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# 2004 Indiana Forest Products Price Report and Trend Analysis

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# 2004 Indiana Forest Products
# Price Report and Trend Analysis

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**PURDUE UNIVERSITY**

## Survey Procedures and Response

Data for this survey was obtained by a mail survey of all known mills in Indiana who buy logs. This list is maintained in cooperation with the Forest Products Forest Resources Information Program, Indiana Division of Forestry. The prices reported are for logs delivered to the log yards of the mills who responded to the survey. Approximate stumpage prices can be obtained by subtracting logging and hauling costs (Table 4) from the delivered sawlog and veneer log prices; however, see **Caution** below.

The survey was sent to 235 mills. Sixty-two mills reported useable data, compared to 82 last year. Another 16 responded in some form, but provided no data. This makes the overall response rate 33 percent, below last year's return of 52 percent. After the initial mailing and one reminder post card enumerators employed by the Indiana Agriculture Statistics Service personally contacted a portion of the nonrespondents. The Department of Forestry and Natural Resources pays for this assistance using funds provided by the John S. Wright Endowment.

The number of mills contributing price data for a specific product is shown in the fourth column in Tables 2 to 5. Forty-three mills reported their 2003 total board foot production, compared with 59 reporting 2002 production. The distribution by production categories is shown in Figure 1. The total production for these mills was 204 million board feet. The smallest mills, custom mills, reported production of 0.5 MBF or less. The largest mill produced 18 million board feet in 2003. The price statistics don't include much data from these small custom mills (left bar in Figure 1) because most do not buy logs. They

report the cost of custom sawing. Thus, the custom sawing costs reported in Table 4 do not reflect the operating cost of large mills.
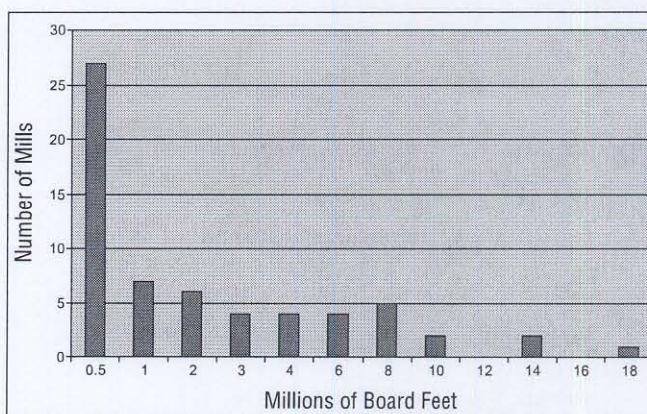


**Figure 1.** *Distribution of the 43 mills reporting 2003 production levels.*

## Caution

Caution: This report is intended to be used as an indication of price trends, not for the market appraisal of logs or stumpage. This data is collected only once a year and log prices are constantly changing. Proper appraisal techniques by those familiar with market conditions on a day-by-day basis should be used to obtain estimates of current market values for particular stands of timber or lots of logs. Because of the small number of mills reporting logging costs, stumpage prices estimated from delivered log prices by deducting the average logging and hauling costs must be used with caution.

## Hardwood Lumber Prices

Hardwood lumber prices, Table 1, for the premium species were higher through July of this year compared to July of 2003. Hickory and yellow poplar were the only species showing declines in lumber prices. The non-premium species were unchanged. Hard maple and black cherry prices continued to trend upward at 3 and 2 percent respectively for the July 2003 to July 2004 period for the highest grade of lumber, Firsts ad Seconds (FAS), plus the premium for bundles of FAS only. FAS soft maple increased 13 percent over this period. FAS white oak increased 18 percent, while red oak increased only 4 percent. Walnut was up 3 percent for FAS steam treated. These price increases are an indication of strong underlying demand that translated into higher prices for logs. Higher prices for lower grades of lumber should help utilization of lower grade logs. Increased demand for hardwood flooring at the expense of carpeting is a big factor.

## Sawlog Prices

Sawlog prices reflect lumber price trends (Table 2). In general sawlog prices increased. This year cottonwood was the only species for which prices declined for all four grades of logs. Beech also declined in the upper two log grades. Basswood prices were up slightly despite lower lumber prices. Ash prices were up for the three lower grades. Demand has apparently caught up with any increased harvest due to ash dieback. The sanitation cuts for emerald ash borer control are not likely to increase log supply because the logs produced can't be moved out of the quarantined area where the trees are cut. Elm prices increased despite constant lumber prices.

Black cherry's steady march upward continued this year with a 14 percent increase for the lowest grade but only 0.7 percent for the highest. Hard and soft maple were also up, although prime soft maple declined. The oaks were up in the lower grades but down in the prime grade. Black walnut was up except for No. 2 sawlogs, most likely a statistical anomaly.

## Softwood Sawlogs

Interest in softwood timber continues to increase, see the bottom of Table 2. Five mills reported purchasing pine logs. The average pine price was $221, an increase from $218 per thousand board feet (MBF) Doyle log scale last year. The average cedar price was $358 per MBF this year, compared to $311 last year. Demand for Eastern red cedar is increasing throughout its range. Southern Indiana is the northern end of its natural range. The largest mills are in Alabama and surrounding states and in Missouri. It's used for lumber, chips for animal bedding, chip board for lining closets, among other uses. Most logs are delivered to buyers by landowner who harvest trees from their own lands.

## Veneer Log Prices

The number of mills reporting veneer log prices increased this year (Table 3). The largest increases were for the select grade of black walnut logs over 24-inches diameter inside bark (dib). The price for smaller logs decreased in the range of 3 to 12 percent. The difference in the price changes between small and large logs indicates increased demand overall, but also an increased availability of larger logs as the walnut timber inventory matures. The assumption is that over a period of a year or more mills offer higher prices for larger logs only if this results in an increased supply.

Prices for prime white oak logs increased for the larger sizes. No comparison for select logs in 2004 and 2003 is reported because only one mill reported select prices in 2003. It can be assumed, however, that prices were up. Red oak prices were also up, but only slightly. Hard maple prices were up, except for the small prime category. Yellow poplar veneer prices were up slightly.

## Implications

Although the rate of economic expansion is not as high as expected at this point in a business cycle, demand for hardwood timber is strong. Housing starts remain high because mortgage rates remain low by recent historical standards. Timber offered for sale gets a good response from buyers if any quality is offered.

