Indiana's Hardwood Industry: Its Economic Impact




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Indiana's Hardwood Industry:
Its Economic Impact

(Update of report of this name by Robert M. Swain, Blue River Consulting)

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Highlights of Indiana's Forest and Hardwood Industry

- **Total Economic Impact: $16.6 billion**
  - Every board foot of timber processed had $51 of economic impact.[i]
  - 87.7 percent of logs processed in Indiana were harvested in Indiana.[ii]

- **There are 4,713,557 acres of forest land in Indiana;**
  - 84 percent is privately owned[iii]
  - 98 percent is available for timber production[iv]
  - 98 percent is hardwoods[v]
  - Timber value of managed forests is about 34 percent higher than unmanaged forests.[vi]

- **Total Value of Shipments of $8.1 billion was 2.8 percent of Indiana's Gross Domestic Product.**
  - $164 million was paid to landowners for timber.[vii]
  - For every $1 paid to landowners for timber, $48 of value was added in the production of final products.[viii]

- **The hardwood industry employed 35,641 people**
  - An additional 86,139 jobs were generated in economic sectors supporting or supported by the hardwood industry.[ix]

- **Annual wages of $1.2 billion were paid, generating an estimated.**
  - $41 million in state payroll taxes
  - $12 million in local payroll taxes[x]

- **Each acre of forest supports $244 of hardwood wages paid annually.[xi]**

- **Indiana's forest land increased by about 37,125 acres per year from 1998 to 2009.[xii]**

- **Annual growth in volume of sawtimber 133 percent of the volume harvested.[xiii]**

- **Indiana is a leading producer of**
  - Wood office furniture
  - Manufactured homes
  - Wood stock-line kitchen cabinets
  - Wooden caskets and coffins
  - Hardwood plywood-based products

OVERVIEW

This report outlines the economic impact and structure of Indiana's "hardwood industry." It includes three major sectors: timber producers, the primary industry, and secondary industry.

The latter two sectors are components of Indiana's manufacturing industry. Economic data used in the original report was generally as of 2005. The data used in this report is the latest available, generally 2007. Thus, this report does not capture fully the impact of the dramatic downturn starting in 2008. The report will be updated as data becomes available for 2008 and later years.

In most cases, data sources are cited in endnotes. However, for some figures it was necessary to make estimates.

Forest and Forest Owners

Indiana is blessed with approximately 4.7 million acres of productive forest land comprising about 20 percent of the land area of the state.[xiv]

Three percent of the timber stands on this acreage were initiated by artificial regeneration.[xv]

Eighty-six percent of the 4.65 million acres is owned by private citizens or corporations. All but 3.3 percent of the timber is hardwoods.[xvi]

According to the U.S. Forest Service, the rate of overall sawtimber[xvii] growth on forestland is 31 percent greater than the rate of harvest.[xviii]

The growth-to-harvest ratio varies widely among ownership categories and individual species.

Primary Hardwood Industry

The Primary Industry in 2007 was composed of 102 sawmills, 34 hardwood veneer and plywood manufacturers, at least 19 logging companies large enough to be listed in Dunn & Bradstreet, and many more too small to be listed.

There are at least 50 private consulting foresters engaged primarily in assisting landowners with the management of their land and conducting timber sales. The number of employees and their wages is shown below:[xix]

Logging: 77 businesses with 734 employees earning total wages of $21.5 million in 2007.
Sawmills: 102 businesses with 1,854 employees earning total wages of $68 million in 2007.
Wood Preservation: 8 businesses with 348 employees earning $12 million in annual wages.
Hardwood Veneer and Plywood Manufacturing: 34 businesses with 2,630 employees earning $86 million in annual wages.
Wood Container and Pallet Manufacturing: 124 businesses with 2,220 employees earning $58.6 million in annual wages.

Miscellaneous Wood Products Manufacturing: 60 businesses with 871 employees earning $26.5 million in annual wages.
Total: 405 firms with 8,657 employees earning wages of $272.6 million.

Secondary Wood Manufacturing

These businesses dry, plane, cut and assemble wood products into parts or finished products. In 2007, there were 663 such businesses with 29,798 employees who were paid $964.2 million in total wages. This included:[xx]

Wood Kitchen Cabinet and Counter Top Manufacturing: 226 businesses with 7,809 employees earning $256million in annual wages.
Upholstered Household Furniture Manufacturing: 44 businesses with 3,039 employees earning $92.9 million in annual wages.
Non-upholstered Wood Household Furniture Manufacturing: 105 businesses with 2,192 employees earning 64.8 million in annual wages.
Institutional Furniture Manufacturing: 14 businesses with 754 employees earning $30.4 million in annual wages.
Wood Office Furniture Manufacturing: 32 businesses with 3,342 employees earning $117.2 million in annual wages.
Custom Architectural Woodwork and Millwork Manufacturing: 32 businesses with 1,056 employees earning $38.7 million in annual wages.
Showcase, Partition, Shelving and Locker Manufacturing: 35 businesses with 1,934 employees earning $65.9 million in annual wages.
Blind and Shade Manufacturing: 12 businesses with 1,312 employees earning $40.6 million in annual wages.
Truss Manufacturing: 25 businesses with 731 employees earning $22.8 million in annual wages.
Wood Windows and Door Manufacturing: 42 businesses with 2,072 employees earning $59.9 million in annual wages.
Cut Stock, Re-sawing Lumber and Planing: 44 firms with 1,124 employees earning $33.4 million in annual wages.
Other Millwork (including flooring): 56 businesses with 1,439 employees earning $53.3 million in annual wages.
Total: 667 businesses with 26,804 employees earning $875.9 million in annual wages.

Ancillary Industries

These businesses are related to the hardwood industry but not directly a part of the sector, based on North American Industry Classification System (NAICS) codes. The firms are generally located in industry clusters that originally formed based on manufacturers using wood as the primary raw material. They include:

Sawmill and Woodworking Machinery Manufacturing: 12 firms with 533 employees earning $24.4 million in annual wages.
Lumber, Plywood, Millwork, and Wood Panel Merchants Wholesalers: 271 businesses with 3,112 employees paying $129.8 million in annual wages.

Household Furniture (except Wood and Metal) Manufacturing: 13 businesses with 1,502 employees earning $49.6 million in annual wages.
Office Furniture (except wood) Manufacturing: 11 businesses with 1,592 employees earning $59.9 million in annual wages.
Total: 307 businesses with 6,739 employees earning $263.7 million in annual wages.

Combined Industry

Combining all three sectors, the Indiana hardwood industry in 2007 consisted of 1,379 firms with 42,200 employees earning $1.4 billion in annual wages.

Hardwood Industry Exports

The U. S. Census Bureau reported that Indiana had $253 million in wood product exports in 2006, a 21 percent increase over 2005 exports of $208 million. The Indiana Economic Development Corporation reported wood product exports of $204 million in 2008 and $234 in 2009. Since 2001, exports of wood products originating from Indiana have grown by 42 percent.

