



Global cycle changes the rules for U.S. pulp and paper

As in other industries, the fortunes of the U.S. pulp and paper industry are now closely tied to the global economy.

The U.S. pulp and paper sector exhibits fairly steady production and growth trends, but its economic fortunes have become intertwined with the “global cycle” of supply and demand. Exposure to the global cycle has increased for the U.S. in recent decades with increased levels of U.S. product exports. One effect of this exposure in recent years is increased market volatility associated with trade-related adjustments in export demands and capacity utilization. Price volatility and sensitivity of profits to the global cycle are related to capital intensity and competitiveness in the pulp and paper sector. The recent economic downturn (the so-called Asian decline) caused a number of significant “ripple effects” throughout the pulp and paper sector that are linked to the global cycle of supply and demand.

VOLATILE MARKETS

Although markets improved somewhat in 1999, the U.S. pulp and paper sector has experienced rather volatile prices, variable profits and other ripple effects since the 1995 worldwide peak in pulp, paper and fiber markets, and during the more recent Asian decline since 1997. Superficial examination of trends in production levels or sales does not easily explain the market volatility and the recent period of poor profitability.

The behavior of product prices and industry profits in recent years is tied to capacity

utilization levels and shifts in exports, determined in large part by the global cycle of supply and demand.

Production and sales of the U.S. paper and allied products industry have, in fact, generally moved steadily upward for decades, although many product markets have begun to show signs of maturity, defined as growth that is slower than Gross Domestic Product (GDP) growth. U.S. paper industry sales in the past several years followed fairly smooth trends. Indeed, U.S. paper industry sales appear somewhat less variable than other U.S. wood product industry sales (see Figure 1) because of relatively steady domestic demand for paper and paperboard products. The pulp and paper industry is also about twice as large as the lumber and other wood products industry (see Figure 1).

In contrast to these fairly smooth sales trends, paper industry profits have been quite variable in recent years. Figure 2 shows quarterly profits after taxes in the U.S. wood products sector. The variability in profits for the pulp and paper sector is a reflection of market variability and volatility in product prices. Volatility can be traced to the capital intensity of the industry, competitive behavior and the effects of changes in export demands on capacity utilization and prices. Despite fairly stable sales and relatively stable domestic demands, the fortunes of the U.S. pulp and paper sector are intertwined with shifts in trade and a global cycle of supply and demand.

MOST CAPITAL INTENSIVE

The pulp and paper sector is the most capital-intensive manufacturing sector in the U.S. economy. A modern pulp and paper mill represents an investment of hundreds of millions of dollars. Capital recovery and fixed costs are a large part of manufacturing costs. This circumstance appears to exert important influences on production behavior as indicated by trends in prices and profits.

First, market prices tend to escalate when demands and capacity utilization peak. Because capacity expansion is costly and takes time (months or years due to the large scale of investment required), additional supply is difficult to obtain in the short run. Thus, when industry capacity limits are reached, buyers compete for limited supplies and prices are escalated by excess demands.

Second, prices and profits tend to drop rapidly when demands and capacity utilization decline. Producers are reluctant to reduce production when demand declines because fixed capital costs are a large element of manufacturing costs and are not variable with production. Mill managers will generally want to keep mills running to cover high fixed costs. However, when production is sustained in the face of declining demand, the market can become flooded with excess supply. As producers compete for product sales amid excess supply, prices can and do drop precipitously.

Figure 3 helps illustrate volatility in paper and paperboard markets. It shows

U.S. paper and paperboard capacity utilization and overlapping trends in paper and paperboard price indexes since 1994 (adjusted for inflation). Capacity utilization is the ratio of actual production to available production capacity, as measured by the American Forest and Paper Association (AF&PA). Capacity utilization has fluctuated in recent years by 12 to 13% in a range that is roughly between 85 and 100%. It tends to be a bit higher for paperboard than for paper. Real price trends are shown by national indexes of paper and paperboard prices adjusted for inflation. Price indexes were lagged by four months as plotted in Figure 3. Prices generally peak about four to five months after capacity utilization peaks. The chart clearly shows that product price trends have followed capacity utilization trends. Prices have gone up when capacity utilization went up, and prices have gone down when capacity utilization receded.

