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Changes in the Global Forest Products Industry

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Changes In The Global Forest Products Industry

Defining The Environment For British Columbia

- This report summarizes a presentation made at the symposium on the future of the B.C. forest sector by Don Roberts. The symposium was sponsored by the B.C. Forum on Forest Economics and Policy, and held in Vancouver during the first quarter of 2005.

- After placing the B.C. forest products companies in a global context, both in terms of size and financial performance, we focus on the key changes in the global industry which are shaping the environment for B.C.-based companies.

- We focus on five key global trends: 1) increasing industry consolidation; 2) the decreasing secular trend in commodity prices; 3) increasing wood supply; 4) decreasing supply of low-cost energy; and 5) the emergence of China - is it a customer or competitor for B.C. forest product companies?

- If there is one external change over the next five years that could have the biggest positive impact on the B.C. forest products industry, it would arguably be the closure of the Chinese non-wood pulp & paper sector - an issue not even on the "radar screen" of Canadian business and government.

All figures in Canadian dollars, unless otherwise stated.

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See "Price Target Calculation" and "Key Risks to Price Target" sections at the end of this report, or at the end of each section hereof, where applicable.

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Introduction

The forest products sector in B.C. is at a critical juncture. The objective of this report is to provide the first cut at an empirically based "problem analysis" for the sector. In our view, it is a necessary prerequisite to the identification of specific opportunities and policy initiatives, which will lead to a robust forest sector in the province.

We begin by first placing the "B.C. players" in a global context in terms of size and financial performance. Having done that, we proceed to examine what we see as five of the most critical changes that are shaping the global environment in which the B.C. sector is operating. Specifically, we focus on:

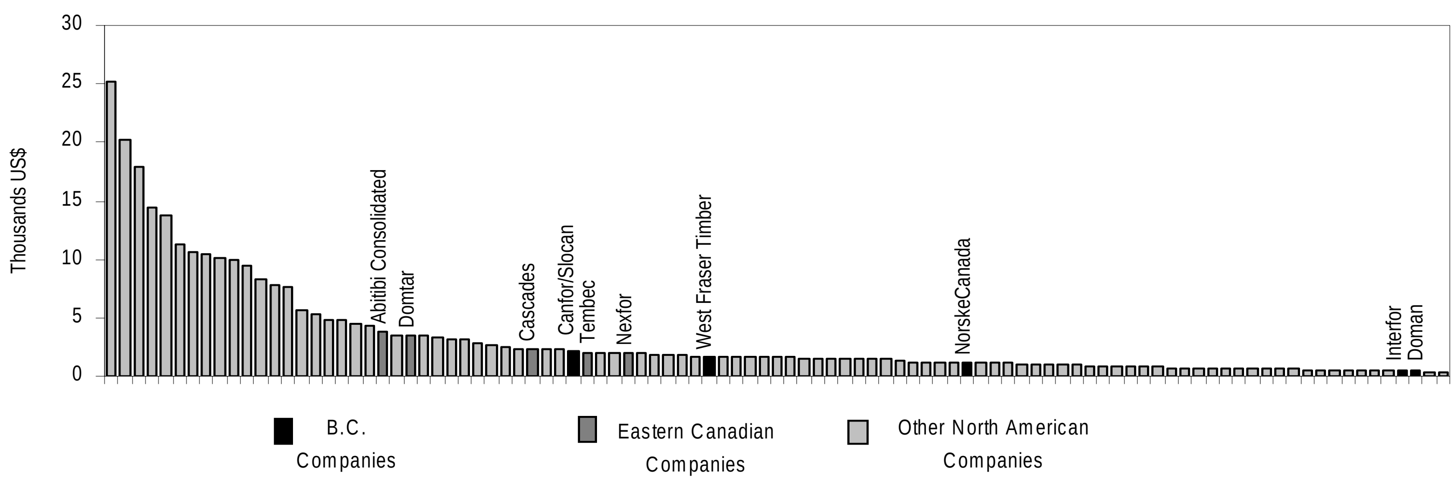
- Increasing industry consolidation;
- Decreasing secular trend in commodity prices;
- Increasing wood supply;
- Decreasing supply of low-cost energy; and,
- The emergence of China — is it a customer or a competitor?

Setting The Stage

Who Are The Players?

While B.C.'s forest product companies are growing through mergers and acquisitions, the reality is that they are still small by international standards (see Exhibit 1). After the addition of Slocan, Canfor (CFP–TSX, Sector Performer) is still only 35th in the world when ranked in terms of 2003 proforma sales. With US$2.1 billion in sales, the largest forest products company in B.C. generates less than 10% of the revenue posted by the global leader (i.e., International Paper (IP–NYSE, Sector Underperformer).

Exhibit 1. Top 100 Public Companies In The Global Forest Products Industry (2003 Net Sales)



Source: PriceWaterHouseCoopers, CIBC World Markets Inc.

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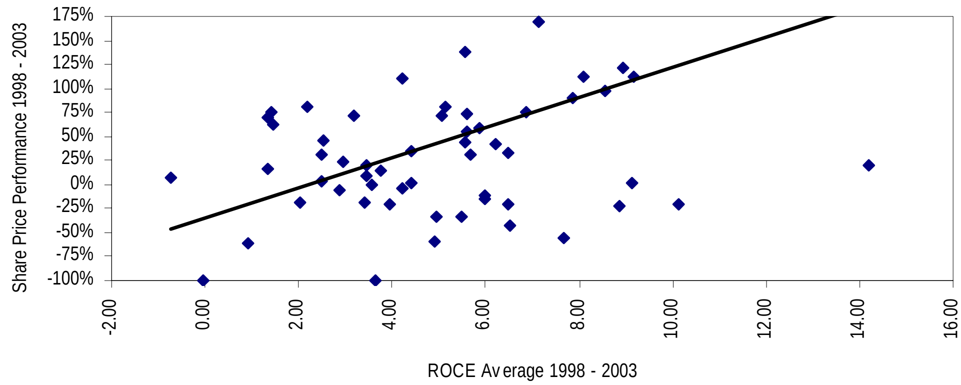
Financial Performance

The ability to attract capital is necessary in order to grow and become a meaningful "player" in the global industry. Investment capital is attracted by the expectation of increasing share prices.

