# Evaluating Changes in Tax Contributions of the Forest Products Industry in the US South

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## Abstract

The forest products industry is a major contributor to the US South's economy. With the global recession of 2007 to 2009 and associated downturn of the US housing market and other construction activities, the forest products industry's production and associated contribution to federal, state, and local taxes have been severely affected. The changes in tax contributions of these events for the products industry (i.e., lumber and wood products, paper and allied products, and wood furniture) were assessed using Impact Analysis for Planning software and 2009 data. Thirteen states in the US South were selected for this study. The results of tax contributions in 2009 were then compared with those made in 2001. Among the forest products industry sectors, tax contributions increased only for the paper and allied products sector from 2001 to 2009. Thus, this study documents the tax contributions of the forest products industry and how they can change over time in response to changes in the sector's economic activity. This study can help policymakers predict fluctuations in tax contributions and plan accordingly to stabilize and/or improve tax revenues.

Forestlands provide the forest products industry with the raw materials (e.g., roundwood and wood chips) needed to manufacture products. In 2012, the forestland in the United States amounted to 766 million acres covering 33 percent of the US land area and 8 percent of world forest cover (Oswalt and Smith 2014). The US forest products industry employed 1.8 million people in 2001 (Tilley and Munn 2007a). In 2006, the industry contributed US$108 billion (gross value added) to the national economy (Food and Agriculture Organization of the United Nations 2011). In 2001, the US South's forest products industry generated $115.30 billion of total industry output and $39.663 billion of value added (Tilley and Munn 2007b) and contributed $21.32 billion in taxes (Tilley 2006). The South supplies 60 percent of the nation's timber demand and is the leading producer of timber in the world (Prestemon and Abt 2002). The forest products industry's direct jobs increased from 623,363 in 1992 (Aruna et al. 1997) to 712,142 in 2001 (Tilley and Munn 2007a). These findings suggest that the industry has grown substantially in the South. Along with this, its importance to the regional economy has also increased. Hence, a number of studies have attempted to quantify the economic contribution of the forest products industry (e.g., Teeter et al. 1989; Aruna et al. 1997; Abt et al. 2002; Tilley and Munn 2007a, 2007b; Hodges et al. 2011; Brandeis et al. 2012; Dahal et al. 2013, 2015).

The 2007 to 2009 global economic recession resulted in a sharp decline in US housing starts and other construction activities. As the result, the industry has been negatively impacted, also affecting the associated tax benefits. The decline in housing starts and loss of demand for southern pine lumber resulted in a decrease in the forest products industry's overall production (Woodall et al. 2011). According to the US Census Bureau, the total number of newly privately owned housing started in the United States was 1.6 million in 2001 and decreased to 554,000 in 2009. In the South alone, there were 1,022 mill closures from 1999 to 2009 (Brandeis et al. 2012), and the industry lost more than 240,000 direct jobs between 2001 and 2009 (Dahal et al. 2015). Clearly, the tax contributions generated by the forest products industry would be less as a result of reduced production and lower employment brought on by the recession. However, to our knowledge, no previous study

has examined the forest products industry's tax contribution over time. This study estimates how the tax contributions generated by the industry (i.e., lumber and wood products manufacturing, paper and allied products manufacturing, and wood furniture manufacturing) and the economic activity it generates were impacted by events associated with the global recession and decline in US housing and other construction activities.

Understanding how the forest products industry's tax contributions change over time, across states, and by the three primary sectors of the forest products industry can prove useful to policymakers at both the federal and the state/local levels. The tax system may protect and promote local industries by, for example, imposing higher taxes on foreign goods. Thus, taxes can be an important tool in developing local economies and promoting domestic economic security. Also, investments made at the state/local level that are supportive of the forest products industry can be justified by examining the tax contributions. As the size of the forest products industry and its subsectors change over time, the tax contributions of each will also change. Understanding changes in tax contributions over time can provide guidance to policymakers. Thus, a tax contribution analysis of the forest products industry will provide insight into key factors useful for policymakers addressing critical economic issues and working to strengthen the economic health of these sectors.

Results from this study will provide a detailed picture of how recent economic changes have impacted tax contributions of the South's forest products industry. Consequences of the housing collapse and recession of 2007 to 2009 on tax contributions of the forest products industry are calculated for federal government nondefense taxes and state/local government noneducation taxes, which are further categorized into corporate profit taxes, indirect business taxes, personal taxes, and social insurance taxes.

Corporate profit tax is the levy placed on profit earned by a business firm, whereas indirect business taxes are the taxes indirectly paid by households; employers act as the collecting agency. Thus, taxes are indirectly paid by household sectors, and business sectors pay these taxes to the government sector. Indirect business taxes are collected in the form of sales taxes, property taxes, motor vehicle license taxes, severance taxes, other taxes (consisting of business licenses and documentary and stamp taxes), nontax revenues (royalties, special assessment, fines, settlements, and donations), excise taxes, and custom duties. Personal taxes and social insurance taxes are levied on individual wages and salaries after adjustment for allowable deductions. Personal taxes are collected in the form of income taxes, nontax revenues (fines and donations), motor vehicle fee payments, property taxes, and other taxes (hunting, fishing, and other personal licenses). Social insurance taxes are collected from employee contributions (retirement plans, temporary disability insurance, Social Security, survivors insurance, veterans life insurance, supplement medical insurance, and unemployment insurance), employer contributions (workers' compensation and temporary disability insurance), and self-employed individuals.

## Methodology

An input–output model, originally developed by Nobel laureate Wassily Leontief in the late 1930s (Miller and Blair 2009), was used to estimate tax contributions of the forest products industry for 13 southern states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. The input–output model is based on an interindustry transactions table (Miller and Blair 2009) where the inputs for one sector are the output of other sectors of the economy. The model tracks the flow of money from producers to various intermediate sectors and finally to final consumers and measures contributions throughout the economy resulting from a change in final demand.

Impact Analysis for Planning (IMPLAN), a widely accepted input–output model, was used to estimate the tax contributions of the forest products industry. IMPLAN was originally developed by the US Department of Agriculture in cooperation with the Federal Emergency Management Agency and the US Department of the Interior Bureau of Land Management and is currently supported by IMPLAN Group LLC. The 2009 IMPLAN model consists of 440 industrial sectors representing all sectors of the economy corresponding to the North American Industrial Classification System (NAICS). IMPLAN version 3 software can be used to produce an input–output model for a defined economy (e.g., county, state, or multistate), offering a quantitative approach to assessing economic contributions (Murthy and Cubbage 2004) and indicating estimates for direct, indirect, and induced effects of a change in final demands for any particular industry and/or group of industries. Direct effects are the initial effects of the industry on the economy, whereas indirect effects result from interindustry spending within the economy. Thus, a financial shock in one sector affects all related sectors within the regional economy (Cline and Seidl 2010). Induced effects refer to household spending resulting from direct and indirect effects (Shields et al. 1996). Multipliers are thus designed to capture direct, indirect, and induced effects of the economic activity (Shields et al. 1996). Social accounting matrix (SAM) multipliers are calculated by summing direct, indirect, and induced effects and then dividing by the direct effects. Here, induced effects are based on the information obtained from the SAM (Lindall and Olson 1996). Since SAM multipliers account for Social Security and income tax leakages, institutional saving, and commuting (Lindall and Olson 1996), it is the preferred multiplier.

This study used 2009 IMPLAN data to analyze tax contributions[1] of the forest products industry at the end of the 2007 to 2009 recession. For reporting purposes, the forest products industry sectors were aggregated into three broad sectors: lumber and wood products, wood furniture, and paper and allied products (Table 1). Tax contributions of these sectors were estimated using IMPLAN version 3.0 software. The sources of tax contributions derived from the IMPLAN database are from the National Income and Product Accounts (NIPA) table, the Consumer Expenditure Survey (CSE), the Annual Survey of State and Local Finances (SLGF), and Regional Economic Accounts (REA) (Olson 1999).