Many readers of past reports have noted that the log prices reported are below the stumpage prices reported elsewhere by consulting foresters on bid sales. Bid sales make up about 15 percent of total timber volume sold. The other 85 percent is purchased primarily by direct contact between a timber buyer and a landowner. The estimated weighted average price for logs delivered to mills from an average stand of timber is estimated to be $452 per MBF in 2004 (Table 8, column 3). If we assume that the average cost of delivered logs reported here is actually the average stumpage price, the average cost of delivered logs would be $672 per MBF, assuming $220 per MBF for logging and hauling. With the assumed mix of 15 percent bid and 85 percent negotiated, the average cost of delivered logs would be $485, determined as 0.15 x $672 + 0.85 x $452. An economist would refer to this as the current equilibrium price. If all timber was purchased at this assumed bid price, making the cost of delivered logs $672, a mill's cost of logs would increase by 38.6 percent. Mills could not absorb such an increase, and they could not pass it on to their customers. If the volume of timber purchased on

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bid were to increase, the average price for bid sales, and negotiated sales, would have to decrease to keep log costs near the equilibrium price. Thus, the typical landowner who sells at negotiated prices is in effect "subsidizing" those who sell on bids.

Our competitive market system requires mills to purchase timber at the lowest cost possible to acquire the mix of logs needed. A very common type of market failure exists here: imperfect information. The goal of economic equity would call for the government to intervene by making all landowners aware of the advantage of selling by bid when there is more than one potential buyer. Given

that over time the average price would have to return to its equilibrium level of $485, there would be no net gain to society from public expenditures to educate all landowners. If bid sales were required by law the increased overhead cost to mills would be reflected in lower bids, causing a net loss to the economy.

If bid sales were required by law, there would be no need for a price reporting system since the bidding would set a competitive price for each spot market, i.e., each sale. In a market dominated by negotiated prices, at a minimum landowners need access to basic market price data.

**Table 1. Hardwood Lumber prices, $'s per MBF, 4/4 Appalachian unless otherwise indicated (Hardwood Market Report, Memphis, Tenn.)**

| | Lumber Grade | Jan 2001 | July 2001 | Jan 2002 | Jul 2002 | Jan. 2003 | Jul. 2003 | Jan 2004 | July 2004 |
|---|---|---|---|---|---|---|---|---|---|
| Ash | FAS + Prem. | 945 | 825 | 770 | 730 | 745 | 745 | 780 | 800 |
| | No. 1C | 650 | 570 | 510 | 480 | 480 | 520 | 580 | 630 |
| | No. 2A | 355 | 315 | 290 | 280 | 280 | 330 | 370 | 415 |
| Basswood | FAS + Prem. | 810 | 740 | 730 | 730 | 730 | 745 | 745 | 760 |
| | No. 1C | 405 | 390 | 370 | 370 | 370 | 405 | 405 | 415 |
| | No. 2A | 225 | 210 | 210 | 210 | 210 | 210 | 210 | 210 |
| Beech | FAS | 465 | 465 | 465 | 465 | 465 | 465 | 465 | 465 |
| | No. 1C | 405 | 405 | 405 | 405 | 405 | 405 | 405 | 405 |
| | No. 2A | 330 | 330 | 330 | 330 | 330 | 330 | 330 | 330 |
| Cottonwood (Southern) | FAS | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| | No. 1C | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| | No. 2A | 220 | 220 | 220 | 220 | 220 | 220 | 220 | 220 |
| Cherry | FAS + Prem. | 2375 | 2375 | 2375 | 2455 | 2545 | 2545 | 2575 | 2590 |
| | No. 1C | 1115 | 1075 | 1060 | 1115 | 1185 | 1400 | 1530 | 1575 |
| | No. 2A | 575 | 470 | 450 | 430 | 450 | 615 | 720 | 775 |
| Elm (Southern) | FAS | 355 | 355 | 355 | 355 | 355 | 355 | 355 | 355 |
| | No. 1C | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 |
| | No. 2B | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Hickory | FAS + Prem. | 810 | 645 | 620 | 715 | 800 | 865 | 865 | 825 |
| | No. 1C | 575 | 500 | 485 | 540 | 580 | 630 | 630 | 610 |
| | No. 2A | 340 | 285 | 285 | 300 | 310 | 350 | 350 | 330 |
| Hard Maple unselected | FAS + Prem. | 1565 | 1470 | 1485 | 1420 | 1405 | 1405 | 1415 | 1445 |
| | No. 1C | 965 | 965 | 990 | 990 | 1000 | 1000 | 1030 | 1115 |
| | NO. 2A | 500 | 490 | 475 | 425 | 425 | 435 | 505 | 565 |
| Soft Maple | FAS & F1F + Prem. | 1045 | 1005 | 990 | 1030 | 1120 | 1195 | 1255 | 1345 |
| | No. 1C | 670 | 625 | 580 | 550 | 560 | 600 | 630 | 750 |
| | No. 2A | 340 | 300 | 295 | 270 | 270 | 290 | 310 | 385 |
| White Oak – Plain | FAS + Prem. | 945 | 875 | 860 | 860 | 885 | 975 | 1110 | 1155 |
| | No. 1C | 525 | 495 | 480 | 470 | 530 | 600 | 700 | 730 |
| | No. 2A | 370 | 350 | 350 | 365 | 440 | 480 | 555 | 565 |
| Red Oak-Plain | FAS + Prem. | 1220 | 1120 | 1110 | 1125 | 1175 | 1260 | 1280 | 1310 |
| | No. 1C | 780 | 730 | 720 | 710 | 740 | 800 | 845 | 865 |
| | No. 2A | 495 | 480 | 480 | 495 | 555 | 575 | 635 | 635 |
| Yellow Poplar | FAS + Prem. | 790 | 630 | 640 | 710 | 730 | 730 | 705 | 690 |
| | No. 1C | 460 | 390 | 380 | 395 | 405 | 415 | 395 | 395 |
| | No. 2A | 300 | 280 | 275 | 290 | 300 | 310 | 310 | 310 |