Exhibit 2 summarizes data for a range of companies in the global forest products industry over the period 1998–2003, and it documents the positive correlation between share price performance and Return on Capital Employed (ROCE). Over a business cycle, companies that generate a higher ROCE also tend to enjoy a greater increase in their share price

Although it has limitations, we focus on ROCE as a key financial metric because of the capital-intensive nature of the industry — particularly on the pulp & paper side of the business. (ROCE is calculated as net income before unusual items, minority interest and interest expense, on an after-tax basis, divided by average total assets less average non-interest bearing current liabilities.)

Exhibit 2. Share Price Performance Vs. Return On Capital Employed (ROCE): 1998–2003



Source: PricewaterhouseCoopers, Bloomberg, CIBC World Markets Inc.

It is also useful to benchmark financial metrics like ROCE since many companies do not have an accurate view of their relative performance. This assertion is supported by a recent survey of manufacturers in *Industry Week* magazine. Readers were asked the question: where do you rank your company within your industry? Of the respondents, 98% placed their companies in the top 50%. Given this result, it is useful to establish the facts about the relative performance of the B.C. forest products companies.

Exhibits 3 summarizes the average ROCE, over the period 1998–2003, for the forest products industry in various regions of the world. The most salient points to note are as follows:

- B.C. ranks in the bottom — half of the regions — with an average ROCE of 5.2%. However, with the exception of Japan at only 1.7%, there are not large differences in the regional results. Furthermore, as discussed below, some of the individual companies in B.C. rank quite well.
- The emerging region of Latin America/South Africa posts the highest average ROCE of 7%. This is a key reason the region is capturing a larger share of the investment capital coming into the industry.

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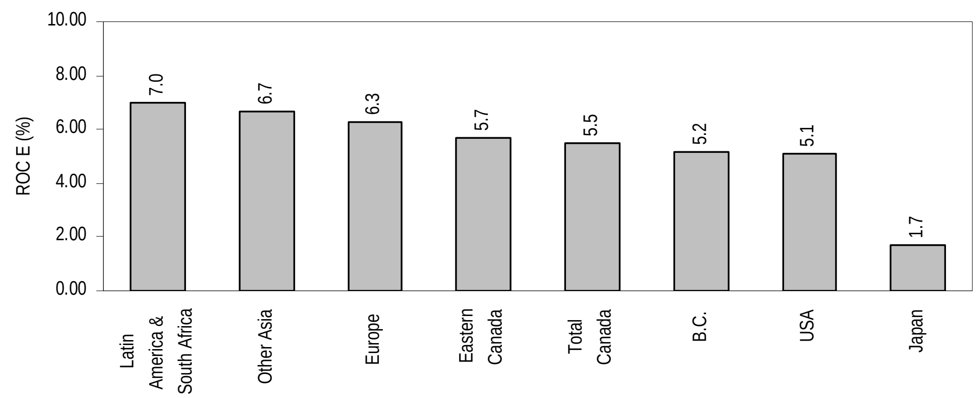
- Even the most profitable region has not covered its cost of capital, which we estimate to be roughly 10%-13%. This suggests that, even at the global level, the forest products industry will have difficulty attracting capital. Having said that, the very best companies in the global industry have generated an average ROCE in the 12%-15% range.

Exhibit 3. ROCE By Region: Six-year Average (1998–2003)



Source: PricewaterhouseCoopers, CIBC World Markets Inc.

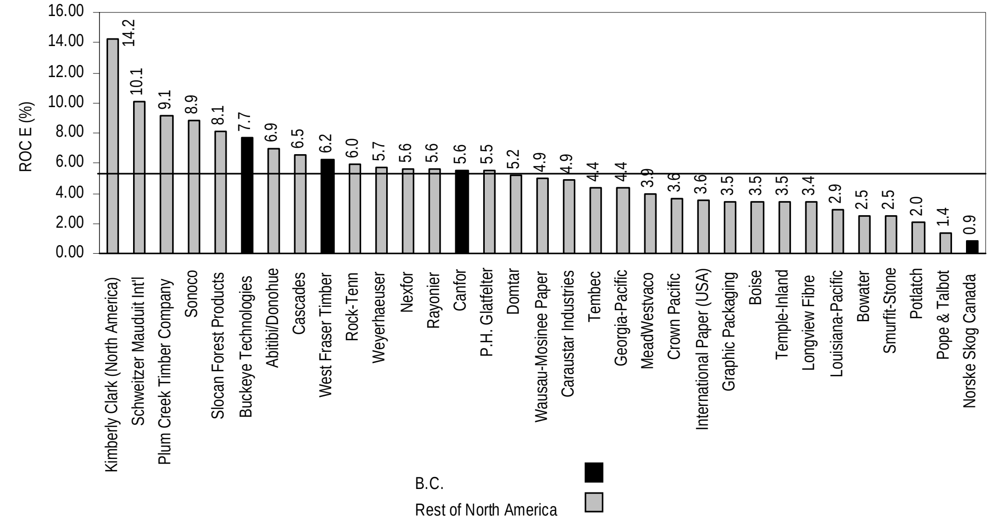
Drilling deeper, Exhibit 4 focuses on the average ROCE of specific companies in the North American industry in general, and B.C. in particular. Several points worth noting are:

- The solidwood companies in B.C. like Slocan and West Fraser (WFT–TSX, Sector Outperformer) have historically generated reasonably good results compared to their North American peers.

- Anecdotal evidence suggests that companies with a high ROCE (e.g., Donohue, Slocan, Willamette) tend to get acquired by larger companies with a lower ROCE.

- When we look at the company level results on an international basis, those firms with a focus on pulp [e.g., Pope & Talbot (POP–NYSE, Not Rated), Tembec (TBC–TSX, Sector Outperformer), Asia Pulp & Paper (APUUY–OTC, Not Rated), Aracruz (ARA–NYSE, Not Rated)] tend to generate the poorest ROCE. In our view, this largely reflects the very capital-intensive nature of pulp operations and significant barriers to exit. In the case of Aracruz and APP, it also reflects the very rapid growth strategies that these companies have pursued.