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[1] Federal government defense and state/local government education were not selected institutions in SAM multiplier specification for input–output model construction. As only the default SAM institutions were selected, this study reports only federal government nondefense taxes and state/local noneducation taxes.

*Table 1.—Impact Analysis for Planning (IMPLAN) sectors included in the aggregated forest products sectors.*

| Aggregated forest products sectors | IMPLAN sectors (NAICS code[a]) contained in the aggregated sector |
|---|---|
| Lumber and wood products | Logging (1133); sawmills and wood preservation (3211); veneer and plywood manufacturing (321211, 321212); engineered wood members and truss manufacturing (321213, 321214); reconstituted wood products manufacturing (321219); wood container and pallet manufacturing (32192); prefabricated wood building manufacturing (321992); all other miscellaneous wood product manufacturing (321999) |
| Paper and allied products | Pulp mills (32211); paper mills (32212); paperboard mills (32213); paperboard container manufacturing (32221); coated and laminated paper, packaging paper manufacturing (322222, 322221); all other paper bag and coated and treated paper manufacturing (322223, 322226, 322224, 322225); stationary product manufacturing (32223); sanitary paper product manufacturing (322291); all other converted paper product manufacturing (322299) |
| Wood furniture | Wood windows and door and millwork manufacturing (32191); wood kitchen cabinet and counter top manufacturing (33711); upholstered household furniture manufacturing (337121); nonupholstered wood household furniture manufacturing (337122); institutional furniture manufacturing (337127); wood TV, radio, and sewing machine housing (337129); wood office furniture manufacturing (337211); custom architectural woodwork and millwork (337212, 337214); showcase, partitions, shelving, and lockers (337215) |

[a] Numbers in the parentheses are North American Industrial Classification System (NAICS) codes.

IMPLAN models were constructed for 13 southern states, and contribution analyses were conducted for each forest products industry sector. Total industry output obtained from the IMPLAN database for each sector was used to estimate the tax impacts for 2009. If the current level of output is used as the direct contribution (initial condition) to shock the model, the input–output model will overestimate the total contribution because of the multiplier effect. Therefore, initial conditions (total industry output) for each forest products industry sector were adjusted so that the final value of the sector output equals the current production of that industry. The 2009 tax contributions of the forest products industry were then compared with 2001 tax contributions (Tilley 2006) in nominal as well as real dollars. To account for inflation, 2009 dollar values were deflated to 2001 values using IMPLAN deflators in the 2009 database. The 2001 IMPLAN model consisted of 509 industrial sectors, which was reduced to 440 sectors in the 2009 IMPLAN model. The bridge table between 509 and 440 sectors provided by IMPLAN Group LLC (www.implan.com) was used to relate new and condensed 440 sectors to the previous 509 sectors. In this study, tax contributions are the total contributions of the industry (i.e., the sum of direct, indirect, and induced tax contributions).

## Results

### 2009 tax contributions of the forest products industry

At the regional level, the forest products industry in the South generated $19.7 billion in taxes (Table 2). Of this total, the paper and allied products sector generated $11.1 billion (56%), the lumber and wood products sector generated $4.33 billion (22%), and the wood furniture sector generated $4.28 billion (22%).

At the state level, the forest products industry in Texas generated the most tax contributions ($2.7 billion). North Carolina and Georgia also generated over $2 billion in tax contributions. Only four states in the region generated less than $1 billion in tax contributions. These were Kentucky, Louisiana, Mississippi, and Oklahoma.

The paper and allied products sector generated more taxes than either the lumber and wood products sector or the wood furniture sector in all states in the region except Mississippi. In Texas, North Carolina, Alabama, and Georgia, the paper and allied products sector alone produced over $1 billion in combined tax contributions.

The tax contributions of the lumber and wood products sector were substantially smaller than the paper and allied products sector, with only two states, Georgia ($534 million) and Texas ($573 million), generating more than $500 million in combined taxes. At the other extreme, only Oklahoma and Kentucky generated less than $200 million.

The tax contributions of the wood furniture sector ranged from $868 million (North Carolina) to $38 million (Louisiana). In addition to North Carolina, only Texas ($809 million) generated tax contributions exceeding $800 million. Virginia was a distant third at $381 million.

### Federal versus state and local taxes

Federal government nondefense tax contributions generated by the forest products industry in the South totaled $11.7 billion and represented 59 percent of taxes generated by the industry (Table 3). State and local noneducational taxes accounted for the remaining $8.0 billion (41%). This ratio varied among sectors of the forest products industry. For the wood furniture industry, federal taxes represented 64 percent of the total tax contribution, 60 percent for lumber and wood products, and 57 percent for paper and allied products. The percentage of the total tax contribution composed by federal taxes also varied from state to state, ranging from 66 percent in Virginia to 42 percent in Arkansas. The range is even greater across states and sectors, ranging from 70 percent for the wood furniture sector in Virginia to 41 percent for the paper and allied products sector in Arkansas.

### Federal nondefense taxes

Of federal taxes, social insurance taxes accounted for $6.45 billion, 55 percent of the total $11.7 billion generated by the forest products industry in the South (Table 4). Personal taxes totaled $2.8 billion (24%), corporate profit taxes accounted for $1.3 billion (11%), and indirect business taxes accounted for the remaining $1.1 billion (9%). These percentages varied only slightly among sectors. For the paper and allied products sector, social insurance taxes accounted for 54 percent, personal taxes 23 percent, corporate profits taxes 13 percent, and indirect business taxes 11 percent. For the remaining two sectors, lumber and wood products and wood furniture, the percentages were

*Table 2.—Combined federal government nondefense taxes ($, millions) and state/local government noneducation taxes ($, millions) generated by the forest products industry (FPI) in the South.*[a]

