

# **Idaho's Forest Products Business Sector:**

## **Jobs, Wages and Salaries, Direct and Indirect Effects – Linkages, Multipliers, and Economic Base**

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### **2.4. Jobs**

As one would expect from the declining timber harvests and increasing investment in mill technology trends described above, the recent trend in employment has been declining (Figure 2-3, p.15). The number of jobs provided by the forest products business sector varies based on which jobs are included in the estimates. The forest products business sector can include a wide range of workers from foresters and loggers to chief executive officers of large corporations, administrative assistants, and grounds keepers at production facilities. In 2005, the

Table 2-1. Idaho lumber production by geographic area, 1979, 1985, 1990, 1995, and 2001.

County group	1979	1985	1990	1995	2001
	<i>thousand board feet (MBF), lumber tally</i>				
Bonner and Boundary	462,481	358,064	552,426	408,988	661,509
Benewah, Kootenai, and Shoshone	467,965	490,866	629,129	613,014	563,482
Latah, Lewis, and Nez Perce	360,847	198,633	262,148	231,610	274,990
Clearwater and Idaho	248,917	228,792	255,336	209,176	156,298
NORTHERN IDAHO	1,540,210	1,276,355	1,699,039	1,444,788	1,656,279
SOUTHERN IDAHO	391,791	389,020	355,511	228,571	102,471
IDAHO TOTAL	1,932,001	1,665,375	2,054,550	1,673,359	1,758,750

Source: Morgan et al. 2004.

wood and paper products industry in Idaho employed about 15,100 workers, roughly the same as in 2004 (Figure 2-3, p.15; Keegan et al. 2006). Everything else being equal, one forest products industry worker was employed for each 76,800 board feet of timber harvested in Idaho in 2005; i.e., there were 13 workers for each million board feet harvested.

Production occupations (e.g., team assemblers, sawing machine setters, woodworking machine setters) make up about 36% of the jobs in the wood and paper products industries (Idaho DC&L 2005). Transportation occupations (e.g., truck drivers) constitute about 16% of the jobs and woods-worker occupations (e.g., logging equipment operators, fallers) another 14%. Administrative support (7%), maintenance (7%), management (6%), construction (5%), computer (2%), engineering (2%), sales (2%), financial (2%), and other (1%) occupations account for the remaining 34% of jobs in the wood and paper products industries (Idaho DC&L 2005).

The Idaho Department of Commerce and Labor predicts that employment in the wood and paper products industries will grow about 5% during the 2000-2010 period (Idaho DC&L 2005). Construction and computer occupations within the wood and paper products industries are expected to grow the most, both at about 31%. The 5% growth predicted for the wood and paper products industries as a whole is less than the 25% growth expected for all industries in Idaho over the same period (Idaho DC&L 2005).

### 2.5. Wages and Salaries

In 2004, earnings by workers in Idaho's forest products industries totaled \$622 million, with \$422 million of that disbursed as wages and salaries (BEA

2005). The forest products industry is a high-wage sector. In Idaho, average salary per job in the forest products industry was \$32,355 in 2004, substantially higher than the average for all industries in the state of \$22,587 (BEA 2005). Wages are highly variable, however, depending upon occupation within the industry (Idaho DC&L 2005).

Idaho has one of the country's largest forest products industries relative to the state's economy (Morgan et al. 2004). In 2000, 4.6% of total labor income came directly from the primary and secondary wood and paper products industries. By this measure, only two other states, Maine and Oregon, have a higher level of dependence on the industry (Morgan et al. 2004).

### 2.6. Direct and Indirect Effects—Linkages, Multipliers, and Economic Base

A business sector's contribution to the economy can be measured through "direct" or "total" economic measures. Sales, jobs, and payroll are measures of the "size" of a business. However, size measures are only one dimension of a business sector's contribution to an economy. Many business sectors exist to serve other sectors; in effect, these industries are indirectly employed by other industrial sectors. The influence one business sector exerts over other sectors is measured by "linkages" (Peralta 2001). Two types of linkages exist: backward linkages are stimuli of expansion imparted from one business sector to its input-supplier sectors; forward linkages are stimuli of expansion imparted from one business sector to its output-user sectors (Peralta 2001).