Economic Impact

The Bureau of Economic Analysis reported the Indiana Hardwood Industry in 2007 had a total value of shipments of $8.1 billion and employed 35,461 Hoosiers. The $8.1 billion is 2.9 percent of Indiana's Gross Domestic Product of $276.8[xxi] million in 2007 based on 2007 dollars. In addition, in 2005, the industry generated $41 million in state income taxes and $12 million in county income taxes on the $1.2 billion in wages paid. Each acre of forest supported $244 in wages paid.

Based on the 2007 Total Value of shipments and employment figures, the estimated total economic impact of the hardwood industry is $16.6 billion and generates 121,600 jobs in the industry and in firms related to and supporting the hardwood industry. There is a $51 economic impact for every board foot of timber harvested and processed.

There was $3,721,934 of value added from stump to product sold, paying $147,042,438 to forest owners. That figure is determined by multiplying the price for an average stand of trees by the amount of round wood receipts of 328,954,000 board feet. For every $1 of stumpage paid to the landowner, $26.43 of value is created. (Log receipts of 328,954,000 board feet and $0.447 per board foot paid to landowners.) This is about $11.81 per board foot. This does not imply that all landowners receive this price. The prices are obtained via survey annually and reported in the Indiana Forest Products Price Report and Trend analysis.

Total value of shipments is the net selling value of products shipped from a manufacturing plant to its next destination. Value Added is derived from the value of shipments minus the cost of material, supplies, fuel, power, containers, contract work used to make the product.

The $16.6 billion of total economic impact is estimated by multiplying the total output of the industry ($8.1 billion) by the Final-demand Output (dollars) for the industry obtained from the U.S. Bureau of Economic Analysis, the RIMS II multiplier, Table 1.

The multipliers are developed from the Regional Input-Output Modeling System. It is one of

Sector	Final-Demand Output (dollars)	Final-Demand Employment (number of jobs)
Wood product manufacturing	2.1339	14.9860
Furniture and related product manufacturing	2.1169	15.9077

Table 1. Economic Activity Multipliers for hardwood sectors[xxii]

the most widely used models by the Department of Defense to determine base closure impact, state Departments of Transportation to estimate the impact of airport construction or road projects. It also was used to analyze the impact of Hurricane Katrina, and prior to that the impacts of Hurricane Andrew in 1992 and Hurricane Charley in 2004.

RIMS II is an Input-Output economic model, which measures total impact of employment and total output. These multipliers measure the impact of a $1 million change in either (1) value of final demand output, (2) earnings, (3) employment (jobs), or (4) value-added. Multipliers are reported down to the six-digit category. Multipliers are available for each North American Classification System industry at the six digit level.

The multipliers in Table 1 are for output and employment based on the total Value of Shipments. The Final-Demand Output is the financial impact an industry has on an economy. The Final-Demand Employment is the number of jobs generated by a $1 million change in Final Demand. The total economic impact is estimated by multiplying Total Value of Shipments by the Final-Demand Output Multiplier.

<u>Value of Shipments Impact</u>:

Wood Mfg. Sector Total Value: $3,243,160,000 X Multiplier 2.1339 = $6,920,579,124
Furn. & Related Total Value: $4,586,787,000 X multiplier 2.1169 = <u>$9,709,769,400</u>
Total = $16,630,348,524

<u>Employment Impact</u>:

Wood Mfg. Sector Total Value $3,243 million X multiplier 14.9860 = 48,600 jobs
Furn. & Related Total Value $4,587 million X multiplier 15.9077 = <u>73,000 jobs</u>
Total = 121,600 jobs

Specific Sector Data

The industry is included in the U.S. Census Bureau's Annual Survey of Manufacturers. The Census Bureau collects information on employment; both production and total employment; wages paid at both levels and the number of annual production hours. The Census Bureau also tracks annual Capital Expenditures, Total Value of Shipments and Total Cost of Materials, along with Total Value Added to Shipments. It also is covered by the U.S. Census Bureau's County Business Patterns Survey. This survey reports only the number of establishments, annual payroll, and number of paid employees.

This data is tracked based on North American Industry Classification System (NAICS), previously called SIC codes. NAICS codes contain six digits; however, some data is only reported at the four-digit level for confidentially purposes. The employment and wage data is shared with the Bureau of Economic Analysis (BEA) and is the basis of much of the data in this report. The data was obtained using the online database of the Indiana University Business Research Center.

Forests of Indiana

According to the U.S. Forest Service Inventory Analysis (FIA) tables, there were 4,713,557 acres of forest land in Indiana in 2009.[xxiii] The area not available for commercial timber production was an estimated 91,768 acres in 2009.[xxiv] Compared to the 2003 estimate from the same source, forest land has increased by almost 160,000 acres. This increase is due primarily to conversion of marginal farm land to forest cover. In many cases, marginal farm land is purchased by owners interested in using the land for hunting and other recreation activities.

The estimates for other states show that Illinois had 4.8 million acres in 2008, Michigan had 19.9 million acres in 2009 with a significant portion in softwoods, and Ohio had 8 million acres in 2008.[xxv] Indiana is recognized by many timber buyers as having higher quality timber of the premium species than other states in the region.

The proportion of black cherry sawtimber volume that is Grade 1 is 20 percent, about the same as the lower grades (Figure 1). In surrounding states, the Grade 1 portion is much lower.
Indiana's advantage in White Oak quality (Figure 2) is more pronounced, with Grade 1 over 35 percent. Illinois and Ohio have an advantage in Red Oak (Figure 3), which may be due to the heavy harvest in Indiana of this species over the last 20 to 30 years. Indiana is slightly ahead of

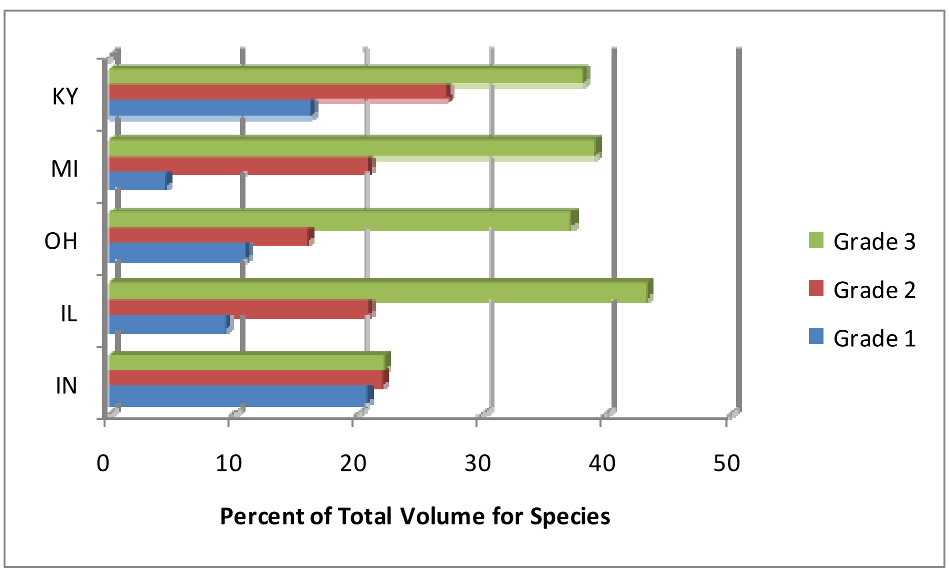

Figure 1. Sawtimber quality distribution for Black Cherry in Indiana and surrounding states (FIA, FIDO, 12/10/10).

