

Mid-Year Forecast Of New Wood Crossties

By Fred M. Norrell

A low point for tie purchases was reached in the year 2000, followed by increases every year since. In 2006, purchases increased by an impressive 13.8 percent—a record for the 20 years RTA has collected data. Purchases have decelerated sharply in recent months, but still show signs of growth as of May. Concurrently, the U.S. economy slowed, plunging to 0.7 percent growth in the first quarter. Is the slow-down over? Will the economy and the tie market regain their rapid climb?

This article describes the process by which the RTA model has been created and used to generate a forecast of crossties. The process begins with an economic forecast obtained from the Fair econometric model, which is produced at Yale University. The second section of this article discusses the U.S. economy and the Fair economic forecast.

The next step in the forecasting process is to uncover the approximate relationship between changes in the economy and corresponding changes in the crosstie market. This is accomplished by estimating econometric equations. Five such equations constitute the RTA model, described in the third section of this article.

The final step in the forecasting process is to generate crosstie forecasts. This is accomplished by taking forecast values from the Fair econometric project and plugging them into RTA's estimated equations. The fourth section of this article describes this process and its results.

The U.S. Economy

2006 turned in good economic performance, with 3.3 percent GDP growth. But, an abrupt slowdown occurred in the first quarter of this year. Growth skidded to 0.7 percent, due mainly to weakness in exports, housing, and reductions in business inventories. U.S. exports of machinery and vehicles suffered a setback, and total real exports, which grew by about 9 percent last year, expanded by 0.7 percent in the first quarter. Housing grew explosively (roughly 9 percent per year) in 2004 and 2005, but retracted by about 4 percent last year, and took a 16 percent dive in the first quarter. Business inventories normally grow with increased sales, but were

reduced by 7 billion dollars in the first quarter.

Despite these setbacks, the consensus view puts the economy back on track in the second quarter, with at least 2.5 percent growth expected. First of all, the lapse in exports is seen as transitory, as our trading partners are enjoying healthy growth. Secondly, all the problems associated with housing, mortgages and bankruptcies are not slowing down consumer spending. In real terms, consumers increased spending by 4.2 percent (annualized rate) in the first quarter bolstered by a 4.8 percent (annualized) increase in real after-tax income.

The outlook that drives RTA's forecast comes from the Fair econometric model, created and maintained at Yale University. Fair's latest forecast, was produced on April 27, 2007, when the preliminary GDP estimate was 1.3 percent for the first quarter 2007. The forecast calls for a quick rebound, with GDP climbing 3.2 percent in the second quarter. Subsequent growth, almost 3 percent through 2010, is rather modest by historical standards, in the 3 to 3.5 percent annual growth range.

The GDP inflation measure increased at an annual rate of 4 percent in the first quarter. Fair's results show a lingering problem here, with price increases occurring between 3 and 4 percent throughout the forecast period. Thus, the Fed maintains a mildly tight monetary policy. This is further revealed by looking at three-month treasury bond yields reaching 5.3 percent by early 2008, and remaining in that range going forward. The Fair model forecasts that corporate bond yields reach 7 percent. Despite the lack of easy money, residential investment in housing increases during the years 2008 and after. The unemployment rate is forecast to increase from the current 4.5 percent to 4.8 percent by early 2009, and then level off. Thus, the outlook calls for relatively quick recovery to a path of moderate growth.

The RTA Model

The model consists of five equations that attempt to "explain" changes in the crosstie market. This market is divided into purchases by North American Class 1 railroads, and purchases made by all others (the "small market.") According to the model, Class 1 purchases depend upon miles of track owned and ton-miles of freight (a 2-year average) moved on that track. In recent years, and in the forecast period (2007 to 2010), track is reduced as railroads rationalize, but these somewhat negative effects are offset by freight increases except for the year 2007.

The track forecast is a result of assumptions based on surveys and industry news. The freight forecast is the product of a second equation, which is driven by GDP, coal shipments by rail, and the price of diesel fuel. The logic is that increased production and increased coal shipments drive up freight. As diesel prices go up,



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freight shifts from truck to rail. Coal shipments, in turn, are the result of the third equation, which indicates increases in coal shipments result as GDP and diesel prices increase. Diesel price is projected by U.S. Department of Energy. Forecast details for these variables are displayed in Table 1.

Year	Real GDP	Real Price Of Diesel	US Class 1 Coal	Freight	Track	New Wood Tie Purchases	Pct
2003	2.5%	26.3%	-0.1%	2.9%	169	13,578	0.6%
2004	3.9%	24.0%	1.0%	7.0%	167	14,307	5.4%
2005	3.2%	43.2%	1.6%	2.2%	164	15,029	5.0%
2006	3.3%	12.5%	6.0%	4.5%	162	15,937	6.0%
2007	2.3%	-0.6%	5.8%	2.7%	160	15,879	-0.4%
2008	2.9%	-7.6%	2.0%	1.1%	158	16,036	1.0%
2009	2.7%	-5.0%	1.7%	2.3%	157	16,157	0.8%
2010	2.9%	-3.0%	2.1%	2.9%	155	16,534	2.3%

The small market consists primarily of short line railroads as well as industrial and government crosstie purchasers. In the fourth equation, purchases are driven by nondurable manufacturing output, diesel prices, Class 1 coal shipments, and miles of track released by Class 1 railroads. The logic is that increased production of nondurable goods calls for increased freight and tie purchases; likewise with coal shipments. As Class 1 railroads release track, short lines tend to absorb it and purchase ties to maintain it. Finally, when diesel prices increase, short lines are hurt financially, and crosstie purchases decline. The forecast of nondurable manufactures is the result of the fifth equation, which indicates this category of production is a function of GDP. Forecast details for these variables are displayed in Table 2 below.