Exhibit 4. ROCE – North America (1998–2003)



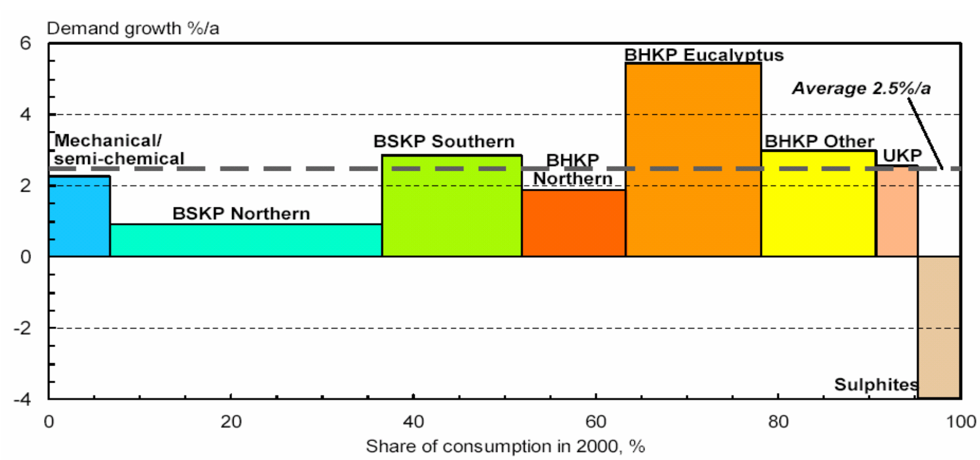
Source: PricewaterhouseCoopers, CIBC World Markets Inc.

Given this paper is essentially a problem analysis, it is useful to explore the factors driving the financial performance of pulp operations in greater detail. This is especially true in light of the important role the market pulp business plays in the financial performance of the B.C. industry.

Even solidwood companies that do not own pulp mills are affected by the state of the pulp market. The reason for this is that for a typical sawmill, roughly 30% of its normalized revenue is derived from the sale of chip residues to pulp & paper mills.

The B.C. industry primarily produces Northern Bleached Softwood Kraft (NBSK) pulp. While this is still the dominant grade of pulp, the estimates of demand growth in Exhibit 5 indicate it is also one of the slowest growing. While the long-term demand for market pulp is estimated to be growing at around 2.5%/year, NBSK demand growth is closer to 1.0%. The reality is that we are seeing a shift in the pulp industry from the Northern to Southern Hemisphere; and over time, the same shift is expected in large segments of the paper industry.

Exhibit 5. Demand For World Market Wood Pulp: 2000–2015

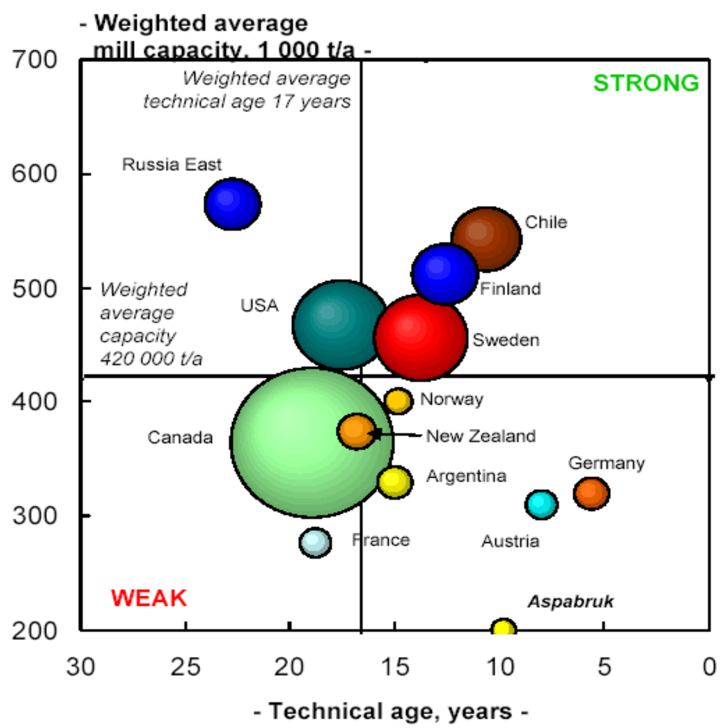


Source: Jaakko Poyry.

While Canada is still the largest player in the global market pulp industry, its industry is not well positioned from a competitive perspective (even when we ignore such variables as the exchange rate). This point is clear from Exhibit 6, which summarizes the relative age and size of the various national pulp industries. The message is reinforced when we take a closer look and examine the data at the company level in Exhibit 7.

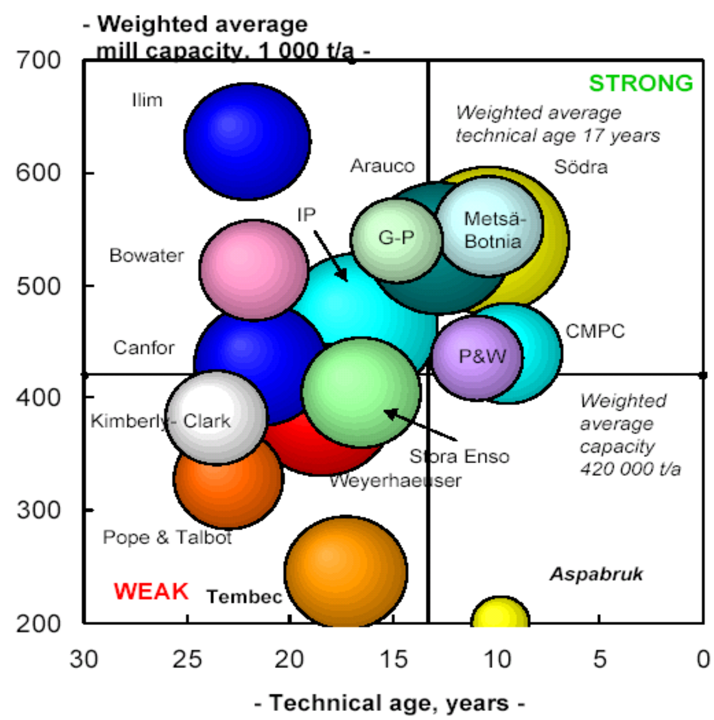
The industry in B.C. and Canada is relatively old, and the typical pulp mills are relatively small. The latter point matters since there are clear economies of scale in pulp production. While the weighted average capacity in the global industry is around 420,000 tpy, most of the new mills are being built around the 1 million tpy level.

