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U.S. Forest Products Annual Market Review and Prospects, 2007–2011

James L. Howard
David B. McKeever

Abstract

This paper describes the current state of the U.S. economy and provides general and statistical information on forest products markets in terms of production, trade, consumption, and prices. Market developments are described for sawn softwood, sawn hardwood, softwood log trade, wood-based panels, paper and paperboard, fuelwood, forest product prices, and housing starts. Policy initiatives that can affect domestic markets and international trade in wood products are also discussed in some detail. Data are provided through the end of the year 2009 with estimates for 2010 and forecasts for 2011.

Keywords: forest products, prices, production, trade

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Contents

U.S. Forest Products Annual Market Review and Prospects, 2007–2011

James L. Howard, Economist
David B. McKeever, Research Forester
Forest Products Laboratory, Madison, WI

Executive Summary

Somewhat unexpectedly, economic activity in the United States exhibited continued weakness during the third quarter of 2010, confirmed by the decline in the annual rate of real gross domestic product (GDP) to 2.3%. Economic activity during the fourth quarter of 2010 was projected to decline to an annual rate of 2.2%. The rate of growth in the U.S. economy will likely expand at a higher rate in the first half of 2011 than predicted earlier in the year by the 43 forecasters surveyed by the Federal Reserve Bank (FRB) of Philadelphia (2010). The higher rate of growth in the U.S. economy predicted for 2011 results from the Obama administration tax deal that would extend current income tax rates for all Americans as well as a benefits program for the long-term unemployed. Growth in U.S. real output looks weaker and inflation lower over the near term compared with previous estimates. Forecasters had expected a slight rise in the 2010 unemployment rate, measured on an annual-average basis. Unemployment was expected to rise from 9.5% in the second quarter of 2010 to 9.6% in the third quarter of 2010, for an annual average unemployment rate of 9.6% for 2010. The unemployment rate was 9.0% at the end of 2010 because many unemployed people simply stopped looking for work. The forecasters see prices rising in the third quarter of 2010 at a slightly lower rate than previously expected, and then declining in the fourth quarter of 2010, staying level into 2011. When increased stability returned to U.S. credit markets because of the Federal Government economic rescue plan passed in early October 2008 and the American Recovery and Reinvestment Act of 2009 passed in February 2009, the expectation for returning strength in the housing sector had not been realized. The Mortgage Bankers Association reported a 37% drop in applications for home loans during the third quarter of 2010 compared with the same time period in 2009. Low long-term interest rates have led to a new surge in mortgage refinancing; therefore, buyers are not purchasing new homes. In July, existing home sales fell to their lowest level on record. Without a housing sector recovery, some argue, the economy can't fully recover.

The decline in the housing sector had a negative effect on softwood lumber consumption until 2010. According to the Western Wood Products Association (WWPA 2010), during the first 10 months of 2010, softwood lumber consumption increased 2.8% from the same period in 2009, and shipments of softwood lumber from western mills decreased 4.9% during the first 10 months of 2010 compared with the same period in 2009. In 1999, the deflated composite price index for softwood lumber reached an all-time high (at a level more than 50% higher than that of the base year, 1982), followed immediately by a sustained decline that continued throughout 2000 and into 2010.

Structural panel production in 2009 was 21.7% below that of 2008, whereas consumption was 21% below 2008 consumption (APA 2010). Structural panel consumption at the end of the second quarter of 2010 was 8.6 million cubic meters, or 7.4% above the second quarter of 2009. Overall, structural panel consumption is expected to drop to 18.3 million cubic meters in 2010 before beginning to increase in 2011 (Adair 2009). Structural panel market shares were negatively affected by the current economic downturn.

Roundwood production for pulp and wood-based panel mills was 126 million cubic meters in 2009, down slightly from 2008. As expected, roundwood pulpwood consumption continued to decrease during 2010. Pulpwood supplied from residue continued to decrease relative to roundwood. This is a result of declining residual production and competition for residuals for pellets and biomass and not out of preference on the part of pulp producers.

U.S. timber exports to China surged during the fourth quarter 2010, leading to high expectations for log exports in 2011. Mills in the Pacific Northwest such as Weyerhaeuser and Plum Creek Timber are benefiting most. China's demand for wood is being fueled by demand for nonresidential purposes.

The U.S. furniture industry, in retreat since 1999, continued declining in 2010 as low-cost furniture imports and the global economic recession continued to erode the domestic industry market share. Employment in the domestic furniture industry has fallen more than 50% since 1999.

General Economic and Major Market Trends

The U.S. economy grew at a slower rate during the third quarter of 2010 compared with the second quarter before rebounding slightly in the fourth quarter of 2010, and

further improvement is expected into 2011, according to 43 forecasters surveyed by the Federal Reserve Bank of Philadelphia (2010). The forecasters expect real gross domestic product (GDP) to grow at an annual rate of 2.4% in 2011. The increased pessimism about the labor market accompanies the outlook for weaker output growth. Measured on an annual-average basis, unemployment is expected to average 9.6% in the third and fourth quarters of 2010, with the fourth quarter revised higher, for an average of 9.7% this year. Forecasters expect unemployment to improve to 9.3% in 2011. This decline in unemployment equates to nonfarm payroll employment growing at a rate of 86,600 jobs per month during the fourth quarter and 114,000 jobs per month next quarter. On an annual-average basis, the forecasters expected jobs to decline 56,100 per month in 2010. During the Great Recession from 2007 to 2009, the impact on the job market was 8 million jobs lost in the worst economic downturn since the Great Depression of the 1930s. Almost every sector experienced job cuts—construction lost 2 million jobs, financial services lost 800,000 jobs, and the auto sector lost thousands of jobs. About 7 million adults were already looking for full-time employment before the recession hit in December 2007. The U.S. economy must create about 125,000 new jobs per month just to keep up with population growth and to prevent unemployment from rising. The strength of GDP growth will be the major determinant of when the U.S. economy reaches full employment. With strong GDP growth, full employment could be reached in 4 years. But if GDP growth is weak, reaching full employment could take 10 years.