**Table 1. (Continued)**

| | Lumber Grade | Jan 2001 | July 2001 | Jan 2002 | Jul 2002 | Jan. 2003 | Jul. 2003 | Jan 2004 | July 2004 |
|---|---|---|---|---|---|---|---|---|---|
| Sycamore (Southern Plain) | FAS | 455 | 455 | 455 | 455 | 455 | 455 | 455 | 455 |
| | No. 1C | 435 | 435 | 435 | 435 | 435 | 435 | 435 | 435 |
| | No. 2A | 375 | 375 | 375 | 375 | 375 | 375 | 375 | 375 |
| Black Walnut steamed | FAS | 1470 | 1565 | 1640 | 1705 | 1745 | 1860 | 1885 | 1915 |
| | No. 1C | 785 | 785 | 805 | 845 | 860 | 900 | 930 | 950 |
| | No. 2A | 325 | 380 | 400 | 420 | 425 | 480 | 505 | 520 |

**Table 2. Prices paid for delivered sawlogs by Indiana sawmills, May 2003 and May 2004.**

| Species/ Grade | 2004 Range | No. Respon. | | Mean (s.e.)[1] | | Median | | Change (%) | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2003 | 2004 | 2003 | 2004 | 2003 | 2004 | Mean | Median |
| White Ash | ($/MBF) | | | ($/MBF) | | ($MBF) | | | |
| Prime | 350-800 | 33 | 25 | 512 (16.54) | 508 (20.49) | 500 | 500 | -0.8 | 0.0 |
| No. 1 | 250-550 | 37 | 28 | 386 (13.01) | 394 (14.91) | 350 | 400 | 2.1 | 14.3 |
| No. 2 | 200-450 | 37 | 27 | 273 (9.37) | 295 (11.34) | 250 | 300 | 8.3 | 20.0 |
| No. 3 | 130-300 | 35 | 22 | 193 (6.79) | 217 (9.89) | 200 | 200 | 12.6 | 0.0 |
| Basswood | | | | | | | | | |
| Prime | 150-600 | 24 | 18 | 350 (27.78) | 357 (27.92) | 400 | 400 | 1.9 | 0.0 |
| No. 1 | 150-500 | 26 | 20 | 288 (17.70) | 301 (19.86) | 300 | 300 | 4.3 | 0.0 |
| No. 2 | 150-350 | 25 | 18 | 231 (10.38) | 241 (12.41) | 230 | 250 | 4.1 | 8.7 |
| No. 3 | 150-300 | 24 | 16 | 188 (8.15) | 212 (11.31) | 200 | 200 | 12.5 | 0.0 |
| Beech | | | | | | | | | |
| Prime | 150-350 | 22 | 19 | 250 (11.76) | 238 (12.66) | 250 | 235 | -4.9 | -6.0 |
| No. 1 | 150-300 | 21 | 17 | 236 (7.12) | 226 (10.40) | 250 | 210 | -4.4 | -16.0 |
| No. 2 | 150-285 | 22 | 15 | 212 (9.03) | 214 (9.47) | 200 | 200 | 1.1 | 0.0 |
| No. 3 | 150-285 | 25 | 14 | 203 (7.28) | 215 (10.38) | 200 | 200 | 5.7 | 0.0 |
| Cottonwood | | | | | | | | | |
| Prime | 130-200 | 15 | 9 | 178 (9.82) | 166 (8.99) | 160 | 150 | -7.0 | -6.3 |
| No. 1 | 130-200 | 12 | 8 | 172 (8.15) | 166 (10.17) | 170 | 150 | -3.3 | -11.8 |
| No. 2 | 130-200 | 12 | 8 | 168 (7.70) | 166 (10.17) | 160 | 150 | -1.0 | -6.3 |
| No. 3 | 130-200 | 19 | 8 | 173 (8.20) | 166 (10.17) | 160 | 150 | -3.9 | -6.3 |
| Cherry | | | | | | | | | |
| Prime | 1000-2000 | 32 | 21 | 1355 (57.52) | 1364 (59.68) | 1400 | 1475 | 0.7 | 5.4 |
| No. 1 | 700-1500 | 33 | 24 | 985 (47.35) | 1061 (44.17) | 1000 | 1000 | 7.7 | 0.0 |
| No. 2 | 180-950 | 33 | 23 | 592 (31.99) | 632 (42.54) | 550 | 600 | 6.7 | 9.1 |
| No. 3 | 150-600 | 30 | 21 | 260 (13.92) | 296 (24.93) | 245 | 293 | 14.0 | 19.4 |
| Elm | | | | | | | | | |
| Prime | 180-300 | 17 | 12 | 225 (13.56) | 238 (12.15) | 200 | 245 | 5.7 | 22.5 |
| No. 1 | 180-300 | 14 | 11 | 220 (8.64) | 232 (11.78) | 200 | 240 | 5.6 | 20.0 |
| No. 2 | 180-285 | 14 | 10 | 201 (5.29) | 220 (11.89) | 200 | 200 | 9.2 | 0.0 |
| No. 3 | 150-285 | 17 | 11 | 200 (7.15) | 219 (13.07) | 200 | 200 | 9.3 | 0.0 |
| S. Hickory | | | | | | | | | |
| Prime | 130-550 | 29 | 20 | 410 (18.26) | 388 (22.54) | 400 | 400 | -5.4 | 0.0 |
| No. 1 | 125-500 | 30 | 23 | 325 (13.03) | 338 (19.01) | 325 | 313 | 4.1 | -3.8 |
| No. 2 | 125-370 | 30 | 22 | 249 (7.91) | 255 (13.31) | 250 | 250 | 2.6 | 0.0 |
| No. 3 | 100-285 | 31 | 20 | 195 (6.06) | 208 (9.58) | 200 | 200 | 6.7 | 0.0 |

[1] Standard error of the mean is given in parentheses beside the mean.