Exhibit 6. Market BKSP Global Producers By Country



Source: Jaakko Poyry.

Exhibit 7. Market BKSP Global Producers

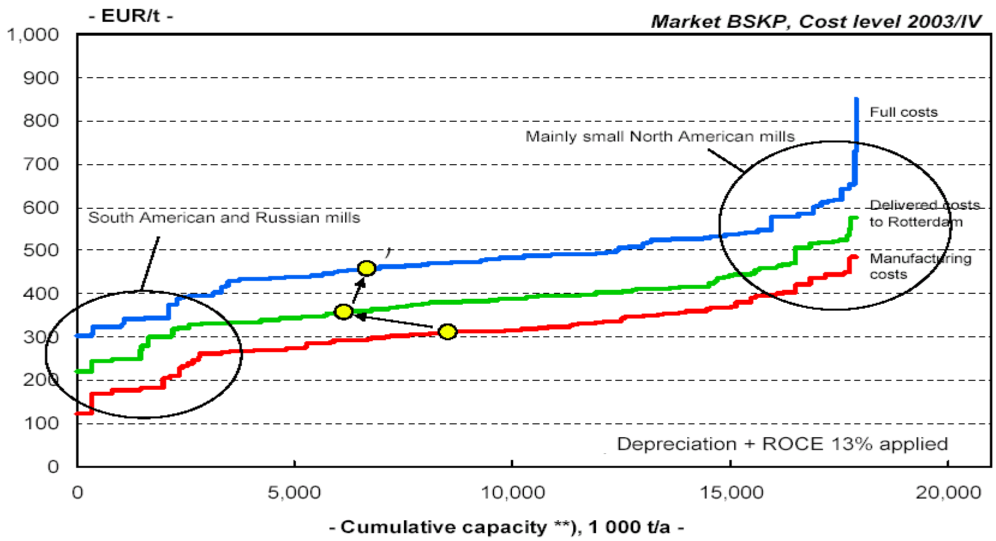


Source: Jaakko Poyry.

Global cost curves vary over time and are highly sensitive to changes in exchange rates. However, one would expect them to be consistent with the underlying technical data presented above. Exhibit 8 provides a snapshot of the global cost structure of the market bleached softwood kraft industry at the end of 2003. Estimates are provided for manufacturing costs, delivered costs to Northern Europe, and full costs (including estimated 13% cost of capital). The most relevant points to note are:

- Many of the small North American mills are at the very top of the cost curve, while the South American and Russian producers dominate the bottom of the curve.
- Due to the US$/C$ exchange rate rising from $0.76 in Q4/03 to roughly $0.81 in Q1/05, the position of the B.C. mills has deteriorated since these curves were estimated. However, within Canada, the B.C. mills are enjoying significantly lower fibre costs than those prevailing in Eastern Canada. This last point is explored in more detail below.

Exhibit 8. Global Cost Curves For Market Bleached Softwood Kraft Pulp



1 EUR = 1.23 USD

Source: Jaakko Poyry.

Changes In The Operating Environment

Changes abound in the global forest products sector. However, as indicated in the introduction, we only focus on five of the most salient. Having said that, we acknowledge there are a number of other changes, which are more subtle, but also of importance. Such under-appreciated changes occurring throughout the global forest sector, which we do not discuss in more detail, include:

- A realignment of exchange rates, with a general weakening of the U.S. dollar;
- A shift towards a more de-centralized management of the forest resource; and
- An increasing marginalization of the forest products industry in the capital markets.

We also do not discuss the long-simmering softwood lumber dispute between Canada and the United States. The reason is that we do not think it will change overtime in a meaningful way.

1. Industry Consolidation

Since the early 1990s, the bulk of the growth in forest product companies in the Northern Hemisphere has been through mergers and acquisitions. This has led to a significant increase in industry consolidation, and we expect this to continue. It is only in the last several years that the industry in B.C. has joined this trend.

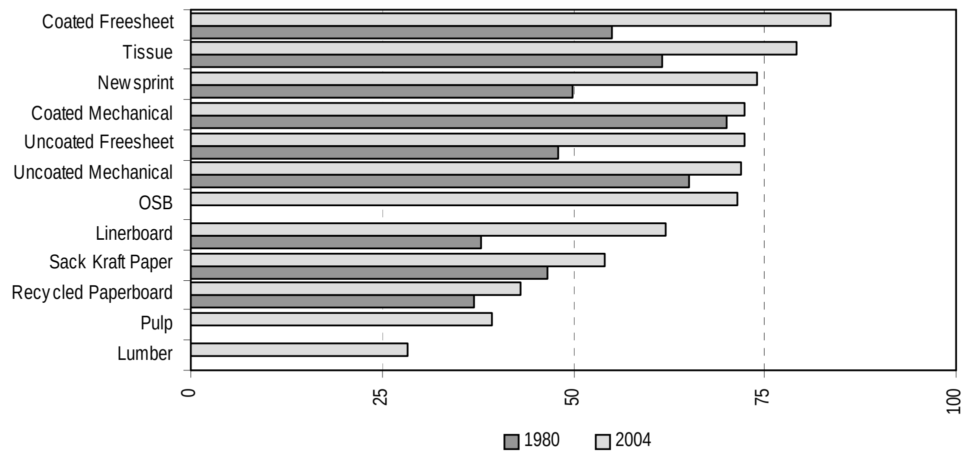
The change in concentration in North America for the various commodities is illustrated in Exhibit 9. The most salient points to note are:

- For oriented strand board (OSB) and most of the paper & packaging grades, the market share of the top five producers is now above 70%.