Core inflation, as measured by the Price Index for personal consumption expenditures, is expected to average 1.1% in 2010 before rising to 1.5% in 2011. On an annual-average over annual-average basis, inflation in the core Consumer Price Index is projected to remain around 0.9% in 2010 before rising to 1.5% in 2011 (Federal Reserve Bank of Philadelphia 2010).

New housing construction showed improvement during the third quarter of 2010 when 546,000 units were started in July at a seasonally adjusted rate (NAHB 2010a). However, the increase was due totally to volatile multi-family starts, which jumped to 114,000 units, up 32.6% from June's depressed rate of 86,000. July's single-family starts fell 4.2% from 451,000 to 432,000, the lowest reading since 406,000 starts in May 2006. All four regions in the United States contributed to the volatility in the level of housing starts during the first half of 2010. The Northeast and Midwest regions after two months of decline saw starts rise by 6.3% and 8.8% respectively, while the South and West regions experienced declines of 5.8% and 14.7%. Single-family building permits in July slipped slightly from 421,000 in June to 416,000, a 1.2% decline. The increase in starts reported in the Northeast and Midwest was not followed up by permits, which fell by 8.2% and 8.1%, respectively. The South was flat with 215,000 single-family permits while the West rose 6.0% from a low in June. New single-family units completed fell to the lowest level on record dating back to 1968, falling 27.5% in July, from 676,000 to 490,000 units.

In 2009, the total value of all new construction in the United States was $908 billion, nearly 15% below the 2008 value of $1,068 billion (DOC 2010). Residential construction was $246 billion in 2009, well below the $350 billion of residential construction in 2008. Nonresidential construction was $347 billion in 2009, 15% below $409 billion in 2008. Public construction in 2009 accounted for nearly 35% of all construction. In 2010, the National Association of Home Builders forecast calls for the housing sector to improve slightly in the fourth quarter, but starts and sales overall for 2010 will still end well below 2009 levels.

With a large forest resource and high production and consumption of wood products, the United States continues to play an important role in world forest product markets. But for the past two or more years, the U.S. role on the world stage has diminished as a result of the contraction in the wood segment of America's economy, precipitated by the continued decline in residential construction and production of building materials. The United States is a world leader in the consumption of paper and paperboard (about 65 million metric tons in 2009), which is mostly supplied by domestic production and imports from Canada (AF&PA 2010). Domestic paper and paperboard production is about 8% above production for the first 7 months of 2010 compared with the same time period of a year ago. The U.S. solid wood industry manufactured about 57 million cubic meters of lumber and 17 million cubic meters of structural panel products in 2009. For the first 6 months of 2010, lumber production is 3.7% above 2009 production, and structural panel consumption is 7% above year-ago levels. The U.S. forest products industry's annual harvest was 346 million cubic meters in 2009, well below the 440 million cubic meters of harvest in 2007. Domestic roundwood timber harvest in 2010 that supports domestic consumption is expected to be below the 2009 harvest level and is expected to drop further in 2011.

Expenditures for residential repair and remodeling fell in 2009 to $143 billion, down 38% from the record high years of 2006 and 2007. In 2007, the U.S. Department of Commerce stopped collecting residential repair and remodeling data. Estimates for 2009 presented here are Forest Service estimates based on private residential construction expenditures (DOC 2009). The National Association of Home Builders Remodeling Market Index (RMI) declined to 40.7 in the second quarter from 43.8 in the first quarter of 2010. During this same period, new residential construction weakened dramatically and continued to do so into the third quarter 2010. Since 2000, expenditures for maintenance and repairs to all existing residential properties have averaged about 25% of total expenditures, with the remaining 75% for improvements. Given the unprecedented levels of home

Table 1—Selected U.S. economic indicators, 2007–2011

	Actual[a]			Estimate[b]	Forecast[c]
Indicator	2007	2008	2009	2010	2011
Gross Domestic Product (billion 2005 dollars)	13,254	13,312	14,119	14,662	15,286
New housing starts (million units)	1.342	0.9	0.555	0.62	0.76
Mobile home shipments (thousand units)	96	82	50	59	65
Total residential fixed investment (billion 2005 dollars)	585	451.1	346.6	346.2	374.1
Total nonresidential fixed investment (billion 2005 dollars)	1,544.3	1,569.7	1,290.8	1,362.6	1,477.5
Total industrial production (Index 2007 = 100)	100	96.7	87.7	92.5	96.5
Furniture and related products (Index 2002 = 100)	101.0	90.4	73.0	65.0	59.4
Paper products (Index 2002 = 100)	95.9	92.1	80.0	81.2	84.0

[a]Board of Governors of the Federal Reserve System 2010; Council of Economic Advisors 2010; NAHB 2010a; DOC 2010.
[b]U.S. Forest Service estimates based on 2009 actual data.
[c]NAHB 2010b and U.S. Forest Service estimates.

foreclosures in the United States in recent years, residential improvements and repairs may be an even bigger part of the economy than usual. Many foreclosed homes need significant repair and maintenance to become marketable. Expectations are for continued and growing investments in existing residential properties.