| State | FPI | Combined total federal and state/local taxes | | | % change since 2001 | |
| | | 2001[b] | 2009 | | | |
| | | | Total contribution | In 2001 dollars | Nominal 2009 dollars | Real 2001 dollars |
|---|---|---|---|---|---|---|
| AL | L&WP | 621.80 | 395.34 | 356.24 | −36.42 | −42.71 |
| | WF | 309.68 | 273.02 | 235.87 | −11.84 | −23.83 |
| | P&AP | 849.86 | 1,205.96 | 952.88 | 41.90 | 12.12 |
| | Total | 1,781.34 | 1,874.32 | 1,545.00 | 5.22 | −13.27 |
| AK | L&WP | 442.86 | 380.52 | 348.53 | −14.08 | −21.30 |
| | WF | 202.20 | 200.99 | 172.25 | −0.60 | −14.81 |
| | P&AP | 519.62 | 791.03 | 646.44 | 52.23 | 24.41 |
| | Total | 1,164.69 | 1,372.54 | 1,167.22 | 17.85 | 0.22 |
| FL | L&WP | 492.98 | 330.30 | 295.43 | −33.00 | −40.07 |
| | WF | 509.58 | 378.24 | 326.51 | −25.77 | −35.93 |
| | P&AP | 588.81 | 811.49 | 660.60 | 37.82 | 12.19 |
| | Total | 1,591.37 | 1,520.03 | 1,282.54 | −4.48 | −19.41 |
| GA | L&WP | 770.68 | 534.34 | 482.12 | −30.67 | −37.44 |
| | WF | 436.54 | 355.38 | 307.05 | −18.59 | −29.66 |
| | P&AP | 1,436.29 | 1,613.21 | 1,294.29 | 12.32 | −9.89 |
| | Total | 2,643.51 | 2,502.93 | 2,083.47 | −5.32 | −21.19 |
| KY | L&WP | 314.37 | 181.36 | 164.43 | −42.31 | −47.70 |
| | WF | 180.38 | 183.09 | 160.16 | 1.50 | −11.21 |
| | P&AP | 381.00 | 478.25 | 390.42 | 25.52 | 2.47 |
| | Total | 875.74 | 842.69 | 715.01 | −3.77 | −18.35 |
| LA | L&WP | 311.25 | 272.76 | 242.53 | −12.37 | −22.08 |
| | WF | 29.50 | 37.63 | 32.69 | 27.56 | 10.83 |
| | P&AP | 457.00 | 549.25 | 435.90 | 20.19 | −4.62 |
| | Total | 797.75 | 859.65 | 711.12 | 7.76 | −10.86 |
| MS | L&WP | 466.47 | 322.12 | 288.44 | −30.95 | −38.17 |
| | WF | 523.76 | 338.39 | 287.27 | −35.39 | −45.15 |
| | P&AP | 311.48 | 273.58 | 219.53 | −12.17 | −29.52 |
| | Total | 1,301.71 | 934.09 | 795.24 | −28.24 | −38.91 |
| NC | L&WP | 768.02 | 441.38 | 394.67 | −42.53 | −48.61 |
| | WF | 1,736.51 | 868.79 | 741.82 | −49.97 | −57.28 |
| | P&AP | 942.67 | 1,013.90 | 806.53 | 7.56 | −14.44 |
| | Total | 3,447.20 | 2,324.07 | 1,943.01 | −32.58 | −43.64 |
| OK | L&WP | 103.59 | 58.97 | 53.86 | −43.07 | −48.01 |
| | WF | 79.21 | 41.53 | 35.96 | −47.57 | −54.60 |
| | P&AP | 117.51 | 189.73 | 152.14 | 61.46 | 29.47 |
| | Total | 300.30 | 290.22 | 241.97 | −3.36 | −19.42 |
| SC | L&WP | 304.98 | 283.61 | 251.73 | −7.01 | −17.46 |
| | WF | 128.55 | 92.14 | 80.16 | −28.32 | −37.64 |
| | P&AP | 604.92 | 931.75 | 759.61 | 54.03 | 25.57 |
| | Total | 1,038.44 | 1,307.50 | 1,091.50 | 25.91 | 5.11 |
| TN | L&WP | 389.43 | 244.66 | 2,18.39 | −37.17 | −43.92 |
| | WF | 572.26 | 319.39 | 274.81 | −44.19 | −51.98 |
| | P&AP | 927.90 | 1,189.21 | 953.69 | 28.16 | 2.78 |
| | Total | 1,889.59 | 1,753.26 | 1,446.89 | −7.21 | −23.43 |
| TX | L&WP | 745.45 | 573.26 | 509.47 | −23.10 | −31.66 |
| | WF | 782.69 | 808.69 | 693.40 | 3.32 | −11.41 |
| | P&AP | 1,132.62 | 1,356.49 | 1,098.98 | 19.77 | −2.97 |
| | Total | 2,660.76 | 2,738.44 | 2,301.85 | 2.92 | −13.49 |
| VA | L&WP | 539.09 | 306.51 | 276.47 | −43.14 | −48.72 |
| | WF | 639.83 | 381.41 | 330.11 | −40.39 | −48.41 |
| | P&AP | 644.13 | 689.88 | 546.95 | 7.10 | −15.09 |
| | Total | 1,823.05 | 1,377.80 | 1,153.54 | −24.42 | −36.72 |
| South | L&WP | 6,270.96 | 4,325.12 | 3,882.29 | −31.03 | −38.09 |
| | WF | 6,130.69 | 4,278.68 | 3,678.08 | −30.21 | −40.01 |
| | P&AP | 8,913.81 | 11,093.72 | 8,917.96 | 24.46 | 0.05 |
| | Total | 21,315.47 | 19,697.53 | 1,6478.34 | −7.59 | −22.69 |

[a] L&WP = lumber and wood products; WF = wood furniture; P&AP = paper and allied products.
[b] From Tilley (2006).

Table 3.—Federal government nondefense taxes ($, millions) and state/local government noneducation taxes generated by the forest products industry (FPI) in the South.[a]