"Multipliers" are measures of interdependence of linkages within an economy. Multipliers are estimated from input-output models that are

Table 2-2. Number of active Idaho primary wood products facilities by county, 2001.

County	Sawmills	Veneer/ plywood	Posts, poles, and other roundwood products	House logs	Cedar	Residue- related products <sup>1</sup>	Total
Ada			1	1		1	3
Adams	1					1	2
Bear Lake	1						1
Benewah	4	1	1		4	1	11
Blaine				1			1
Boise			1				1
Bonner	5	1	5	4		3	18
Bonneville			1				1
Boundary	3			2	1		6
Canyon			1			1	2
Clearwater	2			1	2		5
Custer	1			1			2
Fremont	1			1			2
Gem	1	1	1			1	4
Gooding			1	1			2
Idaho	4		2	1			7
Jefferson				1			1
Kootenai	6	1	4	2		2	15
Latah	3				1		4
Lemhi			1	1			2
Lewis	1				2	1	4
Madison						1	1
Nez Perce	1					5	6
Payette				1			1
Shoshone	1						1
Teton			2	2			4
Twin Falls			1				1
Valley							1
<b>TOTAL</b>	<b>35</b>	<b>4</b>	<b>22</b>	<b>21</b>	<b>10</b>	<b>17</b>	<b>109</b>

<sup>1</sup>Residue-related products include a particleboard plant, roundwood/chip conversion facilities, pulp and paper facilities, decorative bark plants, and biomass/energy facilities.

Source: Morgan et al. 2004.

Table 2-3. Number of active Idaho primary wood products facilities in 1979, 1985, 1990, 1995, and 2001.

Year	Sawmills	Veneer/ plywood	Posts, poles, and other roundwood products	House logs	Cedar	Residue- related products <sup>1</sup>	Total
1979	133	8	35	15	44	7	242
1985	90	7	26	20	25	6	174
1990	80	6	27	22	26	11	172
1995	62	6	32	32	15	15	162
2001	35	4	22	21	10	17	109

<sup>1</sup>Residue-related products include a particleboard plant, roundwood/chip conversion facilities, pulp and paper facilities, decorative bark plants, and biomass/energy facilities.

Source: Morgan et al. 2004.

developed by researchers to estimate changes in production attributable to all business sectors of the economy based upon changes in production for a single business sector. Output and employment multipliers measure total output produced and total employment created in the economy associated with production output and associated employment in a given business sector, which are a function of demand for that product from other sectors (Peralta 2001).

The “economic base” concept is derived from input-output models and is consistent with the theoretical framework underlying multipliers and backward linkage. The economic base concept

identifies two types of economic activity: “basic” activities that produce goods and services to be exported from the region being modeled, and “non-basic activities” that produce goods and services to be consumed within the region as well as to support the basic activities. In the economic base concept, exports from the region are the force that drives regional production, and the income generated by basic economic activity (i.e., the “economic base”) is generally viewed as the driver of the local economy (Peralta 2001).

In 2000, Idaho’s wood and paper products industries provided 8% of basic industry employment and 12% of basic industry labor income

Table 2-4. Idaho’s intra-state and inter-state timber flows, 2001.

Percentage of total harvest processed in:	Region of Harvest			IDAHO TOTAL
	Northern Idaho	Southwestern Idaho	Southeastern Idaho	
county of harvest	33%	19%	11%	32%
adjacent county	51%	63%	35%	52%
nonadjacent county	16%	18%	54%	17%
northern Idaho	99%	13%	0%	94%
southwestern Idaho	1%	86%	3%	5%
southeastern Idaho	0%	0%	97%	1%
Idaho	95%	46%	77%	90%
out-of-state	5%	54%	23%	10%

Source: Morgan et al. 2004.