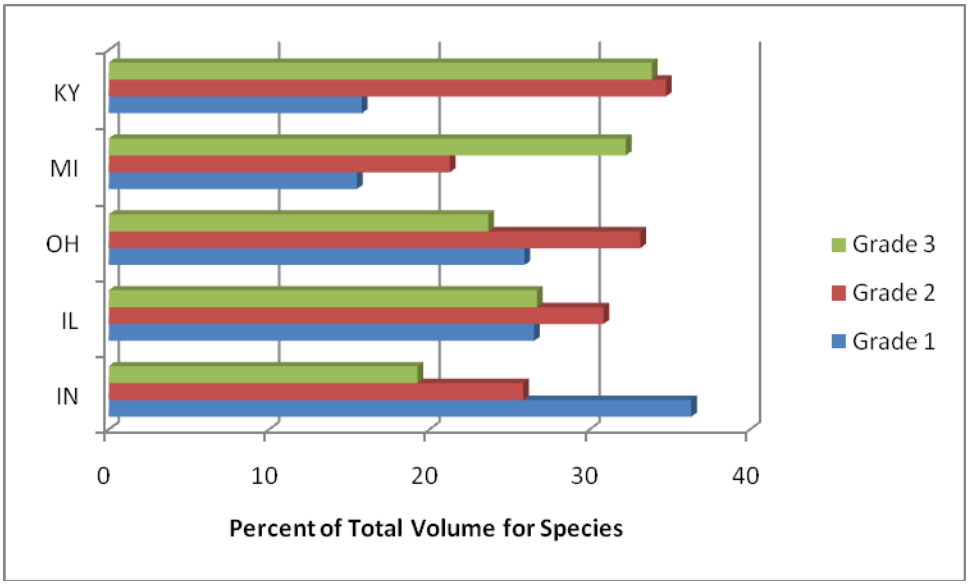

Figure 2. Sawtimber quality distribution for White Oak in Indiana and surrounding states (FIA, FIDO, 12/10/10).

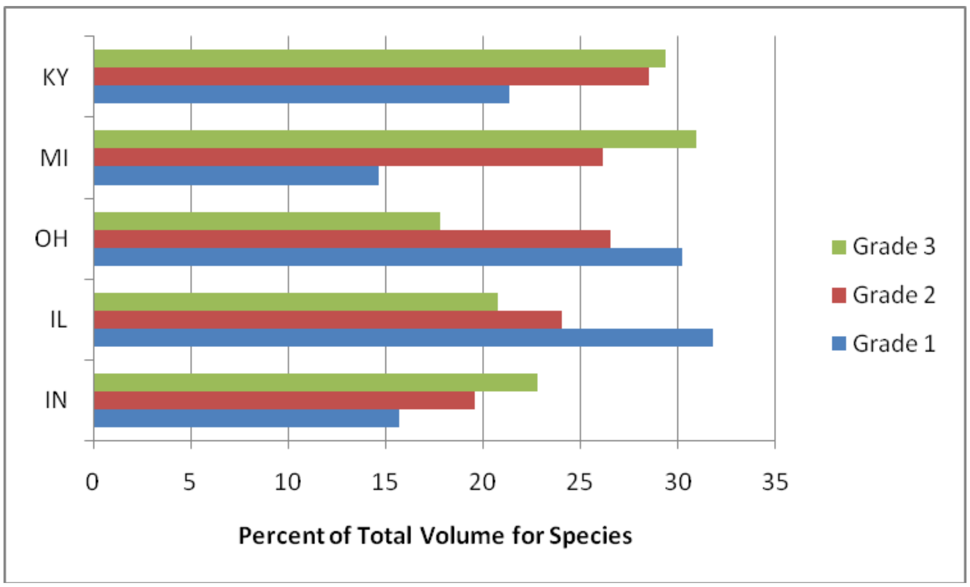

Figure 3. Sawtimber quality proportions for Red Oak in Indiana and surrounding states (FIA, FIDO, 12/10/10).

Michigan in the quality of Black Walnut sawtimber (Figure 4). Both Michigan and Indiana are significantly ahead of the other states.

Ownership of Indiana forest land is split between federal, state, county, and municipal governments, and family or private. The Family or Private ownership category has consistently accounted for about 85 percent of forest land (Table 2).

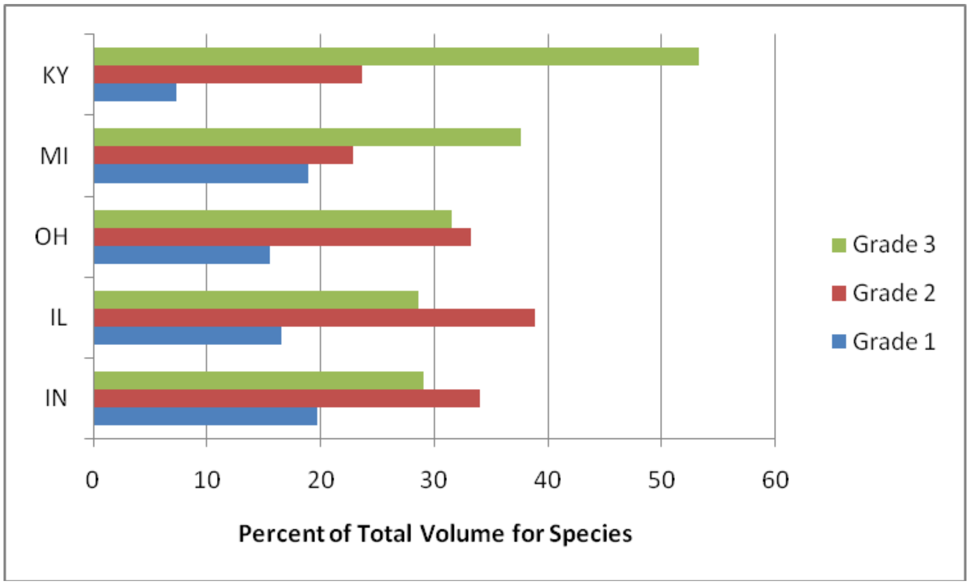

Figure 4. Sawtimber quality proportions for Black Walnut in Indiana and surrounding states (FIA, FIDO, 12/10/10).