- Lumber and pulp — the two key products in the B.C. industry — are the two markets that are least concentrated. The top five producers have less than 30% of the lumber capacity, and 40% of the market pulp capacity.

- Uncoated freesheet (UFS) paper, linerboard and newsprint are the products that have experienced the greatest increase in their degree of concentration over the past 20 years.

Exhibit 9. Market Share Of Top Five Producers In North America



Source: Paperloop, Pulp& Paper Factbook, CIBC World Markets.

There are a number of economic forces driving this increase in industry concentration, including the following:

- Synergies can often be captured through a combination of assets. Based on a sample of 26 M&A transactions in the global industry, we estimate that the typical transaction results in a profit improvement, which is equivalent to 9% of the target company's total cost of goods sold. These synergies may be derived from a range of sources, including:
  - Leveraging best practices over a larger asset base (including investments in R&D).
  - Re-allocating production from higher to lower cost plants, both of which may have been running at less than full capacity.
  - Focusing specific mills or machines on the production of specialized products, which may avoid inefficiencies associated with grade changes.
  - Re-directing fibre and product flows so as to minimize transportation costs.
  - Capturing bulk purchasing discounts when securing inputs.
  - Removing duplicate fixed overhead costs.
- A larger company generally has more options when it comes to rationalizing operations. It is easier to remove redundant assets without losing customers.

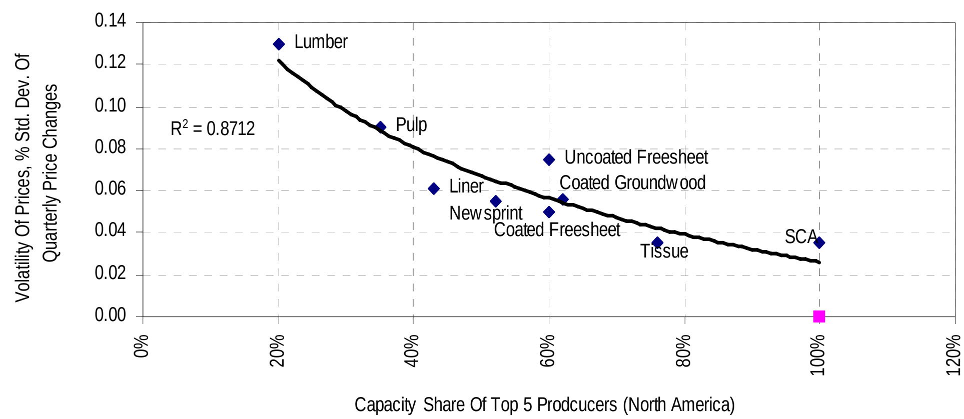
- Most stakeholders place a value on growth, and over time, it has tended to be cheaper to buy than build assets. This fact reflects factors like the poor profitability of existing assets, and the high cost of construction

- It is possible to avoid capital spending when two companies are combined, and both had wanted to pursue the same type of greenfield or brownfield project. With the combination, only the best projects tend to proceed.

When down-stream and up-stream players in the supply chain are larger, there may be an incentive to grow to provide a counterweight. Beyond a certain point, greater size also makes it easier to manage inventory levels and ensure supply balances demand at the industry level. Note that while we do not believe greater concentration will cause an increase in average product prices over a cycle, we do assert that it can lead to greater price stability. This assertion is consistent with the data in Exhibit 10, which documents a negative correlation between the volatility in commodity prices and the capacity share of the top five producers.

Lastly, greater size tends to allow companies to achieve a lower cost of capital. The data in Exhibit 11 document this positive relation in the case of equity financing. The stock market multiple conferred on companies (as measured by the ratio of Total Enterprise Value/Normalized EBITDA) tends to increase with the market capitalization of the company. This same general relationship can be shown to exist when dealing with debt financing.

Exhibit 10. Industry Concentration In North America Versus Commodity Price Volatility, By Product



Source: Paperloop, CIBC World Markets.

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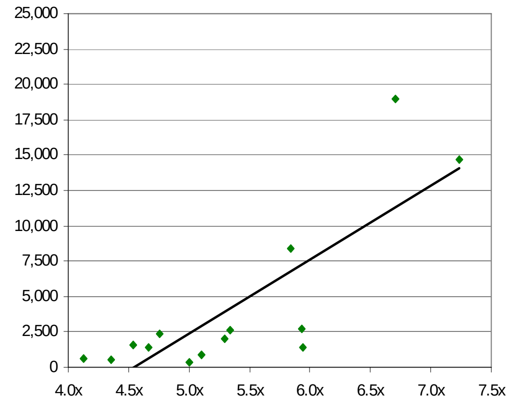
Exhibit 11. Market Capitalization & Trading Multiple

Rank	Company	Mkt. Cap. (US$ mlns.)	TEV/Trend EBITDA
1	International Paper	18,938	6.7
2	Weyerhaeuser	14,649	7.2
3	Georgia Pacific	8,418	5.8
4	Louisiana-Pacific	2,702	5.9
5	Domtar	2,659	5.3
6	Abitibi	2,357	4.8
7	Bowater	2,000	5.3
8	Canfor	1,577	4.5
9	West Fraser	1,422	4.7
10	Norbord	1,376	5.9
11	Cascades	869	5.1
12	NorskeCanada	606	4.1
13	Tembec	499	4.4
14	Fraser Papers	359	5.0