In general, as capacity utilization goes up or down by just 12 to 13%, prices have gone up or down by 30 to 40% or more. An important observation is that competitive price volatility has a three- to four-fold amplification relative to the level of capacity utilization. Thus, relatively small adjustments in product demand can cause changes in capacity utilization that are sufficient to cause significant changes in product prices and profitability. Furthermore, with increased exposure to global markets, it now appears that capacity utilization in the U.S. pulp and paper sector largely follows trends in export demands.

EXPORT MARKETS KEY

Figure 4 shows that U.S. paper and paperboard capacity utilization trends follow trends in exports. Capacity utilization peaked along with peak exports in 1995. Capacity utilization then declined precipitously in late 1995, along with declining exports. Capacity utilization rose again in 1996 along with rising exports and then fell again more recently with the Asian decline since 1997.

Even though exports are only a small element of U.S. product demand, they exert an important marginal influence on capacity utilization. In the past 20 years, the U.S. pulp and paper sector has gained greater exposure to overseas markets, with a greater share of production shipped into export markets. U.S. exports of paper and paperboard rose from 3.2 million short tons in 1977 to 13.1 million in 1997 (2.9 million to 11.9 metric tons), according to AF&PA. Exports now assume a larger share of domestic production, and export demands are generally more volatile than domestic demands. This means that capacity utilization has become (along with prices and industry profits) highly sensitive to volatile adjustments in global markets. In brief, the short run fortunes of the industry are caught up in a global cycle.

Fluctuations in aggregate demand and capacity utilization of only 5 to 10% (largely due to fluctuations in export markets) have been sufficient to cause much larger fluctuations in short run product prices in recent years. As industry profits and financial performance are tied to product prices, industry fortunes are thus swept up in the global cycle of supply and de-

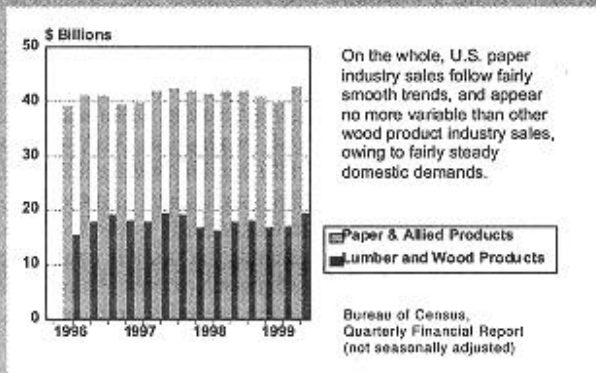
mand. The global economic cycle is not within anyone's firm control. In general, the fortunes of the industry are likely to improve only when the global economic cycle turns in its favor. However, firms in the industry do control capacity expansion and mill closure decisions, thus influencing rates of capacity utilization.

RIPPLE EFFECTS

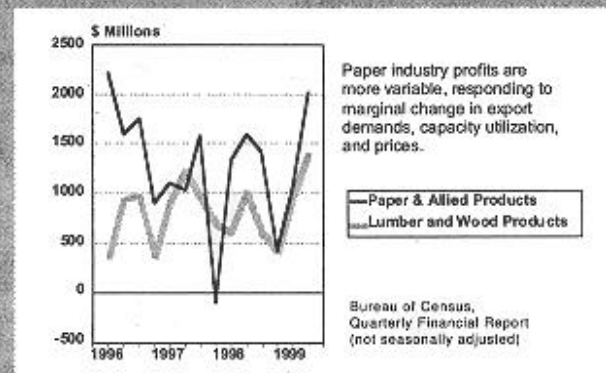
The global economic cycle and recent period of decline in pulp and paper profits have had important consequences or "ripple effects." One effect was that declining profits in recent years contributed to relatively poor performance for U.S. paper industry stocks. Stock prices of leading U.S. paper companies have not kept up with the Dow Jones Industrial Average or S&P 500 index in recent years. The performance of paper industry stocks was a notable exception to the overall gains in the bull market of recent years. In 1998, for example, the Standard & Poor's index of paper and forest product stocks dropped by 1.1% while the S&P 500 index rose by 20%. On the positive side, the stock prices of many paper industry firms turned significantly upward in early 1999 on reports of improved profits.