Table 2-5. Destination and percentage of total sales value of Idaho's 2001 primary wood product sales.<sup>1</sup>

Product	Idaho	Rocky Mountain <sup>2</sup>	Far West <sup>3</sup>	North-Central <sup>4</sup>	Northeast <sup>5</sup>	South <sup>6</sup>	Other countries	Unknown
Lumber, timber, other sawn products	15%	25%	25%	19%	10%	6%	0%	0%
Plywood and veneer	2%	7%	16%	32%	20%	13%	11%	0%
Post, poles, rails, and other roundwood products	27%	8%	29%	12%	5%	0%	19%	0%
House logs and log homes	22%	39%	22%	8%	3%	3%	3%	0%
Cedar products	11%	10%	13%	22%	2%	41%	0%	0%
2001 ALL PRODUCTS TOTAL	14%	23%	24%	20%	10%	7%	2%	0%
1995 All Products Total	19%	22%	18%	22%	10%	8%	1%	0%
1990 All Products Total	13%	13%	19%	24%	16%	11%	2%	2%
1985 All Products Total	11%	18%	14%	21%	13%	12%	0%	11%
1979 All Products Total	11%	20%	9%	25%	10%	10%	1%	13%

<sup>1</sup>Does not include mill residue sales or sales by the residue-utilizing sector.

<sup>2</sup>Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico

<sup>3</sup>Washington, Oregon, California, Alaska, Hawaii

<sup>4</sup>North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Michigan, Indiana, Ohio

<sup>5</sup>Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania

<sup>6</sup>Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Tennessee, Kentucky, Alabama, Georgia, Florida, South Carolina, North Carolina, Virginia, West Virginia, Maryland, Delaware, Washington, D.C.

Source: Morgan et al. 2004.