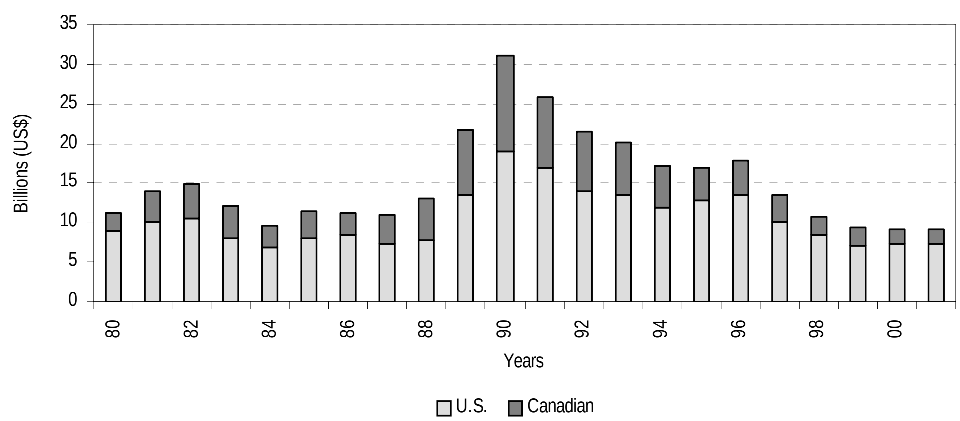


Source: Bloomberg, CIBC World Markets Inc.

While there are a number of factors, which encourage companies to get larger, bigger is not necessarily always better. The reality is that larger companies generally require more layers of management, and tend to be more bureaucratic and less responsive to the market. Over time, it is this “X-inefficiency” which may result in the initial synergies being dissipated.

The emphasis on external as opposed to internal growth is reflected in the capital spending data summarized in Exhibit 12. It is clear that there has been a dramatic fall in spending on new capital throughout the North American pulp & paper industry over the past decade. This result is arguably justified given the inability of the industry to cover its cost of capital. However, at one point, the lack of reinvestment is going to be reflected in deteriorating plant infrastructures, and eventually threaten the long-term viability of many of the mills.

Exhibit 12. North American Pulp, Paper And Paperboard Capital Spending (US$ blns.)



Source: Paperloop, CIBC World Markets Inc.

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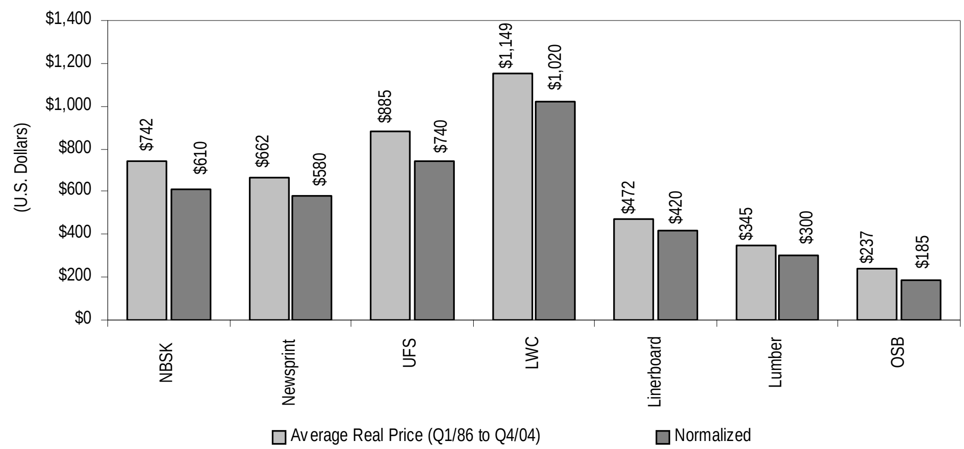
2. Commodity Price Trends

By their very nature, commodity prices tend to be highly cyclical and difficult to predict for a given period. As a result, when companies analyze potential projects in the forest products industry, they tend to focus on "normalized" prices. According to our use, a "normalized price" is simply the estimated real long-term average price over the next 10–15 years.

Exhibit 13 summarizes our normalized price estimates for most of the major forest products, and compares them with the average real price over the period 1986 to 2004. The key conclusion is that, in every case, our normalized price going forward is lower than the average historical price, and it implies a secular decline in real prices. With the exception of only a few commodities (e.g., recycled paper, scrap steel), this downward price trend is prevalent throughout the basic materials sector.

For certain products in which Canada supplies a meaningful portion of the global supply (e.g., lumber, pulp, newsprint), the normalized prices are influenced by the long-term C$/US$ exchange rate. Due to cost-push pressure, a stronger Canadian dollar implies a higher normalized price when measured in U.S. dollars. Difficulty in forecasting the long-term C$/US$ exchange rate is arguably the greatest source of uncertainty when estimating some of the normalized prices.

Exhibit 13. Normalized And Historical Prices (Real 2004 Dollars)



Source: Pulp & Paper Week, Bloomberg, CIBC World Markets Inc.

In our view, the secular decline in commodity prices is due to a range of factors. For example:

- Lower production costs resulting from technological improvements (e.g., improved recovery factors);
- Lower marginal costs for the industry due to the closure of the higher cost plants — flatter cost curves lead to lower prices at the peak of the cycle;
- Increasing supply from emerging, lower-cost producing regions;
- Falling "use-factors" (e.g., consumption per unit of real industrial production), due to greater availability and acceptability of substitute products; and
- Few barriers to entry into the industry, but meaningful barriers to exit.

Note that the last point is a structural problem in the forest products industry, and is compounded by the fact that many of the industry's facilities are located in single-industry communities in which labor has a low opportunity cost. As a result, governments around the world are often under intense pressure to support the ongoing operation of marginal facilities. While such support may extend the life of specific communities, it also contributes to over-supply in the industry and depresses product prices for all producers (and communities).

3. Supply Of Wood Fibre

The supply of wood fibre is a constant source of interest in the forest products industry because of its importance in the cost structure, and the fact that in much of the world the timber base is actually owned by the governments — the industry is often dealing with the private use of a public resource. Furthermore, the gradual shifts of large parts of the forest products industry from the Northern to the Southern Hemisphere is driven by the different rates at which wood fibre can be grown.