**Table 2. (Continued)**

| Species/ Grade | 2004 Range | No. Respon. | | Mean (s.e.)[1] | | Median | | Change (%) | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2003 | 2004 | 2003 | 2004 | 2003 | 2004 | Mean | Median |
| Prime | 600-2000 | 34 | 24 | 876 (24.36) | 887 (58.66) | 900 | 800 | 1.2 | -11.1 |
| No. 1 | 300-1200 | 36 | 26 | 646 (23.94) | 657 (36.42) | 625 | 600 | 1.7 | -4.0 |
| No. 2 | 250-650 | 35 | 25 | 395 (18.56) | 432 (25.97) | 400 | 400 | 9.4 | 0.0 |
| No. 3 | 150-400 | 35 | 24 | 216 (8.79) | 245 (13.39) | 200 | 250 | 13.5 | 25.0 |
| **Soft Maple** | | | | | | | | | |
| Prime | 150-600 | 32 | 20 | 428 (23.11) | 394 (28.69) | 400 | 400 | -7.9 | 0.0 |
| No. 1 | 150-500 | 33 | 25 | 340 (17.39) | 348 (19.95) | 340 | 350 | 2.2 | 2.9 |
| No. 2 | 130-400 | 32 | 23 | 255 (7.70) | 265 (12.96) | 250 | 295 | 4.0 | 18.0 |
| No. 3 | 100-385 | 34 | 18 | 197 (8.00) | 208 (15.40) | 200 | 200 | 5.8 | 0.0 |
| **White Oak** | ($/MBF) | | | ($/MBF) | | ($MBF) | | | |
| Prime | 400-1050 | 35 | 23 | 677 (20.57) | 677 (33.54) | 700 | 665 | -0.1 | -5.0 |
| No. 1 | 300-700 | 36 | 26 | 482 (15.82) | 511 (21.88) | 500 | 500 | 6.1 | 0.0 |
| No. 2 | 200-500 | 36 | 26 | 320 (11.57) | 360 (15.67) | 300 | 360 | 12.4 | 20.0 |
| No. 3 | 100-350 | 34 | 23 | 206(7.90) | 244 (13.87) | 200 | 235 | 18.5 | 17.5 |
| **Red Oak** | | | | | | | | | |
| Prime | 550-1100 | 37 | 25 | 856 (16.80) | 831 (25.50) | 835 | 800 | -2.9 | -4.2 |
| No. 1 | 450-930 | 37 | 26 | 649 (16.39) | 681 (21.02) | 650 | 700 | 5.0 | 7.7 |
| No. 2 | 200-650 | 38 | 26 | 441 (17.49) | 450 (20.24) | 400 | 450 | 2.1 | 12.5 |
| No. 3 | 150-400 | 36 | 25 | 236 (9.8) | 265 (13.11) | 240 | 278 | 12.3 | 15.6 |
| **Black Oak** | | | | | | | | | |
| Prime | 400-1100 | 31 | 23 | 759 (23.96) | 743 (34.19) | 750 | 750 | -2.0 | 0.0 |
| No. 1 | 300-900 | 32 | 25 | 544 (20.91) | 595 (27.14) | 500 | 600 | 9.4 | 20.0 |
| No. 2 | 200-650 | 35 | 26 | 381 (19.73) | 393 (21.04) | 350 | 400 | 3.2 | 14.3 |
| No. 3 | 100-350 | 30 | 23 | 217 (9.10) | 248 (13.92) | 200 | 240 | 14.4 | 20.0 |
| **Tulip Poplar** | | | | | | | | | |
| Prime | 300-550 | 32 | 25 | 436 (11.05) | 407 (14.24) | 450 | 400 | -6.7 | -11.1 |
| No. 1 | 200-450 | 34 | 26 | 334 (8.61) | 320 (12.17) | 300 | 300 | -4.3 | 0.0 |
| No. 2 | 200-350 | 32 | 23 | 255 (8.61) | 245 (8.75) | 250 | 250 | -4.0 | 0.0 |
| No. 3 | 100-300 | 32 | 20 | 194 (7.40) | 198 (11.67) | 200 | 200 | 1.8 | 0.0 |
| **Sycamore** | | | | | | | | | |
| Prime | 160-350 | 22 | 18 | 245 (12.86) | 247 (13.28) | 245 | 250 | 0.8 | 2.0 |
| No. 1 | 180-350 | 21 | 14 | 228 (10.17) | 237 (13.09) | 220 | 225 | 3.9 | 2.3 |
| No. 2 | 150-285 | 20 | 12 | 207 (8.60) | 212 (11.44) | 200 | 200 | 2.5 | 0.0 |
| No. 3 | 150-285 | 27 | 13 | 198 (8.52) | 216 (11.15) | 200 | 200 | 9.0 | 0.0 |
| **Sweetgum** | | | | | | | | | |
| Prime | 150-450 | 20 | 13 | 207 (11.06) | 226 (21.65) | 200 | 200 | 9.3 | 0.0 |
| No. 1 | 150-300 | 19 | 11 | 205 (8.73) | 212 (12.20) | 200 | 200 | 3.3 | 0.0 |
| No. 2 | 150-280 | 19 | 10 | 202 (8.76) | 201 (10.16) | 200 | 200 | -0.5 | 0.0 |
| No. 3 | 150-280 | 23 | 11 | 194 (8.66) | 206 (10.64) | 200 | 200 | 6.4 | 0.0 |
| **Black Walnut** | | | | | | | | | |
| Prime | 800-2000 | 31 | 22 | 1174 (41.27) | 1209 (57.98) | 1200 | 1200 | 3.0 | 0.0 |
| No. 1 | 600-1500 | 32 | 24 | 900 (30.39) | 948 (40.32) | 975 | 1000 | 5.4 | 2.6 |
| No. 2 | 350-920 | 32 | 23 | 614 (31.43) | 605 (33.76) | 600 | 600 | -1.4 | 0.0 |
| No. 3 | 150-550 | 28 | 19 | 272 (16.43) | 316 (29.31) | 265 | 280 | 16.3 | 5.7 |
| **Softwood** | | | | | | | | | |
| Pine | 175-300 | 5 | 5 | 218 | 221 (23.79) | 200 | 200 | 1.4 | 0.0 |
| Red cedar | 250-450 | 4 | 6 | 311 | 358 (33.76) | 300 | 375 | 15.0 | 25.0 |