Year	Non-Durable Mfg	Real Price Of Diesel	US Class 1 Track Acquired	Coal	New Wood Tie Purchases	Pct
2003	-1.1%	26.3%	1.0	-0.1%	2,895	-20.4%
2004	2.1%	24.0%	1.8	1.0%	3,695	27.6%
2005	0.8%	43.2%	3.5	1.6%	3,776	2.2%
2006	0.7%	12.5%	2.2	6.0%	4,709	24.7%
2007	0.1%	-0.6%	1.6	5.8%	4,718	0.2%
2008	0.4%	-7.6%	1.6	2.0%	4,257	-9.8%
2009	0.3%	-5.0%	1.6	1.7%	4,168	-2.1%
2010	0.4%	-3.0%	1.6	2.1%	4,166	-0.1%

The Crosstie Forecast

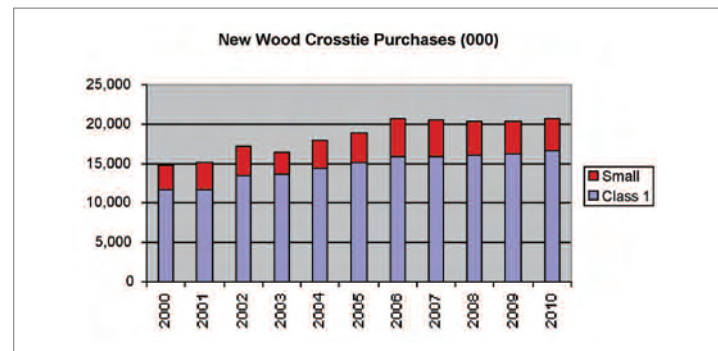
Table 1 presents in summary form the forecast for North American Class 1 purchases. First, real GDP growth slows to a sub-par 2.3 percent this year. Coal shipments continue their increase at a slightly diminished pace. Real diesel price falls slightly. Combined, all three drivers bring about a deceleration in freight, from 4.5 percent last year, to 2.7 percent in 2007. Class 1 track is assumed to follow recent trends, and is reduced by 1 percent in 2007. Combined, the effects of changes in freight and track cause crosstie purchases to drop by 0.4 percent in 2007. In subsequent years, a moderate acceleration can be seen in freight, driving crosstie purchases to grow once again.

Table 2 captures the essential elements of the small market. U.S. nondurable manufacturing has experienced disappointing growth for some years, and moderate GDP growth constrains the outlook, such that 0.4 percent is the maximum expected yearly advance. Coal shipments are also moderate, as are assumed track acquisitions, providing little upward push for crosstie maintenance. Some financial relief is afforded by falling diesel prices, allowing for more crossties in

budgets. An adjustment to crosstie purchases is made in 2007, assuming this is the last year of increased investment tax credits for short line railroads. This adjustment puts purchases close to those of 2006, but by 2008 purchases fall to about 4 million.

Table 3 and the graph, below, combine market segments representing total crosstie purchases from RTA members.

Year	Class 1 Purchases	Small Market Purchases	Total Purchases	Pct
2003	13,578	2,895	16,473	-3.9%
2004	14,307	3,695	18,001	9.3%
2005	15,029	3,776	18,805	4.5%
2006	15,937	4,709	20,647	9.8%
2007	15,879	4,718	20,597	-0.2%
2008	16,036	4,257	20,293	-1.5%
2009	16,157	4,168	20,325	0.2%
2010	16,534	4,166	20,700	1.8%



The first thing to note in Table 3 has to do with dates. The “years” shown are not quite calendar years, but are 12-month periods ended in approximately November. Class 1 crosstie installations for a given calendar year are reported, and they correspond to purchases made approximately one month prior. Thus all purchases numbers are moved back approximately one month in time, and will not match with calendar year purchases. In the 12 months ended November 2006, purchases were 20.76 million, or 0.3 percent higher than the forecast.

Perhaps the most dramatic characteristic of the forecast is a sharp downturn of small market purchases in and after 2008, when investment tax credits are assumed to revert to prior rates. Secondly, Class 1 purchases drop slightly in the current year, and recover slowly. The combination of market segments reveals slight down years in 2007 and 2008, without much pick-up until 2010, when increased Class 1 freight (in 2009 and 2010) stimulates maintenance needs.

The overall market deceleration can be traced to slow-downs of GDP, coal shipments, and rail freight. With the exception of an adjustment for short line investment tax credits, these results are largely mechanical; they are numerical solutions of equations. §

Fred M. Norrell served as an economist for Alabama Power Company for 23 years, and has taught economics at the University of Alabama, Jacksonville State University and Birmingham Southern College. Upon his retirement from Alabama Power in 2001, Norrell has worked as an economic consultant, currently serving as consulting economist for Railway Tie Association.