Another significant ripple effect was the trend toward corporate mergers and acquisitions. Recent mergers included that of International Paper and Union Camp, formerly ranked one and seven, respectively, in U.S. capacity, and the merger of Jefferson Smurfit with Stone Container Corp., formerly ranked three and six, respectively, in U.S. capacity. Other major mergers since 1997 include Fort Howard and James River and

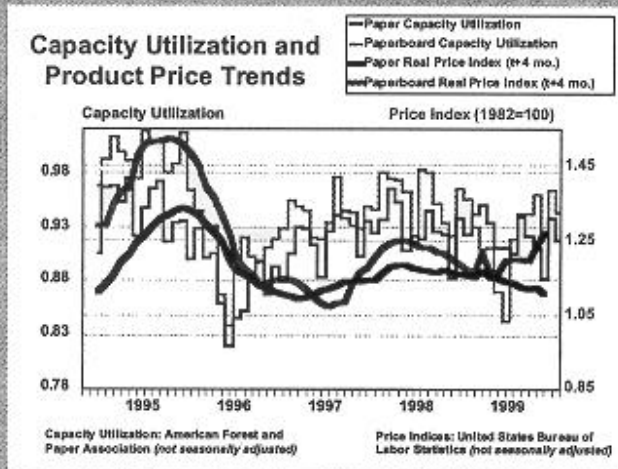
**FIGURE 1:
U.S. WOOD PRODUCT INDUSTRY
QUARTERLY SALES, 1996-1999**



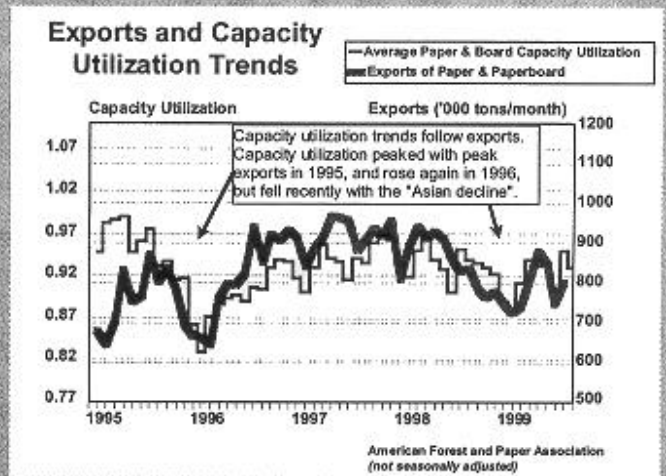
**FIGURE 2:
U.S. WOOD PRODUCT INDUSTRY QUARTERLY
NET PROFITS AFTER TAXES, 1996-1999.**



**FIGURE 3:
U.S. PAPER AND PAPERBOARD CAPACITY
UTILIZATION AND PRICE TRENDS, 1994-1999.**



**FIGURE 4:
U.S. PAPER AND PAPERBOARD EXPORTS AND
CAPACITY UTILIZATION TRENDS, 1994-1999**



the purchase of Avenor by Bower.

Is there a general explanation for these recent mergers and acquisitions? Most obvious is the view, shared by Wall Street analysts, that greater concentration will yield better discipline in capacity expansion and less market volatility. From this perspective, mergers are a response to market volatility, a way to deal with the global cycle and poor stock performance. There are also other reasons. For one, it can be cheaper to buy capacity in the stock market than to build it. Buying capacity in the stock market affords more timely expansion of capacity in anticipation of markets than costly and time-consuming mill upgrades or construction projects. It reflects a buy low, sell high philosophy, and it allows a firm to grow while avoiding the dilemma of building excess industry capacity that may reduce capacity utilization and depress prices.

Targeted consolidation and acquisition also allows dominant firms to gain control over a larger share of individual markets. The top five U.S. firms now control about 38% of paper and board production capacity, but industry concentration is much higher by individual product grade because of targeted consolidation and specialization. The top five firms differ among various product grades in North America. However, capacity concentrations of the top five are reportedly 60% in newsprint, 58% in uncoated groundwood, 65% in coated groundwood, 53% in uncoated free sheet, 60% in coated free sheet, 43% in containerboard and 40% in paper grade market pulp, according to industry news-

letter *Pulp & Paper Week*.

A third important ripple effect of the global cycle in recent years was a significant downsizing of industry capacity growth, stemming in part from corporate mergers and weak export markets. For example, since Smurfit and Stone Container merged in November 1998, Smurfit-Stone has reportedly shut down 1.075 million tons (975,000 metric tons) of annual capacity at four containerboard mills, according to *Pulp & Paper Week*. The company also announced plans to shut down 400,000 tons (363,000 metric tons) per year of market pulp capacity at two mills. Other mill closures have been announced elsewhere in the industry, and there are few announcements of capacity expansion.