[1] *Standard error of the mean is given in parentheses beside the mean.*

**Table 3. Prices paid for delivered veneer logs by Indiana veneer mills, May 2003 and May 2004.**

| Species/ Grade/Log Dia. | 2004 Range | No. Respon. | | Mean (s.e.)[1] | | Median | | Change (%) | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2003 | 2004 | 2003 | 2004 | 2003 | 2004 | Mean | Median |
| **Black Walnut ($/MBF)** | | | | ($/MBF) | | ($/MBF) | | | |
| **Prime** | | | | | | | | | |
| 12-13 | 1200-3850 | 10 | 16 | 2150 (130.17) | 2050 (168.76) | 2000 | 2000 | -4.7 | 0.0 |
| 14-15 | 1750-5070 | 13 | 17 | 2746 (234.14) | 2669 (190.54) | 3000 | 2675 | -2.8 | -10.8 |
| 16-17 | 2000-6350 | 14 | 17 | 3589 (305.18) | 3621 (259.49) | 3625 | 3750 | 0.9 | 3.4 |
| 18-20 | 2000-8000 | 14 | 15 | 4521 (324.66) | 4777 (440.37) | 4500 | 4500 | 5.7 | 0.0 |
| 21-23 | 2000-8000 | 12 | 12 | 5208 (428.43) | 5408 (510.56) | 5500 | 6000 | 3.8 | 9.1 |
| 24-28 | 4000-12000 | 10 | 9 | 5550 (450.00) | 6722 (821.21) | 6000 | 6500 | 21.1 | 8.3 |
| *28 | 4000-12000 | 7 | 8 | 5429 (493.15) | 7250 (920.99) | 6000 | 8000 | 33.5 | 33.3 |
| **Select** | | | | | | | | | |
| 12-13 | 1000-2000 | 5 | 9 | 1560 (280.36) | 1367 (136.42) | 1500 | 1300 | -12.4 | -13.3 |
| 14-15 | 1000-3500 | 3 | 10 | 1333 (166.67) | 1960 (248.19) | 1500 | 2000 | 47.0 | 33.3 |
| 16-17 | 1100-4000 | 4 | 10 | 2700 (700.00) | 2610 (280.65) | 2000 | 2500 | -3.3 | 25.0 |
| 18-20 | 1100-5000 | 4 | 10 | 2750 (684.96) | 3310 (335.81) | 2100 | 3500 | 20.4 | 66.7 |
| 21-23 | 1100-6000 | 4 | 8 | 3175 (804.54) | 3638 (497.47) | 2600 | 4000 | 14.6 | 53.8 |
| 24-28 | 1100-8000 | 3 | 7 | 2500 (288.68) | 4300 (798.51) | 2500 | 4000 | 72.0 | 60.0 |
| *28 | 1100-8000 | 3 | 6 | 2833 (166.67) | 4683 (1010.19) | 3000 | 4000 | 65.3 | 33.3 |
| **White Oak** | | | | | | | | | |
| **Prime** | | | | | | | | | |
| 13-14 | 600-1700 | 9 | 11 | 1361 (101.99) | 1277 (105.18) | 1500 | 1425 | -6.2 | -5.0 |
| 15-17 | 800-3000 | 13 | 16 | 1535 (142.03) | 1628 (145.7) | 1500 | 1600 | 6.1 | 6.7 |
| 18-20 | 1200-3250 | 15 | 15 | 1973 (175.72) | 2153 (177.51) | 2000 | 2250 | 9.1 | 12.5 |
| 21-23 | 1500-4500 | 11 | 12 | 2277 (234.27) | 2567 (233.33) | 2000 | 2500 | 12.7 | 25.0 |
| 24-28 | 1500-4500 | 11 | 10 | 2491 (276.82) | 2940 (318.40) | 2500 | 2500 | 18.0 | 0.0 |
| *28 | 1500-5000 | 7 | 8 | 2171 (306.06) | 3000 (400.89) | 2000 | 2500 | 38.2 | 25.5 |
| **Select** | | | | | | | | | |
| 13-14 | 500-1250 | 2 | 7 | 575 (225.00) | 971 (103.43) | 575 | 925 | 68.9 | 60.9 |
| 15-17 | 600-1500 | 1 | 9 | | 1072 (99.69) | | 1000 | | |
| 18-20 | 1000-2000 | 1 | 9 | | 1306 (126.50) | | 1100 | | |
| 21-23 | 1000-2500 | 1 | 6 | | 1633 (202.76) | | 1500 | | |
| 24-28 | 1000-3500 | 1 | 6 | | 2083 (351.58) | | 2000 | | |
| *28 | 1000-3500 | 1 | 6 | | 2250 (381.88) | | 2000 | | |
| **Red Oak** | | | | | | | | | |
| **Prime** | | | | | | | | | |
| 16-17 | 800-1830 | 13 | 15 | 1320 (74.74) | 1342 (85.20) | 1500 | 1350 | 1.7 | -10.0 |
| 18-20 | 1000-1830 | 13 | 14 | 1376 (73.16) | 1402 (79.31) | 1500 | 1400 | 1.8 | -6.7 |
| 21-23 | 1000-2000 | 11 | 13 | 1447 (94.25) | 1487 (86.11) | 1500 | 1500 | 2.8 | 0.0 |
| 24-28 | 1000-2000 | 9 | 11 | 1511 (103.34) | 1594 (115.30) | 1600 | 1600 | 5.5 | 0.0 |
| *28 | 1000-2000 | 6 | 7 | 1417 (140.04) | 1629 (147.50) | 1500 | 1700 | 14.9 | 13.3 |
| **Select** | | | | | | | | | |
| 16-17 | 800-1200 | 1 | 6 | | 1000 (51.46) | | 1000 | | |
| 18-20 | 800-1500 | 1 | 6 | | 1117 (110.81) | | 1000 | | |
| 21-23 | 1000-1600 | 1 | 6 | | 1200 (126.49) | | 1000 | | |
| 24-28 | 1000-1600 | 1 | 6 | | 1283 (127.58) | | 1000 | | |
| *28 | 1000-1600 | 1 | 4 | | 1425 (143.61) | | 1500 | | |

## Table 3. (Continued)

| Species/ Grade/Log Dia. Hard Maple | 2004 Range ($/MBF) | No. Respon. 2003 | No. Respon. 2004 | Mean (s.e.)[1] 2003 ($/MBF) | Mean (s.e.)[1] 2004 | Median 2003 ($/MBF) | Median 2004 | Change (%) Mean | Change (%) Median |
|---|---|---|---|---|---|---|---|---|---|
| **Prime** | | | | | | | | | |
| 16-20 | 1250-4500 | 11 | 16 | 2782 (266.91) | 2575 (209.41) | 2500 | 3000 | -7.4 | 20.0 |
| *20 | 1250-5500 | 8 | 12 | 3000 (340.69) | 3113 (305.76) | 2750 | 3000 | 3.8 | 9.1 |
| **Select** | | | | | | | | | |
| 16-20 | 1000-3000 | 4 | 9 | 1563 (413.00) | 1778 (188.40) | 1500 | 1750 | 13.7 | 16.7 |
| *20 | 1500-3500 | 3 | 7 | 1583 (506.90) | 2357 (282.72) | 1500 | 2250 | 48.9 | 50.0 |
| **Prime** | | | | | | | | | |
| 16-20 | 500-700 | 6 | 5 | 567 (65.40) | 600 (41.83) | 575 | 650 | 5.8 | 13.0 |
| *20 | 550-750 | 6 | 3 | 583 (58.69) | 650 (57.74) | 575 | 650 | 11.5 | 13.0 |
| **Select** | | | | | | | | | |
| 16-20 | | 1 | 1 | | | | | | |
| *20 | | 1 | 1 | | | | | | |