| State | FPI | Total federal nondefense taxes | | | | | | Total state/local noneducational taxes | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2009 | | | % change since 2001 | | | 2009 | | | % change since 2001 | |
| | | 2001[b] | Total contribution | In 2001 dollars | % of total | Nominal 2009 dollars | Real 2001 dollars | 2001[b] | Total contribution | In 2001 dollars | % of total | Nominal 2009 dollars | Real 2001 dollars |
| AL | L&WP | 395.27 | 228.25 | 205.68 | 57.74 | −42.25 | −47.97 | 226.53 | 167.09 | 150.56 | 42.26 | −26.24 | −33.53 |
| | WF | 208.25 | 163.83 | 141.54 | 60.01 | −21.33 | −32.03 | 101.43 | 109.19 | 94.33 | 39.99 | 7.65 | −7.00 |
| | P&AP | 565.21 | 621.67 | 491.21 | 51.55 | 9.99 | −13.09 | 284.65 | 584.29 | 461.67 | 48.45 | 105.27 | 62.19 |
| | Total | 1,168.72 | 1,013.75 | 838.42 | 54.09 | −13.26 | −28.26 | 612.62 | 860.57 | 706.57 | 45.91 | 40.47 | 15.34 |
| AK | L&WP | 277.11 | 164.48 | 150.65 | 43.23 | −40.64 | −45.64 | 165.76 | 216.04 | 197.88 | 56.77 | 30.33 | 19.37 |
| | WF | 135.08 | 91.30 | 78.25 | 45.43 | −32.41 | −42.07 | 67.12 | 109.69 | 94.01 | 54.57 | 63.42 | 40.06 |
| | P&AP | 340.62 | 327.46 | 267.60 | 41.40 | −3.86 | −21.44 | 179.01 | 463.57 | 378.84 | 58.60 | 158.96 | 111.63 |
| | Total | 752.80 | 583.24 | 496.50 | 42.49 | −22.52 | −34.05 | 411.89 | 789.30 | 670.72 | 57.51 | 91.63 | 62.84 |
| FL | L&WP | 333.40 | 213.15 | 190.65 | 64.53 | −36.07 | −42.82 | 159.59 | 117.15 | 104.78 | 35.47 | −26.59 | −34.34 |
| | WF | 356.76 | 250.44 | 216.19 | 66.21 | −29.80 | −39.40 | 152.82 | 127.80 | 110.32 | 33.79 | −16.37 | −27.81 |
| | P&AP | 402.23 | 496.74 | 404.38 | 61.21 | 23.50 | 0.53 | 186.58 | 314.75 | 256.23 | 38.79 | 68.69 | 37.33 |
| | Total | 1,092.38 | 960.32 | 811.21 | 63.18 | −12.09 | −25.74 | 498.99 | 559.71 | 471.33 | 36.82 | 12.17 | −5.54 |
| GA | L&WP | 488.84 | 336.30 | 303.43 | 62.94 | −31.20 | −37.93 | 281.84 | 198.04 | 178.69 | 37.06 | −29.73 | −36.60 |
| | WF | 285.97 | 231.04 | 199.62 | 65.01 | −19.21 | −30.20 | 150.57 | 124.34 | 107.43 | 34.99 | −17.42 | −28.65 |
| | P&AP | 933.49 | 956.71 | 767.58 | 59.30 | 2.49 | −17.77 | 502.80 | 656.50 | 526.72 | 40.70 | 30.57 | 4.76 |
| | Total | 1,708.31 | 1,524.05 | 1,270.63 | 60.89 | −10.79 | −25.62 | 935.21 | 978.88 | 812.83 | 39.11 | 4.67 | −13.09 |
| KY | L&WP | 194.94 | 98.37 | 89.19 | 54.24 | −49.54 | −54.25 | 119.43 | 82.99 | 75.24 | 45.76 | −30.51 | −37.00 |
| | WF | 118.79 | 102.38 | 89.56 | 55.92 | −13.81 | −24.61 | 61.58 | 80.71 | 70.60 | 44.08 | 31.07 | 14.65 |
| | P&AP | 245.09 | 245.88 | 200.73 | 51.41 | 0.32 | −18.10 | 135.91 | 232.37 | 189.70 | 48.59 | 70.97 | 39.57 |
| | Total | 558.83 | 446.62 | 379.47 | 53.00 | −20.08 | −32.10 | 316.92 | 396.07 | 335.54 | 47.00 | 24.97 | 5.87 |
| LA | L&WP | 193.09 | 158.93 | 141.31 | 58.27 | −17.69 | −26.81 | 118.16 | 113.83 | 101.21 | 41.73 | −3.66 | −14.34 |
| | WF | 18.87 | 23.03 | 20.01 | 61.20 | 22.05 | 6.04 | 10.64 | 14.60 | 12.69 | 38.80 | 37.22 | 19.22 |
| | P&AP | 294.56 | 291.63 | 231.44 | 53.10 | −0.99 | −21.43 | 162.44 | 257.62 | 204.45 | 46.90 | 58.59 | 25.86 |
| | Total | 506.51 | 473.60 | 392.77 | 55.09 | −6.50 | −22.46 | 291.24 | 386.05 | 318.35 | 44.91 | 32.55 | 9.31 |
| MS | L&WP | 289.17 | 185.56 | 166.16 | 57.61 | −35.83 | −42.54 | 177.30 | 136.56 | 122.28 | 42.39 | −22.98 | −31.03 |
| | WF | 347.98 | 209.18 | 177.58 | 61.82 | −39.89 | −48.97 | 175.79 | 129.21 | 109.69 | 38.18 | −26.50 | −37.60 |
| | P&AP | 201.65 | 144.22 | 115.73 | 52.72 | −28.48 | −42.61 | 109.83 | 129.36 | 103.80 | 47.28 | 17.78 | −5.49 |
| | Total | 838.79 | 538.96 | 459.47 | 57.70 | −35.75 | −45.22 | 462.92 | 395.13 | 335.78 | 42.30 | −14.64 | −27.47 |
| NC | L&WP | 489.53 | 281.10 | 251.35 | 63.69 | −42.58 | −48.65 | 278.49 | 160.28 | 143.32 | 36.31 | −42.45 | −48.54 |
| | WF | 1,153.81 | 573.94 | 490.06 | 66.06 | −50.26 | −57.53 | 582.70 | 294.85 | 251.76 | 33.94 | −49.40 | −56.79 |
| | P&AP | 612.37 | 609.82 | 485.09 | 60.15 | −0.42 | −20.78 | 330.31 | 404.08 | 321.43 | 39.85 | 22.33 | −2.69 |
| | Total | 2,255.70 | 1,464.86 | 1,226.50 | 63.03 | −35.06 | −45.63 | 1,191.50 | 859.21 | 716.51 | 36.97 | −27.89 | −39.86 |
| OK | L&WP | 63.89 | 38.57 | 35.23 | 65.41 | −39.63 | −44.86 | 39.70 | 20.40 | 18.63 | 34.59 | −48.61 | −53.07 |
| | WF | 51.14 | 27.93 | 24.19 | 67.25 | −45.39 | −52.71 | 28.07 | 13.60 | 11.78 | 32.75 | −51.55 | −58.04 |
| | P&AP | 74.18 | 110.30 | 88.45 | 58.14 | 48.69 | 19.24 | 43.33 | 79.43 | 63.70 | 41.86 | 83.31 | 47.00 |
| | Total | 189.21 | 176.79 | 147.87 | 60.92 | −6.56 | −21.85 | 111.09 | 113.43 | 94.11 | 39.08 | 2.11 | −15.29 |
| SC | L&WP | 190.00 | 166.80 | 148.05 | 58.81 | −12.21 | −22.08 | 114.98 | 116.81 | 103.68 | 41.19 | 1.59 | −9.83 |
| | WF | 84.40 | 56.19 | 48.88 | 60.98 | −33.42 | −42.08 | 44.15 | 35.95 | 31.28 | 39.02 | −18.57 | −29.16 |
| | P&AP | 394.84 | 507.24 | 413.53 | 54.44 | 28.47 | 4.73 | 210.08 | 424.51 | 346.08 | 45.56 | 102.07 | 64.74 |
| | Total | 669.24 | 730.23 | 610.46 | 55.85 | 9.11 | −8.78 | 369.21 | 577.27 | 481.04 | 44.15 | 56.35 | 30.29 |
| TN | L&WP | 260.24 | 150.84 | 134.64 | 61.65 | −42.04 | −48.26 | 129.18 | 93.82 | 83.74 | 38.35 | −27.37 | −35.17 |
| | WF | 400.77 | 205.13 | 176.50 | 64.23 | −48.82 | −55.96 | 171.50 | 114.26 | 98.31 | 35.77 | −33.38 | −42.67 |
| | P&AP | 639.04 | 695.49 | 557.75 | 58.48 | 8.83 | −12.72 | 288.86 | 493.72 | 395.94 | 41.52 | 70.92 | 37.07 |
| | Total | 1,300.05 | 1,051.45 | 868.89 | 59.97 | −19.12 | −33.16 | 589.54 | 701.81 | 578.00 | 40.03 | 19.04 | −1.96 |
| TX | L&WP | 503.91 | 379.56 | 337.32 | 66.21 | −24.68 | −33.06 | 241.54 | 193.70 | 172.14 | 33.79 | −19.81 | −28.73 |
| | WF | 549.93 | 551.95 | 473.26 | 68.25 | 0.37 | −13.94 | 232.76 | 256.74 | 220.14 | 31.75 | 10.30 | −5.42 |
| | P&AP | 774.30 | 859.72 | 696.51 | 63.38 | 11.03 | −10.05 | 358.32 | 496.77 | 402.47 | 36.62 | 38.64 | 12.32 |
| | Total | 1,828.14 | 1,791.23 | 1,507.10 | 65.41 | −2.02 | −17.56 | 832.62 | 947.21 | 794.75 | 34.59 | 13.76 | −4.55 |
| VA | L&WP | 350.18 | 208.31 | 187.89 | 67.96 | −40.51 | −46.34 | 188.91 | 98.20 | 88.58 | 32.04 | −48.02 | −53.11 |
| | WF | 433.80 | 267.37 | 231.41 | 70.10 | −38.37 | −46.66 | 206.03 | 114.04 | 98.70 | 29.90 | −44.65 | −52.09 |
| | P&AP | 430.88 | 432.63 | 343.00 | 62.71 | 0.41 | −20.40 | 213.25 | 257.25 | 203.95 | 37.29 | 20.63 | −4.36 |
| | Total | 1,214.86 | 908.31 | 762.30 | 65.92 | −25.23 | −37.25 | 608.18 | 469.49 | 391.23 | 34.08 | −22.80 | −35.67 |
| South | L&WP | 4,029.55 | 2,610.21 | 2,341.55 | 60.35 | −35.22 | −41.89 | 2,241.41 | 1,714.91 | 1,540.74 | 39.65 | −23.49 | −31.26 |
| | WF | 4,145.54 | 2,753.70 | 2,367.05 | 64.36 | −33.57 | −42.90 | 1,985.15 | 1,524.98 | 1,311.04 | 35.64 | −23.18 | −33.96 |
| | P&AP | 5,908.44 | 6,299.49 | 5,062.99 | 56.78 | 6.62 | −14.31 | 3,005.37 | 4,794.23 | 3,854.97 | 43.22 | 59.52 | 28.27 |
| | Total | 14,083.54 | 11,663.40 | 9,771.59 | 59.21 | −17.18 | −30.62 | 7,231.93 | 8,034.13 | 6,706.74 | 40.79 | 11.09 | −7.26 |

[a] L&WP = lumber and wood products; WF = wood furniture; P&AP = paper and allied products.
[b] From Tilley (2006).