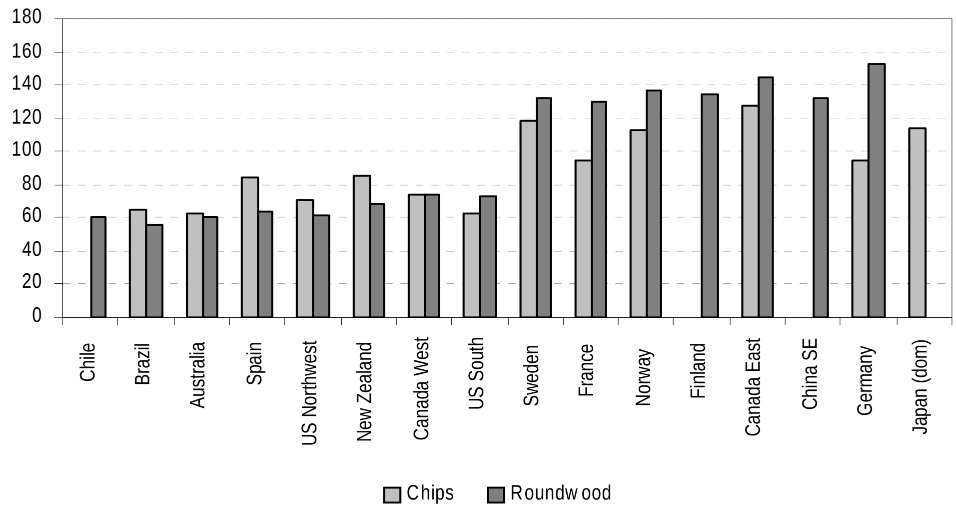
It is useful to start any discussion of wood fibre markets by first establishing the empirical facts regarding the current prices of wood throughout the global industry. Exhibit 14 illustrates the prices of average coniferous pulp logs and chips in the key producing regions in the third quarter of 2004. We focus on pulp fibre in this instance because it tends to be more homogeneous than sawlogs, and thus makes inter-regional comparisons more meaningful. The most salient points to note in Exhibit 14 are:

- Wood fibre prices are typically much lower in the Southern than Northern Hemisphere. Prices in Chile, Brazil and Australia are one-half to one-third of that prevailing in many of the main producing regions in the Northern Hemisphere.

- B.C. faces much lower prices than does Eastern Canada. We expect this situation to continue with increased harvesting of "beetle wood" in B.C. over the next several years, and further contractions in wood supply in Quebec and Ontario. Having said that, fibre prices in Eastern Canada are expected to fall over time due to shrinkage of the region's pulp & paper industry.

- Virgin fibre prices in China and Japan are consistently amongst the highest in the world due to their deficit in wood fibre. We think this premium will continue, but that the differential will narrow over time due to inter-regional trade.

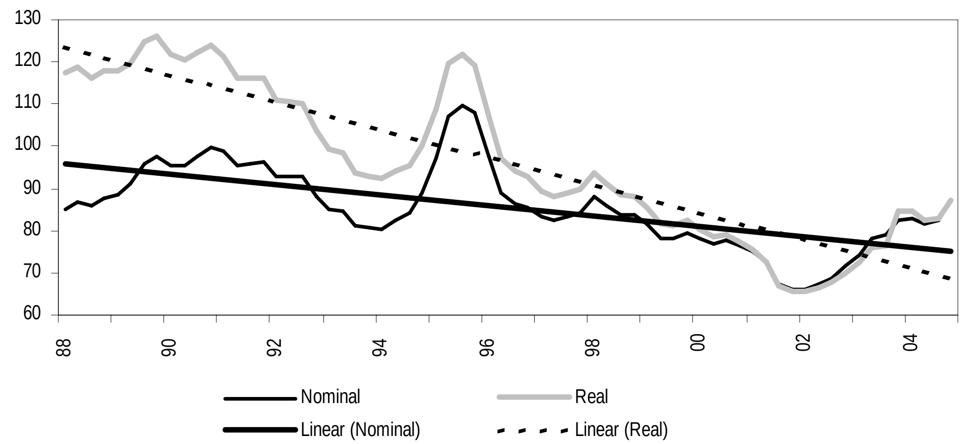
Exhibit 14. Average Delivered Softwood Fibre Prices For Q4/04 (US$/ODMT)



Source: Wood resources International.

Having established where fibre prices currently stand, we now look at where they have come from. The trend in average global conifer chip prices since the 1980s is illustrated in Exhibit 15. Similar trends hold for conifer sawlogs and non-conifer pulpwood. The data clearly demonstrates that real (and nominal) wood prices are on a secular decline.

Exhibit 15. Global Average Conifer Chips (Softwood)

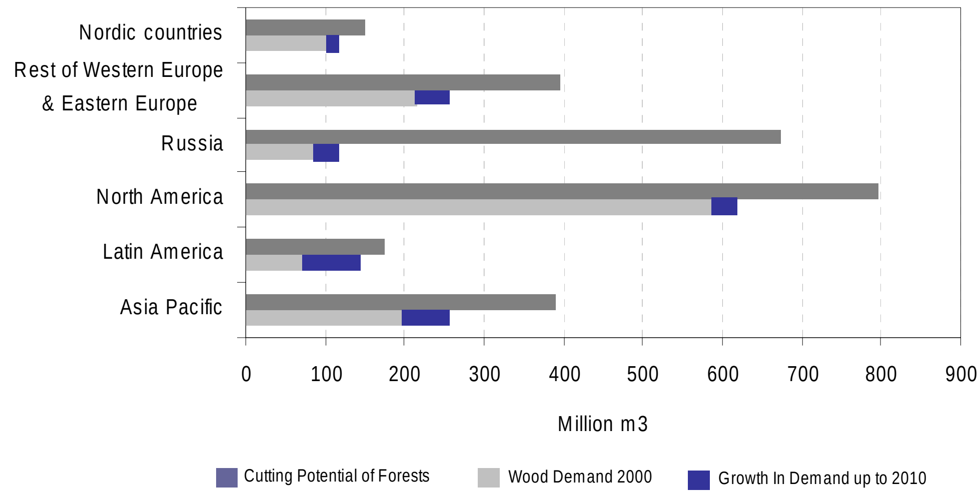


Source: Wood Resources, CIBC World Markets Inc.