Three of the major indicators of demand for wood products—furniture and related products, paper products output, and total industrial production—were higher during the first 6 months of 2010 than in 2009. Total industrial output also fell from year-ago levels:

- Industrial production, an important demand determinant for pallet lumber, containerboard, and some grades of paper, increased 5% during the first 6 months of 2010 when compared with the annual level for 2009.
- Furniture and related products, a determinant of high-grade lumber production, increased by 14% in the first 6 months of 2010, improving on the decline of 2009.
- Paper products output, a determinant of pulpwood and wood residue use, as well as recycled fiber availability and use, increased during the first 6 months of 2010 compared with the 2009 average. The index (2007 = 100) of paper products output for the first 6 months of 2010 was 6% ahead of the 2009 average for the comparable time period.

In summary, the housing sector remained weak during the first three quarters of 2010, and this weakness continued into fourth quarter 2010. Starts in 2010 will probably fall below year-ago levels as a result of the expected continuation of the weakness in the housing sector, forecast to continue throughout 2011. With the slow rate of growth in GDP, most analysts predict that conditions favorable to the growth of timber markets won't occur until the second half of 2011. Selected U.S. economic indicators are shown in Table 1.

Timber Products Production, Trade, and Consumption

Statistics and Prospects

Prospects for wood and wood products are shown in Table 2. All volumes are reported in 1,000 cubic meters. Data for 2010 are preliminary estimates; data for 2011 are forecasts.

U.S. Wood Product Market Shares

U.S. solid wood products production and foreign trade data are collected annually by governmental agencies and industry associations. This information provides an overview of how robust the wood-using sectors of the U.S. economy are and how their performance has changed over time (Howard, unpublished data). But it does not provide detailed information specific to individual end-use markets needed to further evaluate changing patterns of consumption. End-use markets of interest include new single-family, multi-family, and mobile home construction, repair and remodeling of existing residential structures, low-rise nonresidential building and other types of nonresidential construction, furniture and other manufactured products production, and packaging and shipping. These end-use markets typically account for 80% to 90% of all solid wood products consumption. Market share estimates presented here are based on findings from limited public and private research reports that were related to more readily available, annual economic indicator data

Table 2—Prospects and statistics for wood and wood products, 2009–2011[a]

Sawn softwood	2009	2010	2011
Production	40,382	38,976	39,076
Imports	20,683	18,233	18,476
Exports	2,229	2,109	2,276
Consumption	58,836	55,100	55,276
Coniferous logs	2009	2010	2011
Production	95,031	94,344	92,987
Imports	1,498	1,444	1,409
Exports	6,564	6,476	6,399
Consumption	89,965	89,312	87,997
Sawn hardwood	2009	2010	2011
Production	16,522	15,466	15,980
Imports	530	530	590
Exports	1,892	1,722	1,906
Consumption	15,160	14,274	14,664
Hardwood logs	2009	2010	2011
Production	34,724	32,577	32,804
Imports	116	109	122
Exports	2,255	2,200	2,209
Consumption	32,585	30,486	30,717
Coniferous plywood	2009	2010	2011
Production	7,618	7,504	7,566
Imports	490	480	512
Exports	570	536	650
Consumption	7,538	7,448	7,428
Non-coniferous plywood	2009	2010	2011
Production	1,316	1,239	1,243
Imports	2,210	1,812	1,977
Exports	180	165	192
Consumption	3,346	2,886	3,028

Oriented strandboard (OSB)	2009	2010	2011
Production	8,494	8,304	8,506
Imports	2,413	2,397	2,500
Exports	133	109	127
Consumption	10,774	10,592	10,879
Particleboard	2009	2010	2011
Production	3,884	3,695	3,702
Imports	658	590	822
Exports	244	236	256
Consumption	4,298	4,049	4,268
Medium-density fiberboard (MDF)	2009	2010	2011
Production	2,958	2,807	2,962
Imports	839	800	835
Exports	355	320	349
Consumption	3,442	3,287	3,448
Insulation board	2009	2010	2011
Production	2,755	2,755	2,755
Imports	172	150	177
Exports	136	129	140
Consumption	2,791	2,776	2,792
Roundwood pulpwood	2009	2010	2011
Production	136,552	1,334,854	135,179
Imports	93	88	94
Exports	1,127	1,099	1,144
Consumption	135,518	1,333,843	134,129
Hardboard	2009	2010	2011
Production	657	602	643
Imports	433	420	440
Exports	293	280	300
Consumption	797	742	783

[a]All volumes are reported in 1,000 cubic meters. Figures for 2010 are U.S. Forest Service estimates, and figures for 2011 are U.S. Forest Service forecasts.

specific to each end-use market. Consumption was then balanced over all end uses, and market shares were developed. These estimates provide a consistent, reliable look at solid wood products markets in the United States (McKeever and Howard unpublished data).

Table 3 presents annual balanced wood products consumption by end use for sawn wood, structural panels, and nonstructural panels for the period 2005 through 2008, with preliminary estimates for 2009 and forecasts for 2010. Figure 1 shows market shares for all solid wood products combined for the same time period.