*Table 4.—Federal, nondefense taxes ($, millions) generated by the forest products industry (FPI) in the South.[a]*

| State | FPI | Corporate profit tax | | Indirect business taxes | | Personal taxes | | Social insurance taxes | | Total, 2009 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2009 | % of total | 2009 | % of total | 2009 | % of total | 2009 | % of total | |
| AL | L&WP | 20.99 | 9.20 | 14.61 | 6.40 | 49.57 | 21.72 | 143.08 | 62.69 | 228.25 |
| | WF | 14.71 | 8.98 | 9.20 | 5.62 | 34.21 | 20.88 | 105.71 | 64.52 | 163.83 |
| | P&AP | 85.31 | 13.72 | 52.09 | 8.38 | 121.62 | 19.56 | 362.64 | 58.33 | 621.67 |
| | Total | 121.01 | 11.94 | 75.90 | 7.49 | 205.41 | 20.26 | 611.43 | 60.31 | 1,013.75 |
| AR | L&WP | 16.44 | 10.00 | 4.22 | 2.57 | 28.29 | 17.20 | 115.52 | 70.23 | 164.48 |
| | WF | 9.66 | 10.58 | 1.85 | 2.03 | 14.92 | 16.34 | 64.87 | 71.05 | 91.30 |
| | P&AP | 49.33 | 15.06 | 9.91 | 3.03 | 50.27 | 15.35 | 217.96 | 66.56 | 327.46 |
| | Total | 75.43 | 12.93 | 15.98 | 2.74 | 93.49 | 16.03 | 398.35 | 68.30 | 583.24 |
| FL | L&WP | 17.05 | 8.00 | 18.72 | 8.78 | 60.71 | 28.48 | 116.66 | 54.73 | 213.15 |
| | WF | 20.16 | 8.05 | 20.20 | 8.07 | 70.93 | 28.32 | 139.15 | 55.56 | 250.44 |
| | P&AP | 54.99 | 11.07 | 50.05 | 10.08 | 133.87 | 26.95 | 257.83 | 51.90 | 496.74 |
| | Total | 92.19 | 9.60 | 88.97 | 9.26 | 265.51 | 27.65 | 513.65 | 53.49 | 960.32 |
| GA | L&WP | 33.35 | 9.92 | 35.49 | 10.55 | 89.08 | 26.49 | 178.37 | 53.04 | 336.30 |
| | WF | 23.63 | 10.23 | 21.71 | 9.40 | 60.60 | 26.23 | 125.09 | 54.14 | 231.04 |
| | P&AP | 123.72 | 12.93 | 119.57 | 12.50 | 235.00 | 24.56 | 478.43 | 50.01 | 956.71 |
| | Total | 180.71 | 11.86 | 176.77 | 11.60 | 384.68 | 25.24 | 781.89 | 51.30 | 1,524.05 |
| KY | L&WP | 10.64 | 10.82 | 6.81 | 6.92 | 18.47 | 18.78 | 62.44 | 63.47 | 98.37 |
| | WF | 10.17 | 9.93 | 6.48 | 6.33 | 18.99 | 18.55 | 66.73 | 65.18 | 102.38 |
| | P&AP | 31.00 | 12.61 | 20.37 | 8.28 | 42.83 | 17.42 | 151.68 | 61.69 | 245.88 |
| | Total | 51.81 | 11.60 | 33.66 | 7.54 | 80.29 | 17.98 | 280.85 | 62.88 | 446.62 |
| LA | L&WP | 17.06 | 10.73 | 9.08 | 5.71 | 44.54 | 28.02 | 88.25 | 55.53 | 158.93 |
| | WF | 2.19 | 9.51 | 1.14 | 4.95 | 6.45 | 28.01 | 13.25 | 57.53 | 23.03 |
| | P&AP | 40.28 | 13.81 | 20.90 | 7.17 | 75.56 | 25.91 | 154.89 | 53.11 | 291.63 |
| | Total | 59.53 | 12.57 | 31.12 | 6.57 | 126.55 | 26.72 | 256.39 | 54.14 | 473.60 |
| MS | L&WP | 20.48 | 11.04 | 14.37 | 7.74 | 31.04 | 16.73 | 119.67 | 64.49 | 185.56 |
| | WF | 23.19 | 11.09 | 12.29 | 5.88 | 34.05 | 16.28 | 139.66 | 66.77 | 209.18 |
| | P&AP | 20.55 | 14.25 | 13.95 | 9.67 | 22.21 | 15.40 | 87.50 | 60.67 | 144.22 |
| | Total | 64.22 | 11.92 | 40.61 | 7.53 | 87.31 | 16.20 | 346.83 | 64.35 | 538.96 |
| NC | L&WP | 28.65 | 10.19 | 29.14 | 10.37 | 60.00 | 21.34 | 163.31 | 58.10 | 281.10 |
| | WF | 60.57 | 10.55 | 51.34 | 8.95 | 121.06 | 21.09 | 340.97 | 59.41 | 573.94 |
| | P&AP | 65.96 | 10.82 | 76.23 | 12.50 | 123.86 | 20.31 | 343.76 | 56.37 | 609.82 |
| | Total | 155.18 | 10.59 | 156.72 | 10.70 | 304.92 | 20.82 | 848.04 | 57.89 | 1,464.86 |
| OK | L&WP | 3.92 | 10.16 | 3.91 | 10.14 | 7.84 | 20.33 | 22.89 | 59.35 | 38.57 |
| | WF | 2.33 | 8.34 | 2.63 | 9.42 | 5.66 | 20.26 | 17.30 | 61.94 | 27.93 |
| | P&AP | 15.26 | 13.83 | 15.85 | 14.37 | 19.83 | 17.98 | 59.35 | 53.81 | 110.30 |
| | Total | 21.51 | 12.17 | 22.39 | 12.66 | 33.34 | 18.86 | 99.55 | 56.31 | 176.79 |
| SC | L&WP | 18.94 | 11.35 | 13.17 | 7.90 | 32.79 | 19.66 | 101.91 | 61.10 | 166.80 |
| | WF | 4.90 | 8.72 | 4.19 | 7.46 | 11.24 | 20.00 | 35.87 | 63.84 | 56.19 |
| | P&AP | 70.63 | 13.92 | 49.28 | 9.72 | 92.98 | 18.33 | 294.36 | 58.03 | 507.24 |
| | Total | 94.46 | 12.94 | 66.63 | 9.12 | 137.00 | 18.76 | 432.13 | 59.18 | 730.23 |
| TN | L&WP | 15.35 | 10.18 | 11.00 | 7.29 | 35.78 | 23.72 | 88.70 | 58.80 | 150.84 |
| | WF | 20.36 | 9.93 | 13.07 | 6.37 | 45.22 | 22.04 | 126.47 | 61.65 | 205.13 |
| | P&AP | 88.20 | 12.68 | 58.30 | 8.38 | 145.42 | 20.91 | 403.56 | 58.03 | 695.49 |
| | Total | 123.91 | 11.78 | 82.38 | 7.83 | 226.42 | 21.53 | 618.74 | 58.85 | 1,051.45 |
| TX | L&WP | 41.02 | 10.81 | 41.48 | 10.93 | 122.01 | 32.15 | 175.06 | 46.12 | 379.56 |
| | WF | 52.42 | 9.50 | 54.54 | 9.88 | 178.91 | 32.41 | 266.08 | 48.21 | 551.95 |
| | P&AP | 101.88 | 11.85 | 108.04 | 12.57 | 267.12 | 31.07 | 382.68 | 44.51 | 859.72 |
| | Total | 195.31 | 10.90 | 204.06 | 11.39 | 568.04 | 31.71 | 823.82 | 45.99 | 1,791.23 |
| VA | L&WP | 19.53 | 9.38 | 18.28 | 8.78 | 69.33 | 33.28 | 101.17 | 48.57 | 208.31 |
| | WF | 23.75 | 8.88 | 20.99 | 7.85 | 87.77 | 32.83 | 134.85 | 50.44 | 267.37 |
| | P&AP | 48.85 | 11.29 | 48.69 | 11.25 | 133.85 | 30.94 | 201.24 | 46.52 | 432.63 |
| | Total | 92.13 | 10.14 | 87.96 | 9.68 | 290.95 | 32.03 | 437.26 | 48.14 | 908.31 |
| South | L&WP | 263.42 | 10.09 | 220.30 | 8.44 | 649.47 | 24.88 | 1477.02 | 56.59 | 2,610.21 |
| | WF | 268.03 | 9.73 | 219.63 | 7.98 | 690.01 | 25.06 | 1576.03 | 57.23 | 2,753.70 |
| | P&AP | 795.96 | 12.64 | 643.22 | 10.21 | 1,464.43 | 23.25 | 3,395.89 | 53.91 | 6,299.49 |
| | Total | 1,327.40 | 11.38 | 1,083.15 | 9.29 | 2,803.91 | 24.04 | 6,448.95 | 55.29 | 11,663.40 |

