing starts in 2005, U.S. new home construction dropped 13 percent in 2006, then accelerated, falling 25 percent in 2007, 33 percent in 2008, and 39 percent in 2009, to 554 thousand units, the lowest level since 1945. Housing starts rebounded slightly (6%) to 587 thousand units in 2010.

The decrease in housing starts significantly reduced demand for lumber and structural panels and thus timber products. U.S. lumber production plummeted 45% from 40 bbf in 2005 to 23 bbf in 2009. Although Texas fared better than the rest of the U.S., its lumber production decreased 29% during the period. Texas structural panel production followed pace with the rest of the nation and decreased 40% from 2005 to 2009.

Meanwhile, the economic downturn shrank the demand for other major forest products such as wood furniture and packaging products (boxboard and containerboard). Although the paperboard market fared better than the lumber and structural panel market, Texas paperboard production in 2009 still decreased by 21% compared to 2005.

According to the National Bureau of Economic Research, the recent U.S. recession started at the end of 2007 and ended in mid-2009. This provides an opportunity to assess the economic impacts of the recent recession to the Texas forest sector by comparing these two years.

From 2007 to 2009, the Texas forest sector saw a decrease in direct employment from 78,358 to 63,411 (-19%). During the same period, the direct industry output of the Texas forest sector dropped 17 percent from \$19.4 billion to \$16.2 billion (2007 constant dollars). Value-added decreased 11 percent from \$6.4 billion to \$5.7 billion. Labor income decreased 20 percent from \$4.4 billion to \$3.5 billion. The average labor compensation per worker remained roughly the same, around \$55,410 per year.

Including direct, indirect, and induced effects, total impact of the Texas forest sector decreased 30 percent in industry output, 29 percent in value added, and 32 percent in labor income. Total employment contributed by the sector dropped 29 percent to 117,165 in 2009 from 166,071 in 2007. This not only reflected the impacts of the recession on the forest sector, but also the impacts on other sectors in the economy.

The impacts of the recession varied across industries in the Texas forest sector. Overall, logging and solid wood products were more adversely affected by the recession than other industries. Compared to 2007, the Texas logging industry experienced a 52 percent decrease in direct industry output and a 20 percent decrease in employment in 2009. The 2009 Texas solid wood products manufacturing industries had a direct industry output 22 percent lower than its pre-recession level and its employment shrank 17 percent.

Consistent with the national trend, paper and paperboard in Texas fared better than other forest industries during the recession. They started to rebound in the third quarter of 2009 after a big drop in 2008 and the first half of 2009, and accelerated due to strong demand overseas. Compared to 2007, direct industry output and employment of the Texas paper and paperboard decreased around 10 percent in 2009. Interestingly, paper and paperboard had the largest drop (around 20%) in average annual labor income among all forest industries during the recession.

Logging and solid wood products industries account for a large proportion of the sector in East Texas, especially in Southeast Texas. Therefore, it was hit the hardest by the recession among all the regions in Texas. From 2007 to 2009, the direct industry output of the East Texas forest sector dropped 23 percent on average. The workforce shrank 17 percent. North Central Texas saw an 11 percent decrease in its direct industry output and a 20 percent decrease in direct employment of the forest sector.

Note that some of the decreases could be the result of recent trends and structural changes in the Texas forest sector. According to Li and Carraway (2009), the Texas primary paper and paperboard industries experienced a continuous trend of decrease in industry output and employment during the decade before the recession.

Although the recent recession had a profound adverse impact on the Texas forest sector, Texas still fared better than most of other states in the U.S. According to Smith and others (2011), the decrease (20%) in employment of the Texas forest sector from 2005 to 2009 was lower than the U.S. South and the national average (both around 26%).

CONCLUSIONS

The Texas forest sector plays an important role in the state economy. During the past decade, the wood-based industry has remained one of the top 10 manufacturing sectors in the state. In 25 of the 43 East Texas counties, the forest sector served as one of the top two largest manufacturing employers. In 2009, the Texas forest sector (forestry, logging, primary and secondary solid wood products manufacturing, and primary and secondary paper and paperboard manufacturing) directly contributed \$16.4 billion in industry output and \$5.8 billion in value-added to the state economy and supported more than 63,000 jobs with a payroll of \$3.5 billion.

Impacts of the forest sector are transferred to other sectors of the economy through input purchases and spending. Including direct, indirect, and induced effects, the total economic impacts of the Texas forest sector in 2009 were $23.7 billion in industry output, $10.0 billion in value-added, $5.9 billion in labor income and more than 117,000 jobs. On average, every dollar generated in the Texas forest sector contributed an additional 0.44 cents in other sectors of the state. Every job in the Texas forest sector created another 0.85 jobs in the state economy.