A combination of restrained capacity expansion and mill closures is causing a period of very slow industry capacity growth. The annual rate of U.S. capacity expansion for pulp, paper and paperboard has declined and is expected to remain at relatively low levels in the near future (See Figure 5). The annual rate of capacity expansion during the next two years is expected to be the slowest of any similar period on record, according to the annual AF&PA capacity survey.

A fourth ripple effect was a decline in industry employment. Since 1997, employment in the U.S. paper and allied products industries has declined by about 30,000. The monthly trend in employment is shown in Figure 6. The loss of 17,200 industry jobs in 1998 alone (a 2.5% drop) was the largest single-year drop since the

recession of 1983, according to data from Bureau of Labor Statistics. The loss in employment is attributable to foreign competition, the Asian market decline and poor financial performance. Capacity contraction and mill closures following recent mergers are also directly related, but again the reality is that the industry is very capital intensive. Machinery and electronics are increasingly being substituted for labor.

In the past 30 years, overall industry production has nearly doubled while employment has remained essentially flat, between 650,000 and 700,000. As older and less productive facilities are closed, the effect will be to continue a trend toward smaller labor inputs per unit of product output.

A fifth ripple effect was a recession in fiber markets. Figure 7 illustrates recent trends in fiber raw material prices in the U.S. Fiber raw material prices have generally receded from peak levels in 1995, reflecting restrained industry growth and limited profits. Douglas-fir chip prices in the West have settled into a range that is compatible with southern pine. Until recently, prices for recovered paper commodities, such as old corrugated containers (OCC), languished at low levels since falling off from their peak in 1995. Between early 1998 and late 1999, delivered hardwood and softwood pulpwood prices in the South dropped by around 15 to 20%, according to Timber Mart-South. By early 1999, the general perspective on pulpwood and recovered paper markets had shifted

to an oversupply from one of scarcity leading up to the price peak in 1995. Although OCC prices turned upward in the second and third quarters of 1999, fiber markets have remained relatively subdued. If fiber markets strengthen, there is a potential for future development of new fiber resources, as exemplified by expanded wood pulp capacity overseas, planned construction of a corn fiber pulp mill in Nebraska (*PIMA's North American Papermaker*, March 1999), and increased use of agricultural wood fiber crops based on hybrid poplar.

THE DOWNTURN IN PERSPECTIVE

The recent economic downturn may be placed in some historical perspective by looking at the trend in U.S. paper and paperboard production since 1970 (Figure 8). U.S. paper and paperboard production has almost doubled since 1970, and the recent downturn pales in comparison to the long sweep of historical trends. With some early signs of a turnaround (higher first quarter profits, higher paperboard prices and declining market pulp inventories worldwide), it is likely that the economic downturn will be a transitory event.

This is not to say that the industry does not face new challenges. Capacity expansion will probably be somewhat subdued for years to come. However, in the long run, production will probably continue to move upward. U.S. pulp and paper companies estimated that capital expenditures would be up by 4.9% in 1999 (to \$8.06 billion), compared with a decrease of 11.2% recorded in fiscal 1998. However, more than one-third of this spending is reportedly needed to meet new EPA Cluster Rules on air and water emissions, according to *Pulp & Paper Week*.

OUTCOMES AND PROGNOSIS


Industry development that is focused on product market concentration and financial discipline has garnered more trust from Wall Street than open-ended capacity expansion. Mergers and acquisitions are presently viewed as a more shrewd and effective means of growth and consolidation than construction of new facilities. Capacity expansion decisions now receive greater scrutiny than in the past. The recent Asian decline and slack conditions in fiber markets since 1995 have shifted industry attention

toward issues such as product demand and capacity utilization and away from issues of fiber supply that seemed more important earlier in this decade.

The current period of slow capacity growth and limited capital investment in new production facilities has created a period of hardship for supporting industries that were dependent on the capital investment behavior of the industry. Paper industry equipment suppliers and engineering

large capital investment projects.