Sawn Softwood

Housing and other construction markets started off weaker in 2010 and that weakness continued into the third quarter 2010. The housing market is likely to finish the year at a much lower level than that recorded a year ago. The decline in the housing sector, as evidenced by its overall falling market share, continues to have a negative effect on softwood lumber consumption (Fig. 1, Table 3). According to the Western Wood Products Association (WWPA), during the first 6 months of 2010, softwood lumber consumption increased 3.1% from the same period last year, and shipments of softwood lumber from western mills also increased 12.7% during the first 6 months of 2010 compared with the same period in 2009 (WWPA 2010). Production decreased during this period in the South by 3.8%. Apparent consumption for the first 6 months of 2010 was 28 million cubic meters, 3.1% above the 27.2 million cubic meters for the first 6 months of 2009. As predicted, the U.S. housing construction industry declined over the first half of 2010. Timber production, therefore, could also continue to fall in 2010 after declining in 2009. (Softwood production through the first 6 months of 2010 was 20.9 million cubic meters,

Table 3—Wood product market shares in the United States, by end use, 2005–2011

	Residential construction						Nonresidential construction				Manufacturing					
	New housing				Repair & remodeling					Total construction				Packaging & shipping	Total, all end uses	
Year	New single-family (%)	New multi-family (%)	Manufactured housing (%)	Total (%)	(%)	Total (%)	Buildings (%)	Other (%)	Total (%)	(%)	Furniture (%)	Other mfg. (%)	Total (%)	(%)	(%)	Other (%)
Sawn softwood[a]																
2005	36	3	2	40	26	67	4	1	5	72	2	3	5	5	82	18
2006	32	3	2	37	29	66	5	1	6	72	2	3	5	6	83	17
2007	26	3	2	31	34	64	7	1	8	73	2	3	6	7	86	14
2008	20	4	1	25	34	59	10	1	11	70	3	4	7	9	86	14
2009	18	2	1	21	35	57	11	2	13	69	3	6	9	10	89	11
2010	20	2	1	23	35	59	9	2	10	69	3	5	8	10	87	13
2011	24	2	1	27	36	63	8	2	10	73	3	5	8	9	90	10
Sawn hardwood																
2005	9	1	0	10	8	18	4	7	11	29	14	10	24	33	86	14
2006	7	1	0	8	8	17	4	8	12	29	12	10	22	36	87	13
2007	6	1	0	7	8	14	4	9	13	28	12	6	17	40	84	16
2008	4	1	0	4	5	9	5	9	14	23	13	6	18	44	85	15
2009	3	0	0	4	3	6	6	7	14	20	15	5	20	52	92	8
2010	4	0	0	4	3	7	5	7	12	18	14	5	19	50	87	13
2011	4	0	0	5	3	7	5	6	11	18	13	5	18	48	84	16
Total sawnwood																
2005	31	2	2	35	23	59	4	2	6	65	4	4	8	10	82	18
2006	28	3	2	32	25	58	5	2	7	65	4	4	8	11	83	17
2007	22	3	1	26	29	55	7	2	9	64	4	4	8	13	85	15
2008	16	3	1	21	28	48	9	3	12	60	5	5	9	16	86	14
2009	15	1	1	18	28	46	10	3	13	59	6	6	11	19	89	11
2010	17	1	1	19	29	48	8	3	11	58	5	5	11	18	87	13
2011	20	2	1	22	29	51	7	3	10	61	5	5	10	17	89	11
Coniferous plywood																
2005	27	3	1	31	33	64	10	2	12	76	5	9	14	4	94	6
2006	20	2	1	23	38	61	13	2	14	75	4	11	15	5	95	5
2007	15	2	1	18	41	59	12	2	14	73	4	12	16	6	95	5
2008	12	3	1	15	39	55	11	2	13	68	5	16	22	7	96	4
2009	10	1	0	12	38	50	13	2	15	65	6	20	26	8	98	2
2010	11	1	0	13	38	51	10	2	12	63	6	19	24	7	95	5
2011	13	1	1	15	39	54	9	2	12	65	5	18	23	7	95	5
Oriented strandboard (OSB)																
2005	58	3	4	66	16	81	5	1	6	87	0	1	1	1	89	11
2006	53	3	3	60	17	77	6	1	7	84	0	0	1	1	86	14
2007	45	4	3	51	20	71	10	1	11	83	0	0	1	2	86	14
2008	35	4	3	43	21	64	16	2	17	81	0	1	1	3	85	15
2009	34	2	2	39	22	61	20	2	22	83	0	1	1	3	88	12
2010	37	2	2	42	23	64	16	2	18	82	0	1	1	3	86	14
2011	44	2	3	49	23	71	15	2	17	88	0	1	1	3	92	8
Total, structural panels																
2005	46	3	3	52	23	75	7	1	8	83	2	4	6	2	91	9
2006	41	3	2	46	25	71	9	1	10	81	2	4	6	3	89	11
2007	34	3	2	39	28	67	11	2	12	79	2	5	7	4	89	11
2008	26	4	2	32	28	60	14	2	16	76	2	7	9	4	89	11
2009	24	2	2	27	29	56	17	2	19	76	3	9	11	5	92	8
2010	26	2	2	30	29	59	13	2	15	74	3	8	11	5	90	10
2011	31	2	2	35	29	64	13	2	15	79	2	8	10	5	94	6
Nonstructural panels[b]																
2005	24	3	2	29	17	46	6	0	6	52	20	12	33	1	86	14
2006	23	3	2	28	18	46	7	0	8	53	19	14	33	1	87	13
2007	17	3	1	21	21	42	9	0	9	51	19	16	35	1	87	13
2008	12	3	1	16	19	34	12	0	12	46	21	19	41	1	88	12
2009	10	1	1	12	18	29	11	0	12	41	24	22	46	2	89	11
2010	11	1	1	13	18	30	9	0	9	40	22	21	43	1	84	16
2011	12	1	1	15	18	33	8	0	9	41	21	20	41	1	84	16

[a]Includes laminated veneer lumber.
[b]Includes particleboard, medium-density fiberboard, insulation board, hardboard, and non-coniferous plywood.