The largest industry outputs were from secondary forest products (wood windows/doors and mill work, wood container, wood buildings, other wood products, furniture, paperboard container, coated and treated paper and packaging materials, etc.). Over two-thirds of the forestry and logging industries and the great majority of the primary forest products manufacturing industries are in East Texas. Most of the secondary forest products manufacturing facilities in Texas are located outside of East Texas, mostly in North Central Texas.

The forest sector in East Texas directly produced $5.7 billion worth of goods and services in 2009. It generated $2.1 billion in value-added, more than 22,000 jobs, and $1.2 billion in labor income.

Texas forest products firms exported 9 percent of their total industry output, or $1.4 billion worth of forest products to foreign countries in 2009. Primary paper and paperboard was the largest forest products export industry. East Texas was the largest contributor among all regions to the forest products foreign exports in 2009.

The recent U.S. recession had a profound adverse impact on the Texas forest sector. Compared to 2007, the 2009 Texas forest sector direct industry output, value-added, employment, and labor income decreased 17 percent, 11 percent, 19 percent and 20 percent, respectively. Overall, logging and solid wood products were more adversely affected by the recession than other industries. East Texas was hit the hardest by the recession. From 2007 to 2009, the direct industry output of the East Texas forest sector dropped 23 percent on average. Despite the profound adverse impacts of the recent recession on the Texas forest sector, Texas still fared better than most of other states in the U.S.

Note that the scope of this study is focused on the economic impacts of the forest sector. The environmental benefits of forests were not included. There are some emerging, non-traditional markets for forestry and forest products such as electricity or biofuel production using woody biomass, carbon credits, and other ecosystem benefits trading from sustainable forest management. These markets may provide opportunities for the Texas forest sector in the future.

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GLOSSARY

Industry output is the total value of production or service by industry for a given time period.

Value-added is the difference between an industry's total output and the cost of its intermediate inputs. It consists of four components: employee compensation, proprietor income, other property income, and indirect business tax.

Employment includes full-time and part-time employees, and self-employed.

Labor income includes wages, salary and benefits of employees, taxes paid to the government on behalf of employees, and income for self-employed individuals.

Direct effects refer to the sector's own production, value-added, employment and labor income.

Indirect effects refer to the economic activities in other sectors impacted by the forest sector's purchase of goods and services.

Induced effects are economic activities from consumption of goods and services using income generated from the direct and indirect effects.

SAM is the acronym for Social Accounting Matrices, a macro accounting system widely used by many countries for analyzing relationships of economic activities such as production, consumption and trade between various economic entities.

Direct economic impact of a sector includes only direct effects.

Total economic impact of a sector includes all three effects generated by the sector.

APPENDIX

Industry/IMPLAN Sector	IMPLAN Sector ID	1997 BEA Commodity	NAICS 2007
Forestry			
Forestry- forest products- and timber tracts	15	113A00	1131-2
Hunting and trapping on forestlands	18 (partial)	114200 (partial)	1142 (partial)
Forestry support activities	19 (partial)	115000 (partial)	115 (partial)
Logging			
Commercial logging	16	113300	1133
Primary Solid Wood Products			
Sawmills and wood preservation	95	321113-4	321113-4
Reconstituted wood product manufacturing	98	321219	321219
Veneer and plywood manufacturing	96	32121A	321211-2
Secondary Solid Wood Products			
Engineered wood member and truss manufacturing	97	32121B	321213-4
Wood windows and doors and millwork	99	321911	32191
Wood container and pallet manufacturing	100	321920	32192
Prefabricated wood building manufacturing	102	321992	321992
Miscellaneous wood product manufacturing	103	321999	321999
Wood kitchen cabinet and countertop manufacturing	295	337110	33711
Upholstered household furniture manufacturing	296	337121	337121
Nonupholstered wood household furniture	297	337122	337122
Wood television/radio/sewing machine cabinet	300	337129	337129
Institutional furniture manufacturing	299	337124-5,7,9	337127
Office furniture and custom architectural woodwork	301	337211-2	337211-2, 337214
Showcases, partitions, shelving, and lockers	302	337215	337215
Primary Paper and Paperboard Products			
Pulp mills	104	322110	32211
Paper mills	105	3221A0	32212
Paperboard mills	106	3221A0	32213
Secondary Paper and Paperboard Products			
Paperboard container manufacturing	107	322210	32221
Coated and laminated paper and packaging materials	108	32222A	322221-2
All other paper bag and coated and treated paper	109	32222B	322223-6
Stationery product manufacturing	110	322232-3	32223
Sanitary paper product manufacturing	111	322291	322291
All other converted paper product manufacturing	112	322299	322299

Source: Minnesota IMPLAN Group, 2010.