[a] L&WP = lumber and wood products; WF = wood furniture; P&AP = paper and allied products.

nearly identical: social insurance taxes 57 percent, personal taxes 25 percent, corporate profits taxes 10 percent, and indirect business taxes 8 percent. The variation was greater among states. In Arkansas, social insurance taxes accounted for 68 percent of federal taxes. Personal taxes accounted for 16 percent, indirect business taxes 3 percent, and corporate profit taxes 13 percent. At the other extreme, social insurance taxes accounted for only 46 percent of the total

DAHAL ET AL.

in Texas, with personal taxes accounting for 32 percent and corporate profit taxes and indirect business taxes accounting for 11 percent each. The range of variation across states and sectors, as would be expected, is greater than among either states or sectors with social insurance taxes ranging from a high of 71 percent for the wood furniture industry in Arkansas to 45 percent for the paper and allied products sector in Texas.

## State and local noneducation taxes

Of the state and local taxes captured in this analysis, indirect business taxes accounted for $5.9 billion (73%) of the $8.0 billion regional total (Table 5). Dividend taxes accounted for $857 million (11%), personal taxes $802 million (10%), social insurance taxes $250 million (3%), and corporate profit taxes $221 million (3%). The paper and allied products sector accounted for $4.8 billion (60%), lumber and wood products $1.7 billion (21%), and wood furniture $1.5 billion (19%). There was very little variation among the three forest products sectors regionwide. For the paper and allied products sector, indirect business taxes accounted for 75 percent of the total. All the other categories of state and local taxes for all sectors were within 1 percent of the regional average. Variations across states were substantially greater. Three states, Arkansas, Texas, and Virginia, did not levy corporate taxes. In Florida, indirect business taxes accounted for 87 percent of the state's $560 million tax contribution, dividend taxes 8 percent, personal taxes 4 percent, and social insurance taxes and corporate profit taxes 1 percent or less. At the other extreme, in Arkansas indirect business taxes accounted for only 46 percent of the $789 million tax contribution, personal taxes 25 percent, social insurance taxes 23 percent, and taxes on dividends 7 percent. Across sectors and states, the variation was substantially greater. Indirect business taxes accounted for a low of 38 percent of the total collected for the wood furniture sector in Arkansas compared with a high of 88 percent for the Texas paper and allied products sector and the Florida lumber and wood products sector.

## Tax multipliers

Economic multipliers represent the change in total impact of an industry in response to an additional dollar of activity in the local economy. For example, the federal government nondefense tax SAM multiplier for the lumber and wood products industry in Mississippi was estimated to be 2.29. This suggests that every dollar in federal taxes generated by the lumber and wood products industry (direct impact) is linked to an additional $1.29 generated by other sectors, and thus the federal government nondefense tax total impact is $2.29.

State and local government noneducation tax SAM multipliers were larger than federal government nondefense tax SAM for all 13 states and for the all forest products industry sectors. Florida had the highest combined tax SAM multipliers for the lumber and wood products sector (4), the wood furniture sector (3.56), and the paper and allied products sector (3.72) among the 13 states (Table 6). Mississippi, in contrast, had the lowest multipliers for the wood furniture sector (2.19) and the paper and allied products sector (2.29). For the lumber and wood products sector, the multipliers (2.52) were lowest in Kentucky.

Florida had the highest state and local government, noneducation tax SAM multipliers for the lumber and wood products sector (7.16) and the wood furniture sector (9.73), whereas Texas had the highest multiplier for the paper and allied products sector (4.96; Table 7). Multipliers for the lumber and wood products sector and the wood furniture sector were lowest in Arkansas (2.94 and 2.64, respectively). For the paper and allied products sector, Mississippi had the lowest multiplier (2.50).

Among the 13 states, Florida also had the highest federal government nondefense tax SAM multipliers for all sectors, the lumber and wood products sector (3.22), the wood furniture sector (2.70), and the paper and allied products sector (3.22; Table 8). Mississippi had the lowest multipliers for the wood furniture sector (1.77) and the paper and allied products sector (2.12), and Kentucky had the lowest multiplier for the lumber and wood product sector (2.13).

## Changes since 2001

Between 2001 and 2009, the forest products industry's tax contributions for the southern region decreased by 7.6 percent in nominal dollars and 22.7 percent in real dollars (Table 2). There were, however, dramatic differences with regard to state and industry sectors.

Tax contributions generated by the forest products industry decreased for all but five states in nominal dollars and two states in real dollars. Losses as a percentage of previous receipts ranged from 43.6 percent for North Carolina to 10.9 percent for Louisiana in real dollars. In nominal dollars, Texas (2.9%), Alabama (5.2%), and Louisiana (7.8%) experienced modest gains, while Arkansas (17.9%) and South Carolina (25.9%) experienced substantial gains. However in real dollars, Texas (−13.5%), Alabama (−13.3%), and Louisiana (−10.9%) experienced losses, while Arkansas (0.2%) and South Carolina (5.1%) experienced modest gains. Tax contributions generated by the paper and allied products sector remained relatively flat (0.05%) across the region. The lumber and wood products sector (−38.1%) and the wood furniture sector (−40%) lost substantial percentage of tax contributions. At the state level, changes in tax contributions by the wood furniture sector (except for Louisiana) and lumber and wood products sector decreased for all states, while there were mixed results for the pulp and paper industry. The tax contributions generated by the paper and allied products sector increased by more than 20 percent in Oklahoma (29.5%), South Carolina (25.6%), and Arkansas (24.4%).

Changes in tax contributions since 2001 were substantially different by category. The industry's federal government nondefense tax contributions decreased by 30.6 percent for the region (Table 3). Federal tax contributions decreased for all sectors: the pulp and allied products sector (−14.31%), the lumber and wood products sector (−41.9%), and the wood furniture sector (−42.1%). State/local government noneducation tax contributions decreased by 7.3 percent for the South but differed substantially by sector. The paper and allied products sector generated an increase of 28.3 percent, while those for wood furniture and lumber and wood products decreased by 34 and 31.3 percent, respectively.

At the state level, FPI sector tax contributions by category roughly mirrored those for the region, with the paper and allied sector showing decreases for federal and increases for state and local tax contributions, and the lumber and wood

Table 5.—State and local government noneducation taxes ($, millions) generated by the forest products industry (FPI) in the South.[a]