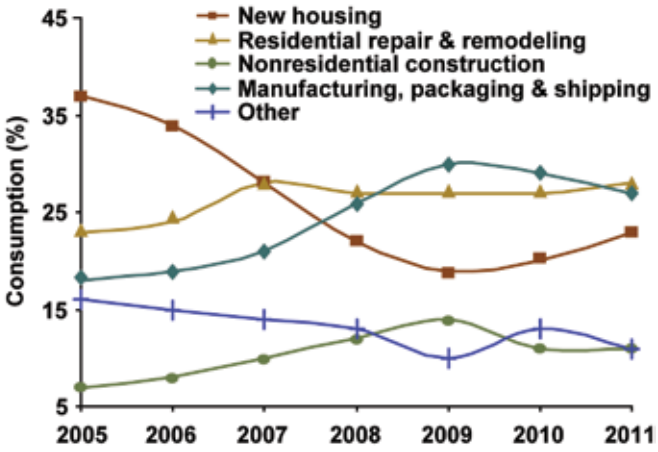

Figure 1—Solid wood products consumption market shares, 2005–2011.

which was up 3.7% when compared with the first 6 months of 2009 when 20.1 million cubic meters of sawn softwood were produced. Production of sawn softwood for 2010 is forecast to fall below 2009 levels, and then rebound with a gradual increase in 2011.

Sawn softwood imports increased 12% during the first 6 months of 2010 relative to the same time period a year ago. The volume of Canadian imports, which constituted 90% of all sawn softwood imports, increased by 15.2% over this period. Total sawn softwood imports were 14.1 million cubic meters in 2009.

During the first 6 months of 2010, U.S. sawn softwood exports increased 43.1% compared with exports for the same period in 2009. Exports to Canada increased by 94.4%, while exports to Japan increased 50.6% and exports to Mexico increased 9.0%.

Sawn Hardwood

Sawn hardwood production decreased by 28.6% to 16.5 million cubic meters in 2009. Imports in 2009 are unchanged from one year earlier. Given the decrease in U.S. production, volatile trade figures, and a declining housing market, apparent consumption for 2010 is forecast to fall below the 2009 volume.

Softwood Log Trade

Softwood log exports to Japan increased 2.5% over the first 6 months of 2010 when compared with exports in the same period of 2009, while softwood log exports to Canada decreased by 8.2% in the same period. Softwood log exports to all other countries increased by 72.2% during the first 6 months of 2010 when compared with the same time period of one year ago. Fueling the surge in softwood log exports especially during the last quarter of 2010 is exports to China. Most of the surge has been centered in the Pacific Northwest. Overall, the number of U.S. logs shipped to China shot up more than 10 times from 256,000 cubic meters in 2007 to an estimated 2.4 million in 2010, or about 7% of the region's total log production. Softwood log imports decreased by 41.3% over the first 6 months of 2010 compared with a year earlier. During 2009, timber harvest fell to a lower level than that in previous years and the forecast calls for continued decline in harvest in 2010.

Hardwood Log Trade

Hardwood log exports decreased by 20.94% and imports increased by 33.64% during 2010 compared with 2009. Exports decreased by 21.55% and imports decreased 55.17% compared with this period in 2008. Canada traditionally provides about 95% of U.S. imports. (Hardwood log exports were up by 22.53% through the first 6 months of 2010 when compared with 2009; hardwood log imports were down 36.72% through the first 6 months of 2010 when compared with 2009.)

Pulpwood

Roundwood production for pulp and wood-based panel mills was 126 million cubic meters in 2009, down slightly from 2008. Roundwood pulpwood consumption, as expected, continued to decrease during 2010. Pulpwood supplied from residue continued to decrease relative to roundwood. This is a result of declining residual production and competition for residuals for pellets and biomass and not out of preference on the part of pulp producers. The roundwood portion of pulpwood was 126 million cubic meters in 2009, a 2% increase from 2008 (Howard, unpublished data). Trade patterns have continued to have a significant impact on paper and paperboard production and have affected pulpwood use, but the significant decline in U.S. paper and board production and consumption that occurred over the past decade was due largely to a downturn in consumer spending associated with the global recession. Exports of paper, paperboard, and converted products increased by 9.0% to 39.8 million metric tons, while imports of paper and paperboard increased by 10.6% to 18.5 million metric tons in 2009. Paper and paperboard production decreased by 10.6% in 2009, falling to 71.0 thousand metric tons. The production of paper and paperboard in 2010 is forecast to be 6.0% above 2009 production as reflected in the annual year-to-date rate for September 2010 of 74.9 million metric tons, which is up 7.4% from 2009, when paper and paperboard was produced at a level of 71.0 million metric tons. Paper and paperboard imports were at an annual rate in June of 7.0 million metric tons, which is down 1.9% from last year.

Structural Panels

Structural panel production in 2009 was 21.7% below that of 2008, while consumption was 21% below consumption in 2008 (APA 2010). Structural panel consumption at the end of the second quarter of 2010 was 8.6 million cubic meters, or 7.4% above the second quarter of 2009. Overall, structural panel consumption is expected to drop to 18.3 million cubic meters in 2010 before beginning to

increase in 2011 (Adair 2009). Structural panel market shares were negatively affected by the current economic downturn. New residential construction which, in 2005, captured 57% of all structural panel consumption, fell to 42% in 2009, and was expected to fall further in 2010 (Table 3).