	Federal Ownership	State	County, Municipal	Family or Private
2009	7.95	7.27	0.65	84.14
2006	8.27	5.4	0.68	85.65
2003	9.19	4.54	0.60	85.67
1998	8.59	5.48	0.29	85.64

Table 2. Percent of forest land owned by four ownership categories.[xxvi]

The Net Volume of Growing Stock on timberland in Indiana has increased steadily in all categories of ownership. There was 8.58 billion cubic feet of growing stock in accessible forests (timberland) in Indiana in 2009 amongst all ownership categories.[xxvii] The FIA report shows about a 3.86 percent annual tree growth.[xxviii] This is estimated to be about 1.31 times the amount of removals.

According to the U. S. Forest Service's Timber Products Output and Use report for 2005, Indiana mills purchased 328,954,000 board feet (Doyle rule) of logs.[xxix] Eighty-eight percent was grown in Indiana, 2.2 percent was from Illinois, 3.7 percent from Kentucky, 3.6 percent from Michigan, 2 percent from Ohio, 0.4 percent from Missouri, and the balance of 0.2 percent from 19 other states. [xxx] These roundwood receipts were made up of 89.7 percent sawlogs, 6.4 percent veneer logs, and 3.9 percent for other products such as wood pulp, tool handles, cabin logs, and tight cooperage.

Timber Prices and Forest Quality

The value of logs delivered to mills is determined by their species, size, and quality. Although many mills have developed their own log grading system, the two standardized systems are the U. S. Forest Service Factory Log Grading and the Purdue Log Grades.

In all cases the grade of a log is determined by its size, shape, and number and size of defects. These criteria correlate to the percentage of a log's volume that will be in defect free lumber.

There are two price reports for Indiana. Since 1957, Purdue Cooperative Extension Service in cooperation with the Indiana Agricultural Statistics Service has conducted a survey of prices paid for sawlogs and veneer logs by mills in Indiana. Prices are reported in the Indiana Forest Products Price Report and Trend Analysis. The Indiana Association of Consulting Foresters publishes an annual survey of stumpage prices for sales consisting of low, medium, and high quality timber. The Purdue survey is used primarily to track price trends by calculating a weighted average stand value for an average and quality stand. The quality stand value assumes a well-managed stand.

According to the 2010 survey, the average stand had a delivered log value of $412.5 per thousand board feet (MBF). After subtracting the costs to do the logging and hauling from the woods to a mill, an equivalent stumpage price would be in the $250 to $300 range. The quality stand had an average delivered log value of $584 per MBF in 2010. The equivalent stumpage value would be in the $425 to $465 per MBF range.

Although the long-term trend line for the deflated average delivered log price is still positive, the real value has decline over the last 10 years. The nominal, deflated, and trend lines for average and quality stands are shown in Figures 4 and 5.

The difference between the average unmanaged stand and the quality managed stand is about $170 per MBF, representing the payback for management. Assuming a stocking level of 3 MBF, the payback from management would be about $500 per acre. Several cost-share

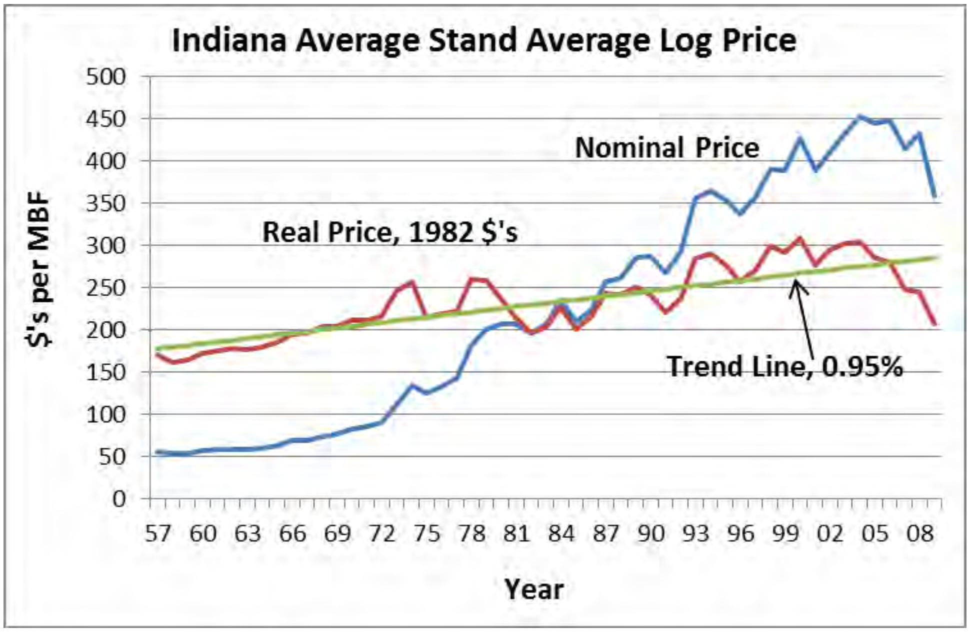

Figure 4. Nominal and real price of logs delivered to mills in Indiana, weighted average price based on average stand of timber.

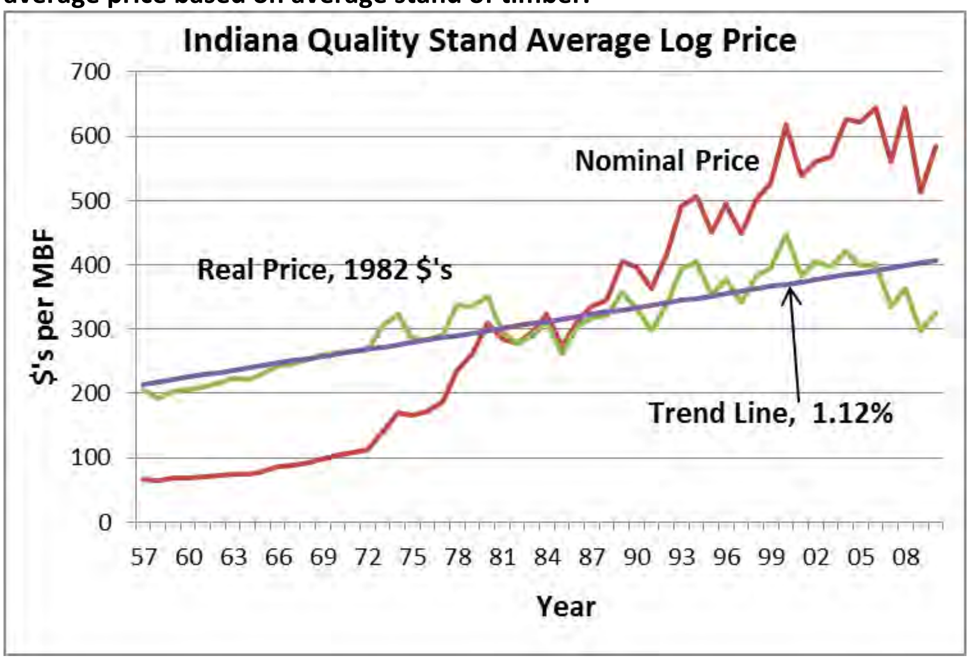

Figure 5. Nominal and real price of logs delivered to mills in Indiana, weighted average price based on well stocked and managed stand of timber.

programs for management are available from the Natural Resources Conservation Service and Indiana DNR Division of Forestry, reducing the cost to achieve this management premium. Details on these programs are at http://www.in.gov/dnr/forestry/2861.htm.