| State | FPI | Corporate profit tax | | Dividends | | Indirect business tax | | Personal taxes | | Social insurance taxes | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2009 | % of total | 2009 | % of total | 2009 | % of total | 2009 | % of total | 2009 | % of total | 2009 |
| AL | L&WP | 5.80 | 3.47 | 26.35 | 15.77 | 109.94 | 65.80 | 22.73 | 13.61 | 2.27 | 1.36 | 167.09 |
| | WF | 4.06 | 3.72 | 18.47 | 16.91 | 69.17 | 63.35 | 15.69 | 14.37 | 1.80 | 1.65 | 109.19 |
| | P&AP | 23.57 | 4.03 | 107.11 | 18.33 | 391.87 | 67.07 | 55.77 | 9.55 | 5.96 | 1.02 | 584.29 |
| | Total | 33.42 | 3.88 | 151.93 | 17.65 | 570.98 | 66.35 | 94.19 | 10.95 | 10.04 | 1.17 | 860.57 |
| AR | L&WP | 0.00 | 0.00 | 11.40 | 5.28 | 95.03 | 43.99 | 59.03 | 27.32 | 50.57 | 23.41 | 216.04 |
| | WF | 0.00 | 0.00 | 6.70 | 6.10 | 41.57 | 37.90 | 31.14 | 28.39 | 30.28 | 27.61 | 109.69 |
| | P&AP | 0.00 | 0.00 | 34.21 | 7.38 | 222.99 | 48.10 | 104.89 | 22.63 | 101.48 | 21.89 | 463.57 |
| | Total | 0.00 | 0.00 | 52.31 | 6.63 | 359.59 | 45.56 | 195.06 | 24.71 | 182.34 | 23.10 | 789.30 |
| FL | L&WP | 0.21 | 0.18 | 7.84 | 6.69 | 103.02 | 87.93 | 5.41 | 4.62 | 0.67 | 0.57 | 117.15 |
| | WF | 0.25 | 0.20 | 9.27 | 7.25 | 111.14 | 86.97 | 6.33 | 4.95 | 0.81 | 0.63 | 127.80 |
| | P&AP | 0.68 | 0.22 | 25.29 | 8.03 | 275.37 | 87.49 | 11.94 | 3.79 | 1.48 | 0.47 | 314.75 |
| | Total | 1.14 | 0.20 | 42.40 | 7.58 | 489.53 | 87.46 | 23.68 | 4.23 | 2.96 | 0.53 | 559.71 |
| GA | L&WP | 1.30 | 0.66 | 15.21 | 7.68 | 159.08 | 80.33 | 21.18 | 10.69 | 1.27 | 0.64 | 198.04 |
| | WF | 0.92 | 0.74 | 10.78 | 8.67 | 97.32 | 78.27 | 14.41 | 11.59 | 0.91 | 0.73 | 124.34 |
| | P&AP | 4.82 | 0.73 | 56.43 | 8.60 | 535.94 | 81.64 | 55.86 | 8.51 | 3.45 | 0.52 | 656.50 |
| | Total | 7.03 | 0.72 | 82.43 | 8.42 | 792.35 | 80.94 | 91.45 | 9.34 | 5.62 | 0.57 | 978.88 |
| KY | L&WP | 5.54 | 6.68 | 10.16 | 12.24 | 45.47 | 54.79 | 21.12 | 25.45 | 0.70 | 0.84 | 82.99 |
| | WF | 5.30 | 6.56 | 9.71 | 12.03 | 43.21 | 53.54 | 21.72 | 26.91 | 0.77 | 0.96 | 80.71 |
| | P&AP | 16.14 | 6.95 | 29.59 | 12.73 | 135.90 | 58.48 | 48.97 | 21.07 | 1.77 | 0.76 | 232.37 |
| | Total | 26.98 | 6.81 | 49.46 | 12.49 | 224.58 | 56.70 | 91.81 | 23.18 | 3.25 | 0.82 | 396.07 |
| LA | L&WP | 16.07 | 14.12 | 4.02 | 3.53 | 83.58 | 73.43 | 7.03 | 6.18 | 3.12 | 2.74 | 113.83 |
| | WF | 2.06 | 14.14 | 0.52 | 3.54 | 10.50 | 71.96 | 1.02 | 6.97 | 0.50 | 3.40 | 14.60 |
| | P&AP | 37.94 | 14.73 | 9.49 | 3.68 | 192.50 | 74.72 | 11.93 | 4.63 | 5.77 | 2.24 | 257.62 |
| | Total | 56.08 | 14.53 | 14.03 | 3.63 | 286.58 | 74.23 | 19.97 | 5.17 | 9.39 | 2.43 | 386.05 |
| MS | L&WP | 4.41 | 3.23 | 25.33 | 18.55 | 90.26 | 66.09 | 15.35 | 11.24 | 1.21 | 0.88 | 136.56 |
| | WF | 5.00 | 3.87 | 28.68 | 22.20 | 77.17 | 59.73 | 16.84 | 13.03 | 1.52 | 1.17 | 129.21 |
| | P&AP | 4.43 | 3.42 | 25.42 | 19.65 | 87.63 | 67.74 | 10.99 | 8.49 | 0.91 | 0.70 | 129.36 |
| | Total | 13.84 | 3.50 | 79.42 | 20.10 | 255.06 | 64.55 | 43.18 | 10.93 | 3.63 | 0.92 | 395.13 |
| NC | L&WP | 3.84 | 2.39 | 21.17 | 13.21 | 121.73 | 75.95 | 12.05 | 7.52 | 1.48 | 0.92 | 160.28 |
| | WF | 8.11 | 2.75 | 44.77 | 15.18 | 214.47 | 72.74 | 24.31 | 8.24 | 3.19 | 1.08 | 294.85 |
| | P&AP | 8.83 | 2.19 | 48.75 | 12.06 | 318.45 | 78.81 | 24.87 | 6.15 | 3.17 | 0.79 | 404.08 |
| | Total | 20.78 | 2.42 | 114.70 | 13.35 | 654.66 | 76.19 | 61.23 | 7.13 | 7.84 | 0.91 | 859.21 |
| OK | L&WP | 0.35 | 1.73 | 2.59 | 12.70 | 15.63 | 76.63 | 1.60 | 7.87 | 0.22 | 1.07 | 20.40 |
| | WF | 0.21 | 1.55 | 1.54 | 11.33 | 10.51 | 77.32 | 1.16 | 8.52 | 0.17 | 1.28 | 13.60 |
| | P&AP | 1.38 | 1.73 | 10.09 | 12.71 | 63.32 | 79.71 | 4.06 | 5.11 | 0.58 | 0.73 | 79.43 |
| | Total | 1.94 | 1.71 | 14.23 | 12.54 | 89.47 | 78.87 | 6.82 | 6.02 | 0.97 | 0.86 | 113.43 |
| SC | L&WP | 4.21 | 3.60 | 21.60 | 18.50 | 77.38 | 66.24 | 13.50 | 11.56 | 0.12 | 0.10 | 116.81 |
| | WF | 1.09 | 3.02 | 5.59 | 15.54 | 24.61 | 68.45 | 4.63 | 12.87 | 0.04 | 0.12 | 35.95 |
| | P&AP | 15.69 | 3.70 | 80.58 | 18.98 | 289.59 | 68.22 | 38.29 | 9.02 | 0.36 | 0.08 | 424.51 |
| | Total | 20.98 | 3.63 | 107.77 | 18.67 | 391.58 | 67.83 | 56.41 | 9.77 | 0.52 | 0.09 | 577.27 |
| TN | L&WP | 4.75 | 5.06 | 5.28 | 5.63 | 75.56 | 80.53 | 6.05 | 6.45 | 2.19 | 2.33 | 93.82 |
| | WF | 6.30 | 5.51 | 7.01 | 6.13 | 89.76 | 78.56 | 7.64 | 6.69 | 3.55 | 3.11 | 114.26 |
| | P&AP | 27.28 | 5.53 | 30.36 | 6.15 | 400.25 | 81.07 | 24.58 | 4.98 | 11.26 | 2.28 | 493.72 |
| | Total | 38.32 | 5.46 | 42.64 | 6.08 | 565.57 | 80.59 | 38.27 | 5.45 | 17.00 | 2.42 | 701.81 |
| TX | L&WP | 0.00 | 0.00 | 10.68 | 5.51 | 167.55 | 86.50 | 14.56 | 7.52 | 0.91 | 0.47 | 193.70 |
| | WF | 0.00 | 0.00 | 13.65 | 5.32 | 220.30 | 85.81 | 21.35 | 8.32 | 1.44 | 0.56 | 256.74 |
| | P&AP | 0.00 | 0.00 | 26.53 | 5.34 | 436.37 | 87.84 | 31.88 | 6.42 | 1.99 | 0.40 | 496.77 |
| | Total | 0.00 | 0.00 | 50.86 | 5.37 | 824.22 | 87.02 | 67.80 | 7.16 | 4.34 | 0.46 | 947.21 |
| VA | L&WP | 0.00 | 0.00 | 11.61 | 11.83 | 83.19 | 84.71 | 2.82 | 2.87 | 0.58 | 0.59 | 98.20 |
| | WF | 0.00 | 0.00 | 14.12 | 12.38 | 95.55 | 83.79 | 3.57 | 3.13 | 0.80 | 0.70 | 114.04 |
| | P&AP | 0.00 | 0.00 | 29.04 | 11.29 | 221.59 | 86.14 | 5.44 | 2.11 | 1.18 | 0.46 | 257.25 |
| | Total | 0.00 | 0.00 | 54.78 | 11.67 | 400.33 | 85.27 | 11.83 | 2.52 | 2.56 | 0.55 | 469.49 |
| South | L&WP | 46.48 | 2.71 | 173.26 | 10.10 | 1,227.42 | 71.57 | 202.44 | 11.80 | 65.31 | 3.81 | 1,714.91 |
| | WF | 33.30 | 2.18 | 170.79 | 11.20 | 1,105.31 | 72.48 | 169.79 | 11.13 | 45.79 | 3.00 | 1,524.98 |
| | P&AP | 140.76 | 2.94 | 512.90 | 10.70 | 3,571.75 | 74.50 | 429.46 | 8.96 | 139.36 | 2.91 | 4,794.23 |
| | Total | 220.54 | 2.75 | 856.95 | 10.67 | 5,904.48 | 73.49 | 801.70 | 9.98 | 250.46 | 3.12 | 8,034.13 |