In 2009, 8.5 million cubic meters of oriented strandboard (OSB) were produced, compared with 11.5 million cubic meters in 2008 (Table 2). OSB consumption totaled 10.5 million cubic meters in 2009 and constituted 60% of the structural panel market (Table 3). This represented a 4% share decrease from 2008. Consumption is expected to further decline in 2010. At the end of the second quarter 2010, consumption was 4.5 million cubic meters, nearly 11.4% above the second quarter of 2009. The weak economic recovery and flat residential construction is expected to keep OSB consumption in 2010 to near 8 million cubic meters.

Softwood plywood production was 7.6 million cubic meters in 2009 (Table 2) (APA 2010). This level of production was 15.9% below 2008. Softwood plywood production at the end of the second quarter in 2010 was 4.1 million cubic meters, which is a 5.6% increase compared with the numbers at the end of the second quarter in 2009. The volume of softwood plywood production fell throughout the 1990s, and the decline continued into 2010. Softwood plywood imports decreased in 2009 by 23.6% compared with 2008 data, while softwood plywood exports decreased in 2009 by 23.8%. Plywood exports to Canada decreased by 26.9% during the first 6 months in 2010 compared with a year earlier, and plywood imports from Canada decreased 21.5%. Softwood plywood consumption was 3.8 million cubic meters at the end of the second quarter in 2010, which was slightly below last year. Apparent consumption of softwood plywood is expected to decrease in 2010 and then increase by the year 2011.

Hardwood Plywood

Hardwood plywood production, including core material such as softwood plywood and OSB, was estimated at 1.3 million cubic meters in 2009, down from 2008 production. Hardwood plywood imports decreased 25% in 2009, falling to 2.1 million cubic meters when compared with 2008. Hardwood plywood exports rose in 2008, increasing 12.8% to 179 thousand cubic meters. Production and consumption of hardwood plywood in 2009 and 2010 was forecast to steadily fall to well below 2008 levels (Table 2). These declines are a result of falling total industrial production and furniture and related products indexes (Table 1), coupled with the U.S. housing market collapse.

Particleboard and Medium Density Fiberboard

Information from the Composite Panel Association (CPA 2009) indicates that particleboard and medium density fiberboard (MDF) production decreased during 2009. Particleboard production was 3.9 million cubic meters, a decrease of 24.7%, and MDF production was 2.9 million cubic meters, a decrease of 2.1% (Table 2). During 2009, particleboard and MDF imports combined decreased by 38.2% on a volume basis, compared with 2008. Particleboard and MDF exports combined decreased by 63.7%. Consumption is forecast to decline by about 5% in 2010 and then increase slightly in 2011. Although they aren't a large component in residential construction, particleboard and MDF account for well over one-half of all nonstructural panels consumed in the U.S., and their market share fell by nearly half between 2006 and 2009 (Table 3). All end uses increased their market shares for nonstructural panels during this time period.

Hardboard

Based on data from the Composite Panel Association (CPA 2009), 657 thousand cubic meters of hardboard were produced in 2009; this level of production is expected to decline slightly in 2010. Hardboard imports and exports are expected to remain flat over the next two years.

Insulation Board

Information from the American Forest & Paper Association showed that 2.7 million cubic meters of insulation board was produced in 2009, unchanged from 2008. Production of insulation board has been flat for several years, resulting in a stable level of apparent annual consumption of about 3.0 million cubic meters.

Fuelwood

Using data from a 2009 Department of Energy survey (DOE 2009c) and adjusting for the 2009 winter weather and an increasing trend in fuelwood use per household, fuelwood consumption was estimated to be 39.6 million cubic meters in 2009—a decrease of 7.9% from 2008. Households use most fuelwood for heating and aesthetic enjoyment. Industry uses mill residue rather than roundwood for fuel. A small portion of roundwood fuelwood is used for electric power production. Use for electric power is limited by the low cost of coal and natural gas alternatives. Fuelwood consumption for 2009 was below the level for 2008, and the forecast calls for decreased fuelwood consumption through 2010. Renewable Fuel Standards and other biomass-related energy policies are likely to increase the growth rate for fuelwood and other forms of wood energy (DOE 2008d).

Forest Products Prices

Trends in the wholesale price of forest products are different across two broad categories: lumber and wood products (such as lumber and wood-based panels) and pulp and paper products (Fig. 2). Throughout the late 1990s, the producer price of lumber and wood products as reflected by the Producer Price Index (PPI) continued to fluctuate around a level reached by the mid-1990s before peaking during the second half of 1999 (DOL 2010). The PPI for lumber and wood products continued to decrease during the first quarter of 2008, but rose and peaked in the third quarter, and then

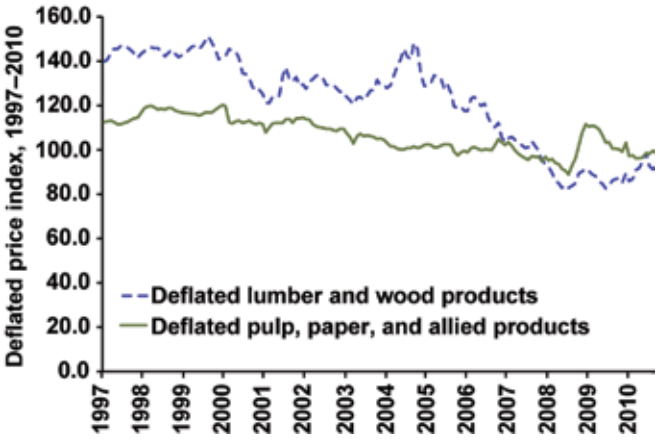

Figure 2—Wholesale prices of forest products, 1997–2010.

declined again in the fourth quarter. The PPI for lumber was down 7.3 points in 2009 from 2008. Changes in the price of softwood lumber and a depressed lumber market accounted for much of this change and most of the volatility in the index. In 1999, the deflated composite price index reached an all-time high (at a level more than 50% higher than that of the base year, 1982), followed immediately by a sustained decline that continued throughout 2000 and into 2010. The PPI reached its lowest level in 5 years during this period. Because of these sustained low prices, U.S. demand for lumber and wood products during 2000 and into 2005 remained at near record levels. But the current situation in the housing market has caused record low price levels during the current downturn. In contrast, the PPI of prices in the pulp and paper sector has exhibited considerably less short-term volatility. In deflated terms, the composite index began 2008 with a flat to declining trend before undergoing an upturn in the third quarter of 2008 that became flat in the first quarter of 2009 before fluctuating throughout 2010.