[1] *Standard error of the mean is given in parentheses beside the mean.*

## Custom Costs

The average cost reported for custom sawing was $243 per MBF in 2004, down $8 from 2003 (Table 4). The mills reporting are primarily small "local" mills, usually portable. We continue to report custom sawing costs on a per MBF basis. Professor Cassens, however, reports that many of these operators charge by the hour, or by the number of individual boards produced, not board feet. Average logging cost was $131 per MBF, down $24 per MBF from 2003. Note that only four mills reported logging cost. The reported cost of hauling more than doubled according to the three mills reporting. The calculated cost per MBF per mile increased from $0.80 to $2.00. The reported average logging cost of $131 per MBF and a hauling cost of $100 assuming 50 mile haul distance means that the stumpage value of most of the low values species is negative. This is why it is difficult to find buyers for low value species, even if the timber is of good quality. There is little if any price differential among log grades for gum, sycamore, elm, cottonwood, and beech.

## Miscellaneous Products

The average price paid for logs converted to pallet lumber in specialized mills (Table 5) was up $12 on a MBF basis to $211, and unchanged at $29 on a tonnage basis. Pulp chip prices were down, while pulpwood was up $2. Sawdust prices were down slightly, while bark prices were mixed. The use of bark for landscaping mulch continues to increase with composting operators located throughout the state.

## Table 4. Custom costs reported by Indiana mills, May 2003 and May 2004

| | No. Responses | 2004 Range | Mean 2003 | Mean 2004 | Median 2003 | Median 2004 |
|---|---|---|---|---|---|---|
| Sawing ($/MBF) | 22 | 120-500 | 251 | 243 | 225 | 225 |
| Logging ($/MBF) | 4 | 80-150 | 155 | 131 | 155 | 145 |
| Hauling ($/MBF) | 3 | 50-180 | 40 | 93 | 40 | 115 |
| Distance (Miles) | 7 | 30-275 | 50 | 114 | 50 | 75 |
| $/MBF/Mile | 3 | 0.33-6.0 | .80 | 2.00 | .80 | 3.50 |

**Table 5. Prices of miscellaneous products reported by Indiana mills, May 2003 and May 2004, fob the producing mill.**

| | No. | 2004 Range | Mean | | Median | |
|---|---|---|---|---|---|---|
| | | | 2003 | 2004 | 2003 | 2004 |
| Pallet logs, $/MBF | 21 | 160-290 | 199 | 211 | 200 | 200 |
| Pallet logs, $/ton | 4 | 25-32 | 29 | 29 | 29 | 30 |
| Pulpwood, $/ton | 2 | | 26 | 28 | 28 | 28 |
| Pulp Chips, $/ton | 17 | 3.5-28 | 18 | 17 | 19 | 18 |
| Sawdust, $/ton | 6 | 5-9 | 8 | 7 | 8 | 5.5 |
| Sawdust, $/cu.yd. | 12 | 1-13 | 4.2 | 3 | 3.00 | 2.25 |
| Bark, $/ton | 6 | 3.75-21 | 10.7 | 11 | 10.0 | 12.5 |
| Bark, $/cu.yd. | 24 | 2-16.5 | 8.68 | 7 | 6 | 5 |
| Mixed, $/ton | 0 | | 15. | | 15 | |
| Mixed, $/cu. Yd. | 0 | | 8.8 | | 7.5 | |

## Indiana Timber Price Index

The delivered log prices collected in the Indiana Forest Products Price Survey are used to calculate the delivered log value of typical stands of timber. This provides trend-line information that can be used to monitor long-term price trends for timber. The species distribution used to calculate the weighted averages are presented in Table 6. The log quality weights used are presented in Table 7. These weights are based primarily on the 1967 Forest Survey of Indiana.

The nominal (not deflated) price (columns 3 and 6 of Table 8) are a weighted average of the delivered log prices reported in the price survey. The price indexes (columns 4 and 7) are the series of nominal prices divided by the price in 1957, the base year multiplied by 100. Thus, the index is the percentage of the 1957 price. For example, the average price in 2004 was 813.1 percent of the price in 1957. The real prices, columns 5 and 8 are the actual prices deflated by the producer price index for finished goods with 1982 as the base year (Table 8, column 2). The real price series represents the purchasing power of dollars based on a 1982 market basket of finished producer goods. It's this real price trend that is important to long-term investments like timber.

Note that each year the previous year's numbers are recalculated using the producer price index for the entire year. The price index used for the current year is the last one reported for the month when the analysis is conducted, which is usually August.

## Average Stand

The nominal weighted average price increased from $433.7 per MBF in 2003 to $452.2 in 2004 for the average stand (Table 10, column 3). Remember, this series is based on delivered log prices, not stumpage prices. This is a 4.3 percent increase (Figure 2). The deflated or real price increased from $302.6 per MBF to $304.3, a 0.6 percent increase (Figure 2). Because this trend is based on 48 years of data, this increase was not enough to make change the real price increase shown by the trend line for the deflated price series.

The new equation for the trend line for the 1957 to 2004 period is as follows:

$$\text{Avg. Stand Real Price} = 165.03 + 2.69 \times T,$$

$$\text{where,}$$

$$T = 1 \text{ for 1957, 2 for 1958, etc.}$$

A linear trend line should be used if it's necessary to project timber prices, as discussed in greater detail in Purdue University Station Bulletin No. 148. Although it's easier to simply plug the average annual compound rate of increase value into the compound interest formula (exponential rate of increase), projections much over 15 years give unrealistic results. Real prices can't increase exponentially for long periods of time. The market adjustments by producing using more substitutes for "real wood" and consumers being willing to accept substitutes.

The real price increase remains at 1.20 percent per annum for the average stand from 1957 to 2004. Thus, the purchasing power of hardwood timber assets exceeds the rate of inflation by over 1 percent.

## Quality Stand

The nominal weighted average price for the quality stand increased from $567.9 in 2003 to $625.1 in 2004 (Table 8, column 6, and Figure 3). This is a 10.1 percent increase.

The average real price series for the quality stand increased from $396.3 per MBF in 2003 to $420.7 in 2004, a 6.2 percent increase.