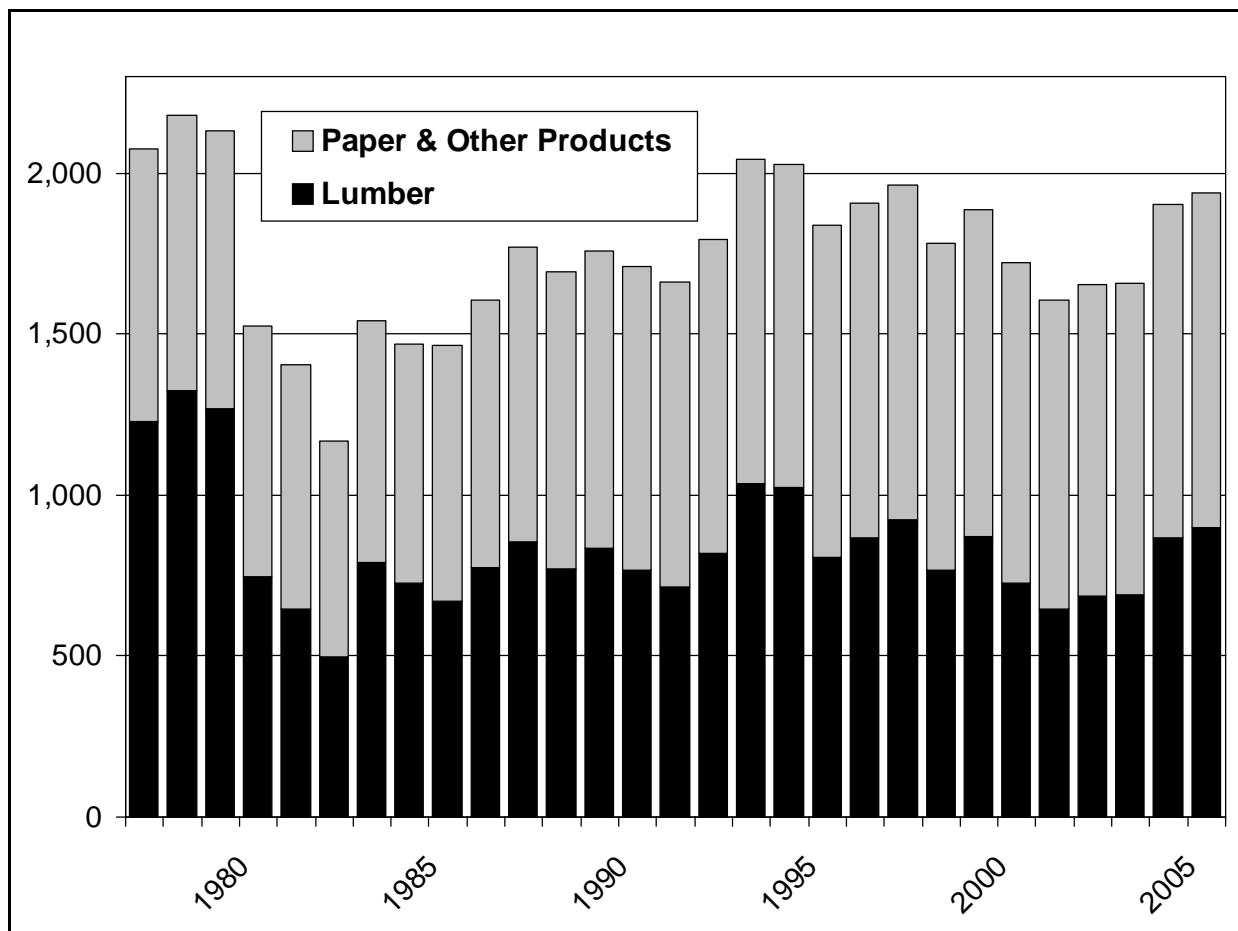


Figure 2-2. Sales value of Idaho's primary wood products, 1977-2005 (in constant 2005 dollars).

Source: Keegan et al. 2006.

Table 2-6. Sales value of Idaho's primary wood products, by product type, 1979, 1985, 1990, 1995, and 2001 (in constant 2001 dollars).

Product	1979	1985	1990	1995	2001
	<i>Million 2001 dollars</i>				
Lumber, timbers, other sawn products	1,153.9	648.1	703.5	800.0	687.6
Plywood and veneer	195.6	122.6	136.2	192.7	69.9
Cedar products	30.0	12.2	18.3	15.7	30.4
House logs and log homes	17.9	5.0	13.2	23.4	25.5
Posts, poles, and other roundwood products	37.8	19.1	34.2	29.3	22.2
Residue-related products <sup>1</sup>	556.6	585.5	722.3	772.1	812.6
<b>ALL PRODUCTS</b>	<b>1,991.7</b>	<b>1,392.6</b>	<b>1,627.8</b>	<b>1,833.1</b>	<b>1,648.1</b>

<sup>1</sup>Residue-related products include particleboard, chips, pulp and paper products, bioenergy products, decorative bark, and mill residues sold within and outside the state.

Source: Morgan et al. 2004.