Policy Initiatives

Climate Change

The United States has taken a leading role in addressing the issue of climate change. The United States is on track to cut greenhouse gas intensity by 18% by 2012. Greenhouse gas intensity—the amount emitted per unit of economic activity—declined by 2.5% in 2005 and by 3.7% in 2006 (DOE 2008a). During 2001 through 2006, the U.S. Government will have devoted more than $29 billion to climate programs, more than any other nation. During his inaugural address in January 2009, President Obama announced the continuation of the Advanced Energy Initiative, which proposes a 22% increase in funding for clean energy technology research, supporting new biofuels such as cellulosic ethanol and biodiesel. The United States is also leading the global effort to promote clean development, enhance energy security, and reduce harmful air pollution worldwide. Multilaterally, the United States provides the most funding of any country for activities under the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC 2008).

The 2002 Farm Bill provided nearly $40 billion in funding over 10 years for conservation on working lands, enabling the Federal Government (largely through the U.S. Department of Agriculture) to provide targeted incentives to encourage wider use of land management practices that remove carbon from the atmosphere or reduce emissions of greenhouse gases. The 2007 Farm Bill added funding of $7.8 billion over 10 years above the current conservation baseline.

The U.S. Federal Government supports an extensive array of scientific and technological research on climate change in addition to domestic and international actions to address greenhouse gas emissions and carbon sequestration. The 2003 Strategic Plan for the United States Climate Change Science Program (CCSP) identified 21 synthesis and assessment products that represent principal responses to the top-priority research, observation, and decision support needs of society. The CCSP and Assessment Product 4.3 (SAP 4.3) (CCSP 2008) evaluated the effects of climate change on agriculture, land resources, water resources, and biodiversity. Among the findings are that 1) forests in the interior West, the Southwest, and Alaska are already being affected by climate change with increases in the size and frequency of forest fires, insect outbreaks, and tree mortality. These changes are expected to continue. 2) Young forests on fertile soils will achieve higher productivity from elevated atmospheric CO_2 concentrations. Nitrogen deposition and warmer temperatures will increase productivity in other types of forests where water is available.

Greenhouse Gases

Forest ecosystems and forest products represent a significant carbon dioxide sink in the United States. Over 90% of the sequestration in agriculture and forests occurs in the forest sector, with an additional 7% sequestered in urban trees. Total carbon stocks in forest ecosystems of the conterminous United States are estimated at 184,800 $TgCO_2$ eq. The net amount of carbon stored in forest ecosystems in the conterminous United States increased by an estimated 547 $TgCO_2$ eq. This estimate does not include increases in biomass harvested from a portion of U.S. forests, used largely as lumber, panels, paper, and fuelwood. On April 17, 2006, the U.S. Department of Energy (DOE) issued revised guidelines for the voluntary reporting of greenhouse gas emissions, sequestration, and reductions, known as the 1605(b) program. The program was implemented by DOE during 2007. The initial program guidelines were issued in 1994, and over 200 utilities, industries, institutions, and other entities now report annually. The U.S. Department of Agriculture provided the technical methods for estimating greenhouse gas emissions, carbon sequestration, and emission reductions

on farm, forest, and grazing lands. The revised guidelines include "state-of-the-science" guidance and tools for estimating emissions from agricultural, forestry, and conservation activities important for carbon sequestration efforts, as well as from other sources of greenhouse gases. As noted in the Forest Appendix of the revised guidelines, international agreements recognize forestry activities as one way to sequester carbon, and thus mitigate the increase of carbon dioxide in the atmosphere; this may slow possible climate-change effects. The Forest Appendix can be found at http://www.usda.gov/oce/global_change/Forestryappendix.pdf.

Carbon is sequestered in growing trees, principally as wood in the tree bole. However, accrual in forest ecosystems also depends on the accumulation of carbon in dead wood, litter, and soil organic matter. When wood is harvested and removed from the forest, not all of the carbon flows immediately to the atmosphere. In fact, the portion of harvested carbon sequestered in long-lasting wood products may not be released to the atmosphere for years or even decades. If carbon remaining in harvested wood products is not part of the accounting system, calculation of the change in carbon stock for the forest area that is harvested will incorrectly indicate that all the harvested carbon is released to the atmosphere immediately. Failing to account for carbon in wood products significantly overestimates emissions to the atmosphere in the year in which the harvest occurs. Tables of estimates of forest carbon stock are provided for common forest types within each of 10 U.S. regions. Six distinct forest ecosystem carbon pools are listed: live trees, standing dead trees, understory vegetation, down dead wood, forest floor, and soil organic carbon (Skog 2008).