[a] L&WP = lumber and wood products; WF = wood furniture; P&AP = paper and allied products.

products sector and the wood furniture sector showing losses for both categories. Exceptions included increases in paper and allied products federal tax contributions in Florida, Oklahoma, and South Carolina; increases in wood furniture federal tax contributions in Louisiana; decreases in paper and allied products state/local tax contributions in Mississippi, North Carolina, and Virginia; increases in wood furniture state/local tax contributions in Arkansas, Ken-

DAHAL ET AL.

Table 6.—2009 combined (federal, state, and local) tax social accounting matrix multipliers.

| State | Lumber and wood products | Wood furniture | Paper and allied products |
|---|---|---|---|
| Alabama | 2.84 | 2.68 | 2.64 |
| Arkansas | 2.63 | 2.24 | 2.57 |
| Florida | 4.00 | 3.56 | 3.72 |
| Georgia | 3.39 | 3.22 | 3.38 |
| Kentucky | 2.52 | 2.47 | 2.45 |
| Louisiana | 2.70 | 2.79 | 2.61 |
| Mississippi | 2.67 | 2.19 | 2.28 |
| North Carolina | 2.89 | 2.76 | 2.98 |
| Oklahoma | 2.62 | 2.63 | 2.87 |
| South Carolina | 2.70 | 2.88 | 2.65 |
| Tennessee | 3.54 | 2.99 | 2.94 |
| Texas | 3.33 | 3.44 | 3.49 |
| Virginia | 2.80 | 2.69 | 2.97 |

Table 8.—2009 federal government nondefense taxes social accounting matrix multipliers.

| State | Lumber and wood products | Wood furniture | Paper and allied products |
|---|---|---|---|
| Alabama | 2.39 | 2.11 | 2.51 |
| Arkansas | 2.31 | 1.90 | 2.30 |
| Florida | 3.22 | 2.69 | 3.22 |
| Georgia | 2.79 | 2.51 | 2.98 |
| Kentucky | 2.13 | 2.03 | 2.17 |
| Louisiana | 2.29 | 2.15 | 2.41 |
| Mississippi | 2.29 | 1.77 | 2.12 |
| North Carolina | 2.47 | 2.21 | 2.64 |
| Oklahoma | 2.14 | 2.08 | 2.61 |
| South Carolina | 2.31 | 2.22 | 2.37 |
| Tennessee | 2.81 | 2.29 | 2.64 |
| Texas | 2.75 | 2.67 | 2.98 |
| Virginia | 2.37 | 2.15 | 2.68 |

tucky, and Louisiana; and increases in the lumber and wood products sector in Arkansas.

## Discussion and Conclusions

The major objectives of this study were to estimate the 2009 tax contributions of the forest products industry in the South and to identify changes since 2001. This study demonstrates how the fluctuations in economic activities lead to alterations in tax contributions. In total, forest products industry tax contributions (federal, state, and local) during the study period declined for the South as a whole, depicting the negative impact that the economic downturn had on tax receipts for the region. Federal government nondefense taxes decreased substantially; however, state/ local government noneducation taxes had a modest decrease. This implies that the region's federal government nondefense tax revenues were more sensitive to the economic downturn than were state/local government noneducation taxes. The composition of federal government nondefense taxes has changed markedly over the study period. In 2001, social insurance tax accounted for 45.2 percent and personal tax accounted for 36.6 percent of total federal government nondefense taxes (Tilley 2006). In 2009, these two taxes accounted for 55.3 and 24.0 percent, respectively, reflecting the region's trend toward social

Table 7.—2009 state and local government noneducation taxes social accounting matrix multipliers.

| State | Lumber and wood products | Wood furniture | Paper and allied products |
|---|---|---|---|
| Alabama | 3.83 | 4.48 | 2.79 |
| Arkansas | 2.94 | 2.64 | 2.80 |
| Florida | 7.16 | 9.73 | 4.93 |
| Georgia | 5.39 | 6.90 | 4.19 |
| Kentucky | 3.21 | 3.44 | 2.84 |
| Louisiana | 3.62 | 5.28 | 2.88 |
| Mississippi | 3.47 | 3.55 | 2.50 |
| North Carolina | 4.14 | 5.44 | 3.71 |
| Oklahoma | 4.53 | 5.65 | 3.34 |
| South Carolina | 3.58 | 5.36 | 3.07 |
| Tennessee | 6.08 | 6.54 | 3.50 |
| Texas | 5.63 | 9.01 | 4.96 |
| Virginia | 4.59 | 6.46 | 3.62 |

insurance taxation. Declines in federal government nondefense taxes were largely owing to personal taxes being highly sensitive to prevailing economic conditions and tax policies. However, indirect business taxes and social insurance taxes remained relatively flat during the period. The composition of state/local government noneducation taxes continued to grow, except for personal taxes, during the period examined. The approximate 35 percent decline in personal taxes was offset by combined (corporate profit tax, dividends, indirect business tax, and social insurance tax) taxes. These results indicate that personal taxes fell quickly with the recession of 2007 to 2009, causing overall tax revenues to decline by 2009 as compared with 2001.

The paper and allied products industry partially offset the decline in tax revenues from the lumber and wood products and wood furniture sectors. However, the combined negative tax contributions exceeded the increase from the paper and allied products sector, resulting in a net decline in forest products industry tax contributions. This suggests that nondurable consumer goods (paper products) are less sensitive to economic downturn than that of durable goods (lumber and allied products and wood furniture). Thus, the paper and allied products sector produced the greatest share of the forest products industry's tax contribution. Among states, North Carolina's forest products industry, which had the largest tax contribution in 2001, was highly affected by the 2007 to 2009 recession, falling to the third-largest contributor among the 13 states in 2009. This was attributable to the size and decline of the wood furniture sector and its sensitivity to economic downturn. Conversely, South Carolina experienced the greatest gain in tax contribution, reflecting the greater proportion that the pulp and paper sector composes of the overall forest products industry. This pattern among states, with North Carolina and South Carolina representing the extremes, simply reflects the proportional dominance of the pulp and paper sector over the lumber and wood products sector and the wood furniture sector.

The forest products industry remains a major tax contributor in the South; however, industry-related taxes were negatively impacted by the 2007 to 2009 recession and decline in US housing starts. Tax revenues are the result of the tax rate and tax base. The results of this study illustrate which forest products industry sector groups and federal and state/local tax categories are most affected by economic

cycles as demonstrated by comparing 2009 with 2001. This information can be used by policymakers to identify which sectors to favor if regulations or stimuli are being considered to improve or stabilize tax revenues. Likewise, this information helps policymakers at the state, local, or federal level know in advance the tax contributions from expected economic upturns or downturns so that they can plan accordingly. As this study shows, the tax contributions vary considerably across sectors and across the different tax categories.

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