The average annual compound rate of increase for the trend line held steady at 1.50 percent per annum (Figure 3). The equation for the trend line is,

$$\text{Qual. Stand Real Price} = 196.58 + 4.41 \times T$$

Thus, the contribution of the real price increase to the total financial return on a quality stand continues to be higher than for the average stand of timber in Indiana. The other components of return are volumetric growth of at least 2 percent, and increases in unit values due to improved log quality as crop trees become larger. This assumes the stand is managed to favor crop trees with the potential for value increases.

Forty-eight years of real price increases haven't been sufficient to motivate more than 10 percent of landowners to seriously manage their timber. Maybe it's time for the forestry community to realistically consider what it would take for Indiana's forestland to achieve its potential economic and environmental contribution. An obvious answer is for serious investors to supply the capital needed to bring investment grade timber under management. Institutional capital is flowing into hardwood timber in the northeast where large tracts of well-stocked stands are available. Timber capital won't come to the central states until a way is found to accumulate significant acreages under common ownerships, even if all the parcels aren't contiguous.



**Table 6. Species composition of the Indiana timber price index for an average and a quality stand.**

| Species | Average Stand | Quality Stand |
|---|---|---|
| **Veneer species:** | (%) | (%) |
| White oak | 13.4 | 21.0 |
| Red oak | 15.1 | 20.0 |
| Hard maple | 9.6 | 14.0 |
| Yellow poplar | 7.5 | 9.0 |
| Black walnut | 5.4 | 5.0 |
| **Non-veneer species:** | | |
| White ash | 5.8 | 3.1 |
| Basswood | 1.5 | 3.1 |
| Beech | 5.6 | 3.1 |
| Cottonwood | 6.2 | 3.1 |
| Black cherry | 0.8 | 3.1 |
| Elm | 1.2 | 3.1 |
| Hickory | 4.7 | 3.1 |
| Soft maple | 6.7 | 3.1 |
| Black oak | 11.4 | 3.1 |
| Sycamore | 5.1 | 3.1 |

**Table 7. Log quality composition of the Indiana timber price index for an average and a quality stand.**

| Log Grade | Average Stand | | Quality Stand | |
|---|---|---|---|---|
| | Veneer Species | Non-veneer Species | Veneer Species | Non-veneer Species |
| **Veneer logs** | (%) | (%) | (%) | (%) |
| Prime | 1.0 | 0.0 | 7.0 | 0.0 |
| Select | 3.0 | 0.0 | 13.0 | 0.0 |
| **Sawlogs** | | | | |
| Prime | 20.0 | 24.0 | 19.0 | 24.0 |
| No. 1 | 26.0 | 26.0 | 21.0 | 26.0 |
| No. 2 | 38.0 | 38.0 | 33.0 | 38.0 |
| No. 3 | 12.0 | 12.0 | 7.0 | 12.0 |

**Table 8.** Weighted average actual price, price index, and deflated price for an average and quality stand of timber in Indiana, 1970 to 2004.

| Year | Producer Price Index | Average Stand | | | Quality Stand | | |
|---|---|---|---|---|---|---|---|
| | | Nominal Price | Index Number | Real Price[1] | Nominal Price | Index Number | Real Price[1] |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | | ($/MBF) | | ($/MBF) | ($/MBF) | | ($/MBF) |
| 1970 | 39.3 | 83.1 | 149.4 | 211.5 | 103.9 | 156.0 | 264.3 |
| 1971 | 40.5 | 85.9 | 154.4 | 212.0 | 107.4 | 161.3 | 265.2 |
| 1972 | 41.8 | 90.2 | 162.2 | 215.8 | 112.2 | 168.5 | 268.4 |
| 1973 | 45.6 | 112.6 | 202.5 | 247.0 | 139.0 | 208.8 | 304.9 |
| 1974 | 52.6 | 135.3 | 243.3 | 257.3 | 170.2 | 255.7 | 323.7 |
| 1975 | 58.2 | 125.1 | 225.0 | 215.0 | 166.3 | 249.8 | 285.8 |
| 1976 | 60.8 | 133.6 | 240.2 | 219.7 | 172.7 | 259.4 | 284.1 |
| 1977 | 64.7 | 143.6 | 258.1 | 221.9 | 188.0 | 282.4 | 290.6 |
| 1978 | 69.8 | 181.7 | 326.1 | 260.3 | 234.9 | 352.9 | 336.6 |
| 1979 | 77.6 | 201.5 | 362.3 | 259.6 | 260.7 | 391.6 | 336.0 |
| 1980 | 88.0 | 207.8 | 373.6 | 236.1 | 309.3 | 464.5 | 351.5 |
| 1981 | 96.1 | 206.7 | 371.7 | 215.1 | 284.9 | 427.8 | 296.4 |
| 1982 | 100.0 | 196.8 | 353.8 | 196.8 | 277.3 | 416.5 | 277.3 |
| 1983 | 101.6 | 207.6 | 373.3 | 204.3 | 294.4 | 442.2 | 289.8 |
| 1984 | 103.7 | 235.8 | 424.0 | 227.4 | 322.7 | 484.6 | 311.2 |
| 1985 | 104.7 | 210.5 | 378.5 | 201.0 | 274.0 | 411.5 | 261.7 |
| 1986 | 103.2 | 223.6 | 402.0 | 216.6 | 312.2 | 468.9 | 302.5 |
| 1987 | 105.4 | 257.3 | 462.7 | 244.2 | 334.6 | 502.6 | 317.5 |
| 1988 | 108.0 | 262.1 | 471.3 | 242.7 | 345.9 | 519.6 | 320.3 |
| 1989 | 113.6 | 285.9 | 514.0 | 251.6 | 404.9 | 608.1 | 356.4 |
| 1990 | 119.2 | 288.3 | 518.3 | 241.8 | 397.9 | 597.6 | 333.8 |
| 1991 | 121.7 | 268.1 | 482.1 | 220.3 | 362.9 | 545.1 | 298.2 |
| 1992 | 123.2 | 293.4 | 527.6 | 238.2 | 417.6 | 627.1 | 338.9 |
| 1993 | 124.7 | 355.2 | 638.8 | 284.9 | 491.2 | 737.8 | 393.9 |
| 1994 | 125.5 | 364.8 | 655.9 | 290.6 | 507.4 | 762.1 | 404.3 |
| 1995 | 127.9 | 354.0 | 636.4 | 276.7 | 451.6 | 678.3 | 353.1 |
| 1996 | 131.3 | 337.7 | 607.1 | 257.2 | 495.4 | 744.0 | 377.3 |
| 1997 | 131.8 | 357.5 | 642.7 | 271.2 | 448.3 | 673.3 | 340.2 |
| 1998 | 130.7 | 391.1 | 703.3 | 299.3 | 501.7 | 753.5 | 383.9 |
| 1999 | 133.0 | 389.2 | 699.8 | 292.6 | 526.3 | 790.5 | 395.7 |
| 2000 | 138.0 | 426.5 | 766.9 | 309.1 | 617.6 | 927.5 | 447.5 |
| 2001 | 140.7 | 389.7 | 700.8 | 277.0 | 538.5 | 808.8 | 382.7 |
| 2002 | 138.9 | 410.7 | 738.4 | 295.7 | 561.2 | 842.9 | 404.0 |
| 2003 | 143.3 | 433.7 | 779.7 | 302.6 | 567.9 | 852.9 | 396.3 |
| 2004 | 148.6 | 452.2 | 813.1 | 304.3 | 625.1 | 938.9 | 420.7 |