The trend lines in Figures 5 and 6 indicate the real price of logs has increased on average by about 1 percent. However, for the last seven years the real price has declined. This is primarily because of a decline in total lumber production, reducing demand. It's too early in the current economic recovery to estimate the extent to which prices will return to the trend line.

Using the ownership data previously outlined and the above price for average standing timber, the value of the standing timber in each of the ownership categories can be estimated (Table 3[xxxi]).

This value assumes that all timber in each category could be sold at the current market price without driving the price down because of the major increase in the supply hypothetically offered

Table 3. Value of standing timber, based on current market price.

	Federal	State & Local	Private	Total
2009 Intl'l ¼, Mil. BF	3,030	2,912	28,097	34,038
2009 Doyle, Mil BF	2,020	1,941	18,731	22,692
Value based on Doyle, Mil. $	$833	$801	$7,727	$9,361

for sale. Sawtimber removals totaled 467 million bf Doyle in 2005, 2.1 percent of sawtimber volume; and 379 million bf Int'l. ¼-inch in 2009.

A more realistic approach to placing a value on Indiana's timber inventory is to capitalize the value of the perpetual average annual timber revenue. Assuming annual removals of 450 million bf at $275 per MBF gives annual revenues of about $124 million. Using a real long-term discount rate of 2.5 percent gives a capital value of almost $5 billion. This is the amount an entrepreneur would pay for the right to receive $124 million in revenue in perpetuity from Indiana's timberland.

Logging

Indiana woodlands are harvested primarily by professional loggers; however, many landowners harvest firewood themselves. A significant number of owners also produce sawlogs themselves to supply their portable sawmills. There were approximately 750 people employed in the logging industry in 2008, spread among 77 firms.[xxxii] This is the same number of firms reported in 1990; however, during the industry peak in the early 2000's 96 firms were operating. The average firm employed 9.5 people. The annual payroll of the 77 firms was $21,569,000, making the annual wage $29,358, a significant increase from the 1990 wage of $13,183.

Sector Overview

The industry typically is classified in two sectors, Primary and Secondary, based on the products made at each stage in the value added chain. The economic characteristics of the major components of the industry are summarized in Table 4.

		No. of	Total Wages	Annual Capital	Total Value of

Sector	No. of Firms	Employees	Paid (1,000)	Expenditures (1,000)	Shipments (1,000)
Logging	77	734	$21,569	Not available	Not available
Sawmills, etc.	110	2,202	$80,776	$13,049	$614,638
Veneer, plywood, etc.	71	3,947	$132,436	$14,291	$654,831
Furniture, etc.	573	25,554	$863,215	$89,874	$4,586,787
Misc. wood mfg.	378	11,896	$390,738	$39,561	$1,973,691
Total	1,209	44,333	$1,488,734	$156,775	$7,829,947

Table 4. Economic indicators for major sectors in the hardwood industry, 2005[xxxiii]

Primary Wood Industry

Sawmills and Veneer Mills constitute the second major step in the value added chain by breaking down logs into lumber and veneer. This sector is the primary determinate of the price paid for logs, and thereby for stumpage.

The cost of lumber and veneer is a major cost component of the secondary sector, but not the major cost for furniture and other products that require labor intensive machining and assembly.

This sector had $615 million of Total Value of Shipments according to the U.S. Census Bureau's Annual Survey of Manufacturers. With the exception of 2001, the value of shipments has been increasing. However, when data for 2008 and later become available it is expected to show annual decreases. This sector appears to have at least maintained its capital base.

NAICS Code	Sector	No. Firms	No. Employees	Wages Paid
321113	Sawmills	102	1,854	$68,770
321114	Wood Preservation	8	348	$12,006
321211	Hardwood Veneer & Plywood Mfg.	34	2,630	$86,094
321212	Softwood Veneer and Plywood Mfg.,	?		
321213	Engineered Wood Member Mfg. (except truss)	?		
321920	Wood Container and Pallet Mfg.	124	2,220	$58,673
321999	All Other Misc. Wood Product Mfg.	112	5,041	$185,352

Table 5.

Hardwood Veneer Group had Total Value of Shipments in 2007 of $654 million, a 15 percent decrease from 2005. This is part of a trend that has seen growth since 1997 when the data list began. In 2000, the group had increased to $613.6 million but then reverted back to the trend. This group does reinvest at a strong 4.4 percent, including 2000 when it invested at the rate of 11 percent.

Miscellaneous Products/Components Group had Total Value of Shipments of

$1.97 billion in 2007. This is down significantly from $2.3 billion in 2005 and $2.6 billion in the late 1990s. The group reinvested at a rate of 2 percent of Total Value of shipments, or $39.6 million.

Individual Sectors of the Primary Hardwood Industry

<u>Sawmill Industry</u> (NAICS code 321113): This sector processed the greatest percentage of logs produced in Indiana and brought in from other states. It includes establishments primarily engaged in the grade lumber, beams, timbers, poles, ties, and wood chips from logs, bolts, the slabs off of the sides of logs. Larger mills also kiln dry the green lumber, plane it, regrade it, and package it based on customer order specifications.

Because of restrictions on open burning and landfilling, mills collect sawdust, wood chips, and bark that is sold directly to end users, used in the mill's boiler, or sold to processers making wood pellets, landscape mulch, and to pulp mills for pulp production and for boiler fuel. In 1990, there were 2,118 people employed in 118 firms. According to the Bureau of Economic Analysis, in 2005 there were only 106 firms with 1,563 employees; in 2007, 102 firms employing 1,854 people. This reflects the consolidation of the industry into fewer larger firms, a trend that dates to at least the 1950s.

While the average wage increased 35 percent over this period of time, the actual wages grew only 14 percent due to the reduction of employees. Growth over the 15-year period went from $40,112,870 to $45,954,521.

<u>Wood Preservation</u> (NAICS code 321114): This U.S. industry includes establishments primarily engaged in 1) treating wood sawed, planed, or shaped in other establishments with creosote or other preservatives, such as alkaline copper quat, copper azole, and sodium borates, to prevent decay and to protect against fire and insects, and/or 2) sawing roundwood poles, pilings, and posts and treating them with preservatives.