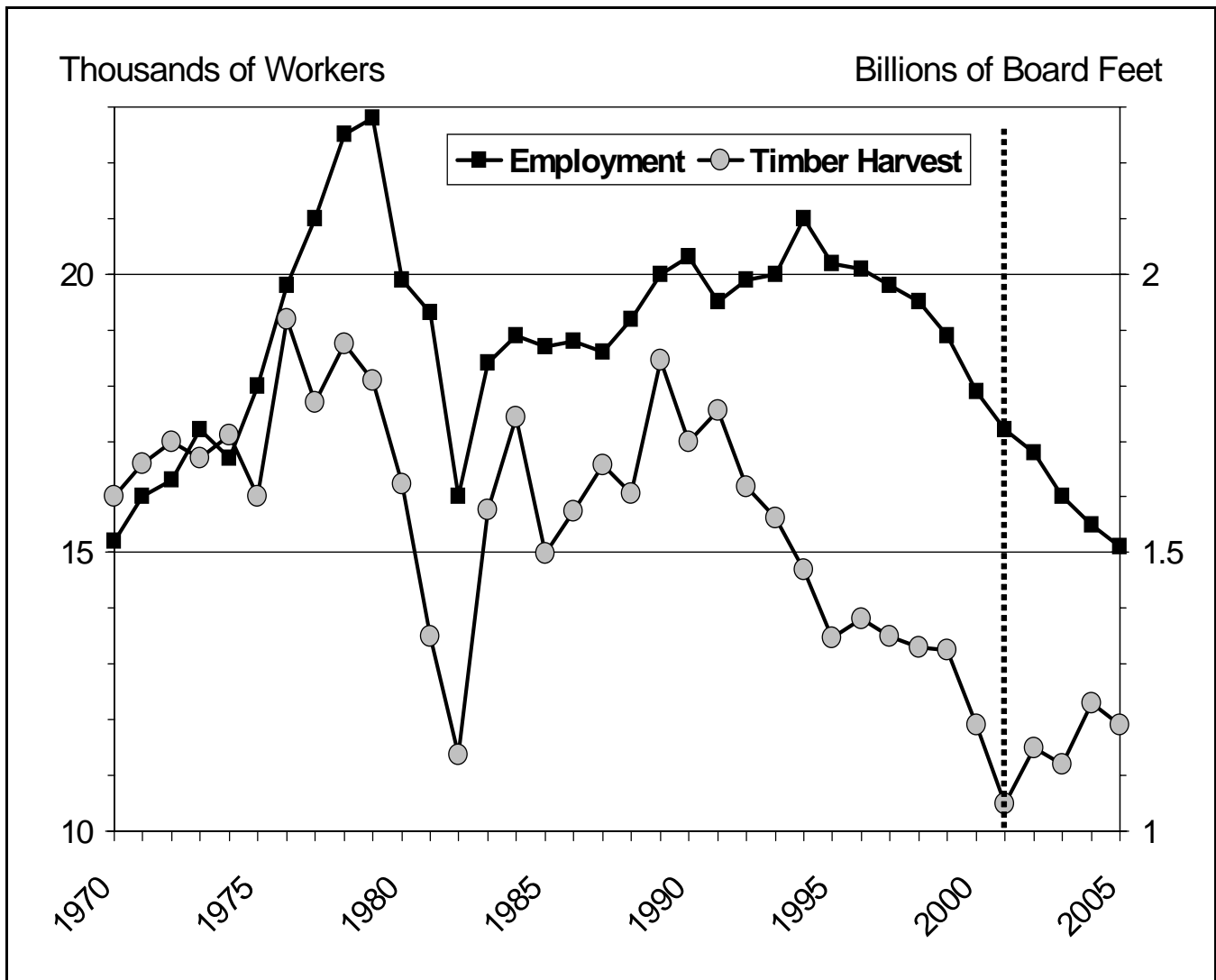


Figure 2-3. Employment in Idaho's forest products industry and Idaho timber harvest level, 1970-2005.

Note: The dotted line at 2001 indicates a change from the Standard Industrial Classification (SIC) system to the North American Industry Classification System (NAICS), which has made it problematic to provide consistent and continuous timber series data for employment. Numbers for years prior to 2001 are based on the old SIC system, while the more recent figures are based on NAICS.

Source: Keegan et al. 2005a.

statewide (Morgan et al. 2004). In northern Idaho, the wood and paper products industries provided 27% of basic industry labor income, the highest percentage of any industry (Morgan et al. 2004).

The economic base concept hypothesizes a relationship between basic and non-basic activity. As a result, changes in basic sector activity can be directly linked to changes in non-basic activity through an impact multiplier. For every single dollar of income earned in the basic sectors, models developed using the economic base concept assume an additional amount of dollars (call it "X") is

earned in the non-basic sectors. The "X" factor is called a "multiplier" and can be used to predict changes in local economic activity based on predicted changes in basic economic activity (Robertson 2003). In an input-output model all business sectors, basic and non-basic, purchase and sell to each other and to the final demand sectors (Peralta 2001).

We used an input-output model called IMPLAN (MIG 2005) to compute multipliers for sales, labor income, and employment generated by Idaho's forest products business sector in 2002. The output

multiplier for Idaho's forest products business sector was 2.01. This means each dollar of sales by the forest products business sector generated another \$1.01 in sales in other sectors of Idaho's economy. The labor income multiplier was 2.44, which means that each dollar of labor income paid to workers in the forest products business sector created \$1.44 of additional income in other sectors of Idaho's economy. The employment multiplier for Idaho's forest products business sector was 3.09. This means that every 100 jobs in the forest products business sector supports an additional 209 jobs in other sectors of Idaho's economy.

Analysis by Peralta (2001) shows that the leading Idaho industries identified with the highest multipliers and backward and forward linkages were not the fastest growing sectors during the 1985-1998 period. In fact the wood products industry contracted during that period. However, the leading industries of the 1980s, including forest products, were in the late 1990s the industries that generated the largest ripple effects on Idaho's economy (Peralta 2001).

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