It is difficult for anyone to predict the timing or duration of a global economic upturn. One leading expert on the subject of Asian economic trends is Professor Rudiger Dornbusch, Ford Professor of International Economics at MIT (Massachusetts Institute of Technology, Cambridge, Mass.) Back in 1997, Professor Dornbusch was quoted as saying, "In Asia we may be on the verge of something like a Great Depression." Certainly his outlook was validated by events that unfolded in the pulp and paper sector between 1997 and 1999. More recently, Professor Dornbusch gave remarks to the National Petrochemical and Refiners Association this spring, where he was quoted as saying, "I expect the first signs of an Asian recovery sometime this fall." Indeed, some signs of recovery in pulp and paper markets have become apparent in 1999. By October of this year, it was apparent that many Asian countries were on the road to economic recovery.

As we approach the new millennium, it is apparent that the global economic cycle of supply and demand is not within anyone's firm control, nor is it easily predicted. However, with some consolidation and constrained capacity growth, the fortunes of the pulp and paper sector will probably improve significantly when the global economic cycle turns in its favor. 



“A combination of restrained capacity expansion and mill closures is causing a period of very slow industry capacity growth. The annual rate of U.S. capacity expansion for pulp, paper and paperboard has declined and is expected to remain at relatively low levels in the near future.”

firms have suffered direct impacts of declining investments in capital equipment and production facilities, according to *PIMA's North American Papermaker*. This trend may also reduce support for equipment research and technology development. Increasingly, pulp and paper industry research and development is undertaken by equipment suppliers and supporting industries. Improvement in productivity through equipment innovation and development may be somewhat adversely affected in the long run, unless there are means of achieving significant productivity gains without

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Errata

These four Figures were not published with the original article in PIMA's North American Papermaker.

Annual Rate of Capacity Expansion

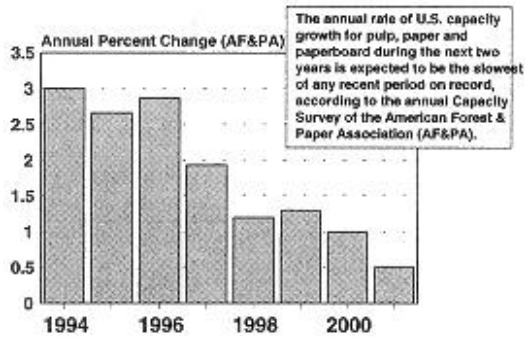


Figure 5. Trends in U.S. pulp and paper industry capacity expansion.

Fiber Raw Material Prices

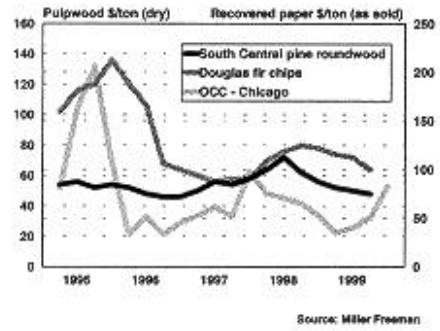


Figure 7. Recent trends in fiber raw material prices (1 ton = 0.9 metric tons).

Monthly Employment (thousands)

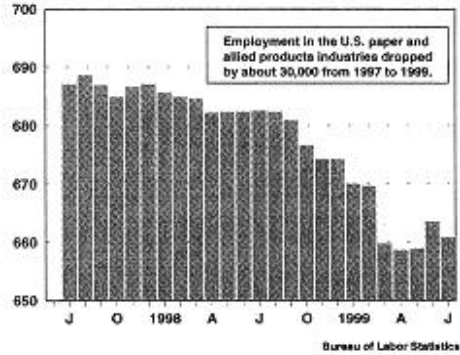


Figure 6. Monthly employment in U.S. paper and allied products industry.

Long-run Trend in U.S. Paper and Paperboard Production

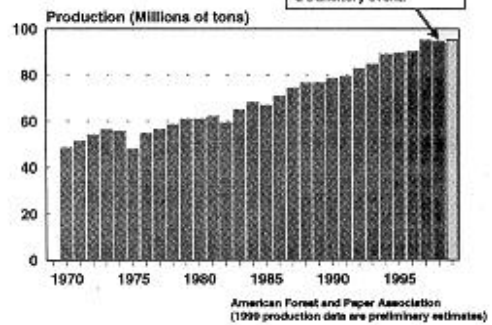


Figure 8. U.S. paper and paperboard production, 1970-1998 (1 ton = 0.9 metric tons).