Wood Preservation employed 348 people, an increase from 293 in 2005. However, there have been fluctuations in that data. In 2000, 362 people were employed, but 220 were employed in 1992. Total wages have grown from $4.7 million annually to $12 million. Total wages paid have also fluctuated from a high of $12 million in 2007 to a low of $4.7 in 1990.

<u>Hardwood Veneer, Wood Container/Pallet, miscellaneous manufacturing:</u> This sector is the second part of the Primary Wood Industry. It is divided into two groups, Hardwood Veneer and more wood manufactured component industry. The NAICS Codes begin with 321 – 321211 for Hardwood Veneer and Plywood manufacturing; 321920 for Wood Containers and Pallet, and 321999 for all other miscellaneous wood product manufacturing.

Hardwood Veneer and Plywood manufacturing is transforming a log into paper thin sheets of wood for furniture manufacturing. The veneer sector has been relatively stable in terms of establishments. In 2007 there were 34 firms. During this 16-year period there were no fewer than 31 and no more than 36 establishments. In 2007 were 2,630 employees compared with 2,153 in 2005. The low point in employment was in 1992 with 1,732 and the high point was 2000 with 2,961.

The sector paid $86 million in wages in 2007, for an average annual wage of $32,699. The average wage grew 81 percent from $38.2 million to the current level.

Wood Container and Pallet manufacturing is the sector engaged in the manufacture of wood pallet, wood box shook, wood boxes, and other wood containers, and wood parts for pallets and containers.

All other **Miscellaneous Wood Product Manufacturing** is the category for firms not classified elsewhere in the Primary Wood Industry. These firms manufacture items such as cork products (except gaskets), handles (e.g., broom, handtools, mop), kiln drying lumber, kitchenware, shoe trees, stepladders, dowels, toilet seats, extension ladders, and toothpicks. In 2007, there were 60 firms with 871 employees earning $26.5 million in total wages. The high point for employment was 1996 at 1,345. Total wages paid has grown by 144 percent annually since 1990.

<u>Secondary Wood Industry</u> (Table 6): This sector uses component parts manufactured or processed in the Primary Sector to make finished goods, such as cabinets and furniture. The NAICS Codes begin with 337, and the industry descriptions and codes are Wood Kitchen and Countertop Manufacturing (337110); Upholstered Household Furniture Manufacturing (337121); Non-upholstered Wood Household Furniture (337122); Household furniture except wood and metal furniture (337125); Institutional Furniture Manufacturing (337127); Wood Office

NAICS Code	Sector	Firms	Employees	Wages Paid
321214	Truss Manufacturing	32/25	1,473/731	$46,642,167/$22,285,000
321911	Wood Window and Door Manufacturing	39/42	1,799/2,072	$61,013,818/$59,950,000
321912	Cut Stock, Resawing Lumber, and Planing	17/44	523/1,124	$14,364,170/$33,431,000
321918	Other Millwork (including Flooring)	65/56	1,963/1,439	$64,075,542/$53,332,000
337110	Wood Kitchen Cabinets and Countertops Manufacturing	273/226	9,487/7,809	$318,749,096/$256,488,000
337121	Upholstered Household Furniture Manufacturing	21/44	1,991/3,039	$59,610,476/$92,993,000
337122	Non-upholstered Wood Household Furniture Manufacturing	99/105	2,681/2,192	$78,863,737/$64,875,000
337127	Institutional Furniture Manufacturing	12/14	570/754	$20,253,914/$30,379,000
337211	Wood Office Furniture	35/32	4,582/3,342	$143,498,065/$117,238,000
337212	Custom Architectural Woodwork and Millwork Manufacturing	21/53	264/1,056	$8,211,572/$38,971,000
337215	Showcase, Partition, Shelving, and Locker Manufacturing	39/35	3,308/1,934	$120,065,787/$65,956,000

337920	Blind and Shade Manufacturing	10/12	1,157/1,312	$28,799,343/$40,608,000

Table 6. Secondary industry, six-digit NAICS sectors, 2005/2008 (Census of Manufacturers/County Business Patterns)

Furniture (337211); Custom Architectural Woodwork and Millwork Manufacturing (337212); Office Furniture except wood Manufacturing (337214); Showcase, Partition, Shelving, and Locker Manufacturing (337215); Blind and Shade Manufacturing (337920). Also included in this sector based on its end product and not NAICS code are Truss Manufacturing (321214); Wood Window and Door Manufacturing (321912); including Flooring (32918).

The first part of the sector is **Cabinet and Furniture Manufacturing**. This group had total Value of shipment trending upwards to a high in 2007 of $5.9 billion. This sector is reinvesting at an average rate of 2.2 percent.

The **Office Furniture Manufacturing** sector had Total Value of Shipments of about $1.3 billion in 2007. Although it has been uneven from year to year, the overall trend has been positive since 1997. This sector continues to reinvest in itself at an average rate of 2.5 percent or more than $30 million annually, with the exception of 1998 when over 7 percent of the Value of Shipments ($76 million) was spent.

The final sector of the Secondary group is **Other Furniture and Related Products**. It had Total Value of shipments of $274.3 million in 2007. Growth has been good over the period of time, but capital expenditures have been uneven as a percentage of Total Value of Shipments. In 2005, $3.9 million was invested. However, in 2007, only a little over $1 million was invested. The latest two years have seen investment of $3.9 million each.

The **Wood Kitchen Cabinet and Countertop Manufacturing** sector includes businesses engaged in wood or plastic laminated on wood kitchen cabinets, bathroom vanities, and countertops (except freestanding). The cabinets and counters may be made on a stock or custom basis. The BEA reported that in 2007 this sector had 7,809 employees, a 17 percent drop from 2005. The 226 firms engaged in this sector are the lowest since data has been collected. The high point was 302 firms in 1995. Total Wages paid was $256,488,000, a 20 percent decrease from 2005. The average wage was $32,845.

Upholstered Household Furniture Manufacturing is the sector that manufactures custom or stock upholstered furniture. Employment in this sector was 3,039 people in 2007. In 1990, there were 1,703 employed, and it grew to 2,313 in 1996. This employment then decreased to 1,800 people in 2002. In 1996, there were 43 firms engaged in this sector. The number has been consistently trended downward to 21 in 2005 but surprisingly increased to 44 firms in 2007. Total Wages paid in 2007 was $92,993,000.

Non-upholstered Wood Household Furniture Manufacturing includes establishments primarily engaged in manufacturing non-upholstered wood household type furniture and freestanding cabinets (except television, radio, and sewing machine cabinets). The furniture may be made on a stock or custom basis and may be assembled or unassembled (i.e., knockdown). This sector grew to 4,634 in 1995. Since then, the sector consistently has lost employment to

2,192 in 2007, or a 52 percent contraction. The growth in number of firms was at its high point in 2007 with 105. Total Wages paid in 2007 was $64.8 million, a 28 percent decrease from 2005.