[1] *Actual price deflated by Producer Price Index for Finished Goods, U.S. Dept. Commerce, 1982 base year.*

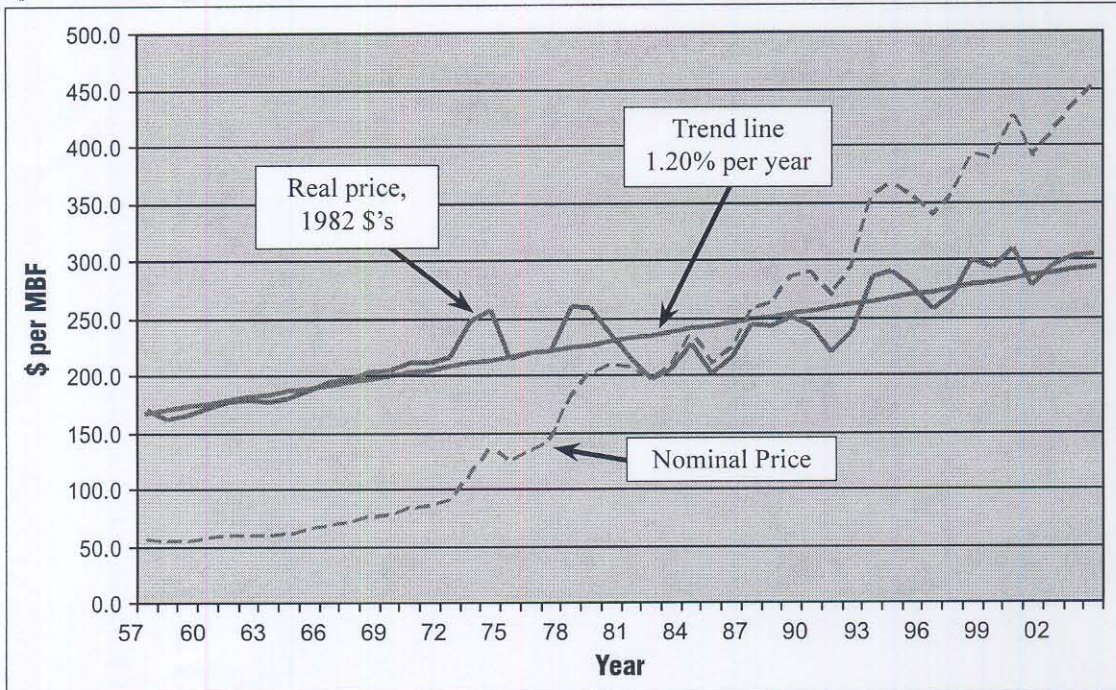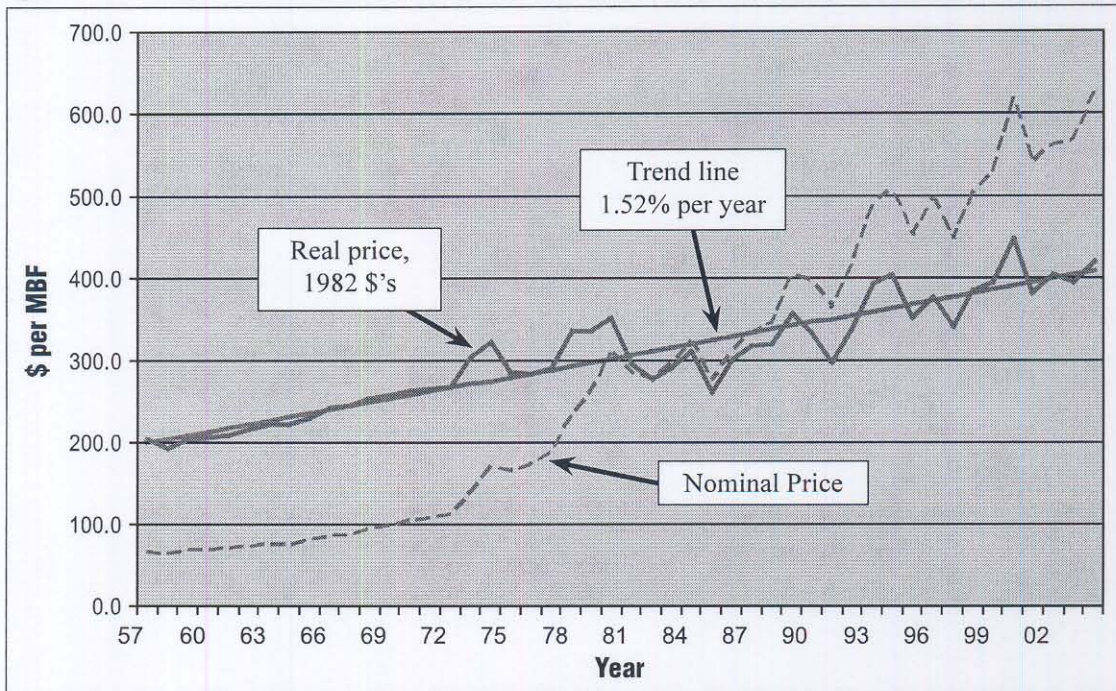**Figure 2. Average stand of timber, nominal, deflated, and trend line price series, 1957 to 2004.**



**Figure 3. Quality stand of timber, nominal, deflated, and trend line price series 1957 to 2004.**

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