Bioenergy

Several recent key laws, Executive Orders, and regulations are helping to drive bioenergy production and use in the United States: Presidential Executive Order 13101, Greening the Government Through Recycling and Waste Prevention (which requires Federal agencies to give preference in their procurement and grant programs to the purchase of specific recycled content products); Presidential Executive Order 13134, Developing and Promoting Biobased Products and Bioenergy (set a goal of tripling the U.S. use of bioenergy and bioproducts by 2010); the Biomass Research and Development Act of 2000, (Title III of the Agricultural Risk Protection Act of 2000, Public Law 106-224); and Section 9002 of the Farm Security and Rural Investment Act of 2002 (FSRIA) the first farm legislation containing a separate title (Title IX) devoted to energy and creates a Federal Government preferential purchasing program for biobased products to help promote emerging markets for these products (EIA 2009).

On August 8, 2005, the Energy Policy Act of 2005 (Public Law 109-58) was signed into law. The act promotes investments in energy conservation and efficiency, including provisions for promoting residential efficiency, reducing Federal Government energy usage, modernizing domestic energy infrastructure, diversifying the nation's energy supply with renewable sources (wind, solar, and biomass energy), and supporting energy-efficient vehicles.

The FSRIA of 2002 created the U.S. Federal Biobased Products Preferred Procurement Program (FB4P). The FSRIA provides for development of a preferred procurement program for biobased products under which Federal agencies are required to purchase biobased products. Research is currently under way on biodiesel fuels, ethanol fuels, and other sources of biomass energy, and associated research is under way on the measurement of atmospheric emissions associated with renewable energy and the potential effects of deregulation of electric utilities on rural communities. On August 17, 2006, the USDA announced two proposed rules under FB4P that designate 20 items that must receive special consideration by all Federal agencies when making purchases. The designation of these 20 biobased items is a major step in advancing the Federal preferred procurement program for biobased products. The 20 biobased items include adhesive and mastic removers, insulating foam for wall construction, hand cleaners and sanitizers, composite panels, fluid-filled transformers, biodegradable containers, fertilizers, metalworking fluids, sorbents, graffiti and grease removers, two-cycle engine oils, lipcare products, biodegradable films, stationary equipment, hydraulic fluids, biodegradable cutlery, glass cleaners, greases, dust suppressants, carpets, and carpet and upholstery cleaners. When finalized, 1,500 biobased products will be given procurement preference by Federal agencies, generating new economic opportunities for biobased product producers while providing new choices for U.S. consumers. Federal agencies must give preference to designated biobased products in Government purchases within one year of publication of the final designation rule. The USDA has assembled a list of biobased items that will be used for designation under the FB4P. The USDA has previously issued final guidelines for the biobased procurement program and developed a model procurement program of training and education to help Federal procurement officials and users of biobased products identify and purchase qualifying biobased products (USDA 2009).

The Energy Independence and Security Act (EISA) of 2007 will improve vehicle fuel economy and help reduce U.S. dependence on oil. The bill the President signed responds to the challenge of his bold "Twenty in Ten" initiative, which President Bush announced in January 2006 (The White House 2008). It represents a major step forward in expanding the production of renewable fuels, reducing our dependence on oil, and confronting global climate change. The goal is to increase energy security, expand the production of renewable fuels, and make America cleaner for future generations. The EISA has set a target of 16 billion gallons

Figure 3—Employment in wood household furniture industry, 1978–2010.

of cellulosic biofuels production by 2022. It would provide one-quarter of this production with an efficiency of 100 gallons of biofuels per dry ton of wood, which would mean an increase in wood use of 40 million ovendry tons per year or an 18% increase over current wood harvest of 224 million ovendry tons per year (DOE 2008c).

Summary of Timber Products and Energy Policy

The past 3 years have been volatile for United States wood and energy markets, with oil prices rising throughout 2010 and wood markets in a continued decline. Economic activity in the United States slowed in 2009 and continued to show weakness during the first three quarters of 2010, as evidenced by the decline in real GDP growth to an expected 2.3% in the third quarter 2010, signaling continued weakness in major sectors of the economy. With weak GDP growth during the second half of 2010, resulting partly from the weakness in the housing sector as reflected in the decline in building permits, increasing unemployment, and anxieties about the financial system, there is very little reason to expect better economic conditions over the next few months. Also, with more home refinancing instead of new home purchases and weak GDP growth, which is an indicator of employment growth, the recovery of the U.S. economy is months away. Inflationary pressures are in decline but sustained high unemployment adds to the current U.S. economic woes. The future strength for other domestic and foreign trade sectors of the wood products industry also depends on the general economy, future lumber prices (which were stronger in 2010), the flat housing sector, and the value of the dollar. U.S. timber exports to China are surging, especially in the Pacific Northwest. As a result of increased tariffs on wood exports in 2007 from Russia, Chinese buyers have turned to the United States for wood amid China's construction boom. If the surge in exports to China is sustained and if the housing market rebounds somewhat, 2011 could be a good year for the U.S. wood industry.

The United States furniture industry, in retreat since 1999, continued declining in 2010 as low-cost furniture imports and the global economic recession continue to erode the domestic industry market share. Employment in the domestic furniture industry has fallen more than 50% since 1999 (Fig. 3). The projections for 2010 show the furniture industry in continued decline but at a slower rate.

The downturn in the world economy has had a significant impact on wood and energy demand, but the near-term future of U.S. wood and energy markets is tied to the U.S. domestic downturn's uncertain depth and persistence. The growing concern about greenhouse gas (GHG) emissions and its effect on energy investment decisions, the increasing use of renewable fuels, the increasing production of unconventional natural gas, the shift in the transportation fleet to more efficient vehicles, and improved efficiency in end-use appliances are the result of U.S. energy concerns. The recovery of the world's financial markets is especially important for the wood and energy supply outlook, because the capital-intensive nature of most large projects makes access to financing a critical necessity.

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