Institutional Furniture Manufacturing includes establishments primarily engaged in manufacturing institutional-type furniture (e.g., library, school, theater, hotel, and church furniture). This sector had been contracting consistently since 1994 when it employed 1,886. Employee numbers did increase from 570 in 2005 to 754 in 2007. Total Wages dropped from a high in 1994 of $46 million to the 2007 level of $30.7 million. The contraction in both total wages and employment has increased the average wage to $40,716.

Wood Office Furniture Manufacturing includes establishments primarily engaged in manufacturing wood office-type furniture. Total Employment has been up and down from a high of 5,842 in 2000 to a low of 4,361 in 2004. The current 2007 level is 3,342. The number of firms stayed consistent with 2005 data, only dropping from 35 firms to 32. Total Wages paid in 2007 were $117,238,000 million, a decline from the 2000 high point of $170.9 million but above the 1991 low point of $96.4 million.

Custom Architectural Woodwork and Millwork Manufacturing includes businesses primarily engaged in manufacturing custom designed interiors that consist of architectural woodwork and fixtures using wood, wood product, and plastic laminates. All of the industry output is made to individual order on a job shop basis and requires skilled craftsmen as a labor input. A job might include custom manufacturing display fixtures, gondolas, wall shelving units, entrance and window architectural detail, sales and reception counters, wall paneling, and matching furniture. In 2007, there were 1,056 people employed, a 670 percent increase since 1990 when employment was 137. Total wages paid in 2007 were $3.8 million, down from $8.2 million in 2005. Otherwise, this has been a steady positive growth trend.

The **Showcase, Partition, Shelving, and Locker Manufacturing** sector includes businesses primarily engaged in manufacturing wood and non-wood office furniture and store fixtures, shelving, lockers, frames, partitions, and related fabricated products of wood and non-wood materials, including plastic laminated fixture tops. This sector had 1,934 employees in 2007, which was part of a downward trend from its high employment point of 4,643 in 2000. Total wages in 2007 were $65.9 million.

Blind and Shade Manufacturing includes businesses primarily engaged in manufacturing one or more of the following: Venetian blinds, other window blinds, and shades; curtain and drapery rods, poles; and/or curtain and drapery fixtures. This sector is not directly related to the Indiana hardwood industry but is classified in this sector. Total wages paid in 2007 were $40.6 million, an increase of 29 percent from 2005. In 2007, 12 firms employed 1,312 employees.

Truss Manufacturing is the sector primarily engaged in manufacturing laminated or fabricated wood roof and floor trusses. Although this sector has consistently grown over the past 16 years, the number of firms decreased from 32 in 2005 to 25 in 2007. These 25 firms had 731 employees who were paid a total of $22,285,000 million in annual wages.

Wood Window and Door Manufacturing includes businesses primarily engaged in manufacturing window and door units, sash, window and door frames, and doors from wood or wood clad with metal or plastics. In Indiana, this sector declined from 48 firms in 1990 to 42 in 2007. However, the number of employees has ebbed. There were 1,796 employees in 1990, growing to 2,368 in 1999 before dropping to the current level of 2,072. During this same time, total wages paid went from $36.4 million to a high of $66 million in 1999. Wages then dropped to $52 million within two years. Employment at that time was 1,810. Total wages increased to $61 million in 2005 but dropped to $59,950,000 in 2007.

Cut Stock, Resawing Lumber and Planing is the sector with businesses primarily engaged in one or more of the following: (1) manufacturing dimension lumber from purchased lumber; (2) manufacturing dimension stock, i.e. shapes or cut stock; (3) resawing the output of sawmills; and (4) planning of purchased lumber. This sector also has contracted. In 1990, there were 34 firms, but in 2007 the number increased to 44. However, employment numbers on the surface appear steady over this period. There were 574 employees in 1990 with a high employment point of 1,127 in 2007 and the low point of 499 in 1991. Total wages paid in 2007 were $33.3 million, a 46 percent increase from 2000.

Other Millwork including Flooring is the sector engaged in manufacturing millwork. This includes clear and finger jointed wood moldings manufacturing, stair work (e.g., newel posts, railings, stairs, stair cases), manufacturing decorative wood moldings (e.g., base, chair rail, crown, shoe), manufacturing wood flooring, manufacturing wood shutters, manufacturing planing mills, and mill work. In 2007, this sector paid its employees $53.3 million in wages, a 225 percent increase over the $16.4 million in 1990. The average wage was $36,831. Growth has been steady. Employment was 837 in 1990 and increased to 1,963 in 2005, with another increase to 1,409 in 2007. The firms involved in this sector number 56, which has been steady over the past eight years. In 1990 there were 48 firms.

Exports

Exports of Indiana products are tracked by the U.S. Census Bureau and the U.S. Department of Commerce. According to the Census Bureau, Indiana had $253 million in forestry, furniture and wood component product exports in 2006, which is 3 percent of the total similar exports of the United States.

See Tables 7, 8a and 8b.

The primary products exported from Indiana include: veneer, rough-sawn planks in various lengths, and furniture or furniture parts. The average annual growth has average about 7.5 percent, with a jump in growth from 2005 to 2006 of 21.5 percent. A full listing of exported products and the amounts for the past five years is attached.

Canada is the leading importer of Indiana hardwood products (Table 9). The value of exports increased. Numbers have increased over the last six years and were expected to have grown in 2007 due to the weak U.S. dollar.

	2001	2002	2003	2004	2005	2006

Total Annual Exports (millions)	$178.4	$175.4	$186.1	$199.6	$208.7	$253.7

Table 7. Total Annual Hardwood Exports

Product Category	2004	2005	2006	2007	2008	2009
Oak wood, in the rough, not treated	$8,283	$13,012,	$11,642	$13,987	$9,762	$3,541
Non-coniferous wood in the rough NESI, not treated	$8,005	$14,670	$12,669	$16,054	$13,202	$6,299
Oak wood sawn, sliced, etc. over 6MM thick	$15,649	$16,399	$21,623	$19,023	$11,728	$10,655
Veneer sheets & sheets for plywood not over 6MM thickness, hardwood	$12,595	$16,592	$18,523	$11,175	$4,494	$7,666
Veneer sheet etc. not over 6MM thick, coniferous	$8,031	$12,781	$14,029	$2,175	$319	$204
Veneer sheets & sheets for plywood not over 6MM thickness, hardwood	$84,200	$64,766	$82,608	$103,789	$89,613	$62,741
Prefabricated buildings	$13,380	$9,901	$16,176	$29,301	$33,661	$17,746

Table 8a. Value of Major Export Categories for 2006, 1,000's.[xxxiv]

Product Category	2004	2005	2006	2007	2008	2009
Oak wood, in the rough, not treated	4.24	7.43	6.18	4.51	3.53	2.03
Non-coniferous wood in the rough NESI, not treated	1.97	3.46	2.86	3.15	2.80	1.73
Oak wood sawn, sliced, etc. over 6MM thick	2.57	2.86	3.61	3.55	2.63	2.84
Veneer sheets & sheets for plywood not over 6MM thickness, hardwood	1.50	1.83	1.85	2.19	1.12	2.20
Veneer sheet etc. not over 6MM thick, coniferous	11.87	0.02	17.69	3.69	0.80	0.57
Veneer sheets & sheets for plywood not over 6MM thickness, hardwood	18.07	14.81	19.58	23.55	31.11	30.42
Prefabricated buildings	3.84	2.17	3.35	5.12	4.04	2.79

Table 8b. Indiana's exports as a percent of U.S. exports for the categories.

Country (millions)	2001	2002	2003	2004	2005	2006
Canada	$82,633	$87,372	$79,196	$87,713	$97,615	$122,084
Germany	$21,249	$12,249	$13,575	$13,651	$15,871	$23,110
Spain	$8,101	$11,350	$13,863	$14,899	$14,146	$13,938
Mexico	$7,658	$5,748	$2,033	$2,426	$7,379	$13,640
China	$3,650	$8,401	$8,110	$11,582	$11,481	$12,956
Hong Kong	$5,844	$6,502	$9,085	$9,442	$9,135	$8,709
Japan	$7,683	$9,134	$12,377	$8,242	$7,642	$7,642
United Kingdom	$8,701	$5,280	$5,476	$6,429	$6,622	$6,726
Italy	$2,560	$4,211	$3,542	$2,985	$4,511	$4,956
Belgium	$3,272	$1,876	$2,099	$3,648	$2,600	$4,144
Percent of Total Exports accounted for by these countries	84	85	80	80	83	85

Table 9. Major Importers of Indiana Hardwood Products

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[i] Total economic impact of $16,630,348,524 divided by 2005 sawlog receipts of 328,954 MBF.

[ii] Piva, R.J. and Joey Gallion. 2007. *Indiana Timber Industry—an assessment of timber product output and use in 2005*. USDA Forest Service. Northern research Station, RB-NRS-22. Table 8. Total sawlog receipts 453,965 MBF Intl. ¼" rule with 398,279 MBF from Indiana sources.

[iii] FIA Table 2.1, Forest Land, 2009

[iv] ibid

[v] FIA, Table 2.3, Forest Land, 2009

[vi] Based on comparison of average price indexes for average and quality forests published annually in *Indiana Forest Products Price Report and Trend Analysis*, Purdue University, College of Agriculture, FNR 177-W.

[vii] Price per MBF in 2010 for average stand, $412/MBF from 2010 Indiana Forest Products Price report and Trend Analysis times 2005 sawlog receipts of 398,279 MBF.

[viii] $8.1 billion in sale of final product less $164 million paid to landowners divided by $164 million.

[ix] 35,461 employees reported by Bureau of Economic Research subtracted from 121,600 jobs estimated by the RIMS II Final-demand Employment multiplier.

[x] Wages paid of $1.149 million times 3.58% for state and 1.058% for local payroll taxes.

[xi] Wages paid of $1,148.5 million divided by 4,713.6 million acres.

[xii] 4,713,557 acres in 2009 minus 4,342,300 acres in 1998 divided by 10

[xiii] Annual growth is 1,230,734 MBF (FIA, Table 27.1, 2009). Annual removals are 379,442 MBF (FIA, Table 41.1, 2009). 1.32 times removals = growth.

[xiv] Unless stated otherwise all references are to forest land, defined by the U.S. Forest Service as land at least 10-percent stocked with trees of any size, or formerly having such tree cover, and not currently developed for non-forest use. Forest land is more inclusive than timberland, defined as forest land that is producing, or is capable of producing, in excess of 20 cubic feet per acre of industrial roundwood products under natural conditions, is not withdrawn from timber utilization by statute or administrative regulation, and is not associated with urban or rural development.

[xv] Based on FIA FIDO, Table 2.6, Forest Land area.

[xvi] Based on FIA FIDO Table 20.2 – net volume of sawtimber trees by species and ownership group (International ¼-inch rule, bd. ft.), accessed 12/1/2010.

[xvii] Sawtimber is defined as live trees at least 11.0 inches dbh of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, meeting regional specification of quality.

[xviii] Based on FIA FIDO, Table 27.1 – Average annual net growth of sawtimber trees (International ¼-inch rule, bd. ft./year) and Table 41.1 – Average annual removals of sawtimber trees (International ¼-inch rule, bd. ft./year), accessed 12/6/2010.

[xix] U.S. Bureau of Economic Analysis at the NAICS 6 digit level.

[xx] U.S. Bureau of Economic Analysis at the NAICS 6 digit level.
[xxi] Bureau of Economic Analysis, News Release, Nov. 18,2010. The GDP of $240,833 million was inflated by 10.6% to put in 2007 dollars.
[xxii] U.S. Dept. of Commerce, Bureau of Economic Analysis. Based on 2002 Input-Output Tables and 2007 Regional Data for Indiana. (Data purchased 12/10/10)
[xxiii] FIA FIDO, Table 2.6, Forest Land, 2009. 12/10/10.
[xxiv] FIA FIDO Table 2.1 Area by owner class and reserved status, 2009.
[xxv] FIA FIDO Table 2.1 for each state, forest land. 12/10/10.
[xxvi] FIA FIDO, Table 2.7. Area by owner and growing stock stocking classes. 2009.
[xxvii] FIA FIDO, Table 15.2, timberland, 12/10/10.
[xxviii] FIA FIDO, 331.1 million cu. ft. of growth (Table 25.1, Timberland) divided by total growing stock volume of 8,582 million cu. ft. (Table 15.2 Timberland)
[xxix] Piva, Ronald J. and Joey Gallion. 2007. Indiana timber industry—an assessment of timber product output and use, 2005. USDA Forest Service Northern research Station, Resources Bulletin, NRS-22, Table 8a, p. 49.
[xxx] Piva, Ronald J. and Joey Gallion. 2007. Indiana timber industry—an assessment of timber product output and use, 2005. USDA Forest Service Northern research Station, Resources Bulletin, NRS-22, Table 8a, p. 49.

[xxxi] Based on FIA FIDO Table 20.2 – Net volume of sawtimber trees by species and ownership group (Intl. ¼-inch rule). Intl. ¼-inch converted to Doyle as 1.5 bf Intl. ¼-inch per Doyle bf. Stumpage price of $275 per MBF applied to Doyle volume.
[xxxii] U.S. Census Bureau, 2008 County Business Patterns, NAICS 1133.
[xxxiii] From Swain Report
[xxxiv] William Luppold, U. S. Forest Service, Northern Experiment Station, personal correspondence, 12/9/10.

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