We expect changes in the prices of pulp logs and sawlogs to become more highly correlated over time with the further expansion of the engineered wood market and improvements in sawmilling technology. Industry is essentially able to apply a “technological fix” to nature, and produce higher quality products with lower quality wood.

Insight into the future direction of fibre prices is provided in Exhibit 16. The chart compares regional data on annual forest growth (which is interpreted as the “cutting potential” of forests), with the actual and expected roundwood demand in 2000 and 2010, respectively. The chart excludes data on tropical natural forests, and is provided by Jaakko Poyry Consulting (the largest consultancy to the global forest products industry).

Exhibit 16. Regional Growth In Fibre Vs. Annual Demand



Source: Jaakko Poyry.

Some of the key points to note related to Exhibit 16 are:

- While China and Eastern Canada are short of wood, every other major region is growing more than it is using. This suggests wood prices are likely to continue their downward trend.

- It is not clear to what extent the data from Jaakko Poyry capture the volume of illegal harvests, which are difficult to record. It is also questionable whether the current level of illegal harvesting is sustainable in the longer term, at least at the current prices. In a joint report, Seneca Creek Associates and Wood Resources International estimate that 8%–10% of global wood products production involves illegal wood. However, the guesstimates for individual countries run much higher, with 15% for Brazil, 15%–20% for Russia; 30% for China, and 60% for Indonesia.

- Softwood plantations are making an increasing contribution to the harvests in Asia Pacific and Latin America. Radiata Pine harvests are forecasted to increase from 75 million m3 to 120 million m3 from 1996 to 2008.

- By far the biggest gap between the estimated potential harvest and the current harvest is in Russia. While the biological growth rate implies a technical cutting potential of roughly 650 million m3 per year, the lack of infrastructure and other constraints means that the economically accessible harvest is far lower (but difficult to accurately estimate). Having said that, as recently as the late 1980s, the harvest was around 300 million m3. Given the Russian industrial harvest has averaged between 100–130 million m3 over the last five years, it does not seem totally unrealistic to guesstimate a potential rise of 100 million m3 over time. To put this volume into context, it is the equivalent to roughly 50% of the total harvest of Canada.

Historically, the price signal being sent to the market is that virgin wood fibre has become less economically scarce over time. Going forward, the above analysis suggests this trend will continue. If this is true, it has a series of implications worth noting. For example:

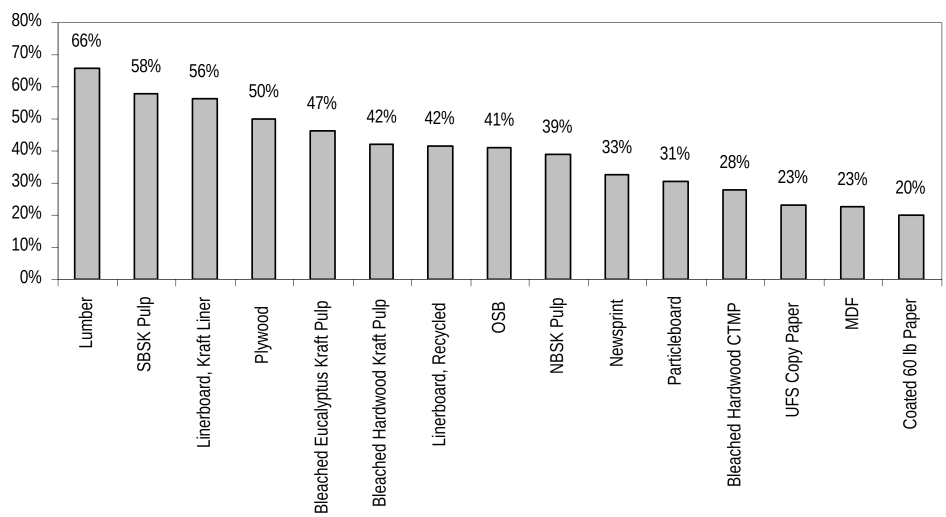
- It will be more difficult for sustainable forest management activities to compete with alternative uses (e.g., timber plantations versus soya bean and cattle production in Brazil);

- The stumpage price earned by governments on their sale of public timber will be reduced over time;
- The price of privately owned timberland will tend to decline; and,
- Due to the competitive nature of markets, the costs and prices of forest products will tend to continue to decline.

Regarding the last point, Exhibit 17 provides a framework for identifying which forest products will likely experience the greatest decrease in their costs and prices. The chart ranks all of the major forest products according to the percentage of mill-gate operating costs that are due to fibre. The key conclusions to note are:

- Lumber, plywood and linerboard will likely experience the greatest fall in costs and prices;
- Freesheet paper and newsprint will likely experience the smallest decrease; and,
- The impact on the pulp producers will vary depending on the region and type of pulp being produced. For example, fibre contributes a far higher share of the cost in producing Southern Bleached Softwood Kraft (SBSK) pulp (56%) than NBSK pulp (39%). All else held constant, this suggests the SBSK producers should experience a greater decrease in their costs. Having said that, we expect relatively greater downward pressure on the price of softwood chips in B.C. over the next several years due to the excess of "beetle wood". As a result, NBSK pulp producers in B.C. are also expected to enjoy a meaningful drop in their costs.

Exhibit 17. Fibre As % Of Mill Gate Operating Cost, By Product



Source: RISI, CIBC World Markets Inc.

Given the increases in fibre supply from offshore sources, we expect increasing competition in international solidwood markets. At the same time, we expect the barriers to Canadian lumber shipments to the United States to continue. As a result, it is logical for B.C. solidwood companies to place an increased emphasis on producing "housing components". Such a strategy will allow the companies to stay within North America, but bypass the barriers to the U.S. market.

4. Price Of Energy

Primarily due to the rapid economic growth in countries like China and India, which are at a very energy intensive stage of their development, we expect that real energy prices will be on a secular upward trend for the foreseeable future.

As in the case of fibre, the impact of higher energy prices varies depending on the forest product in question. Exhibit 18 is analogous to Exhibit 17 above, but instead shows the percent of mill operating costs, which consists of energy. The most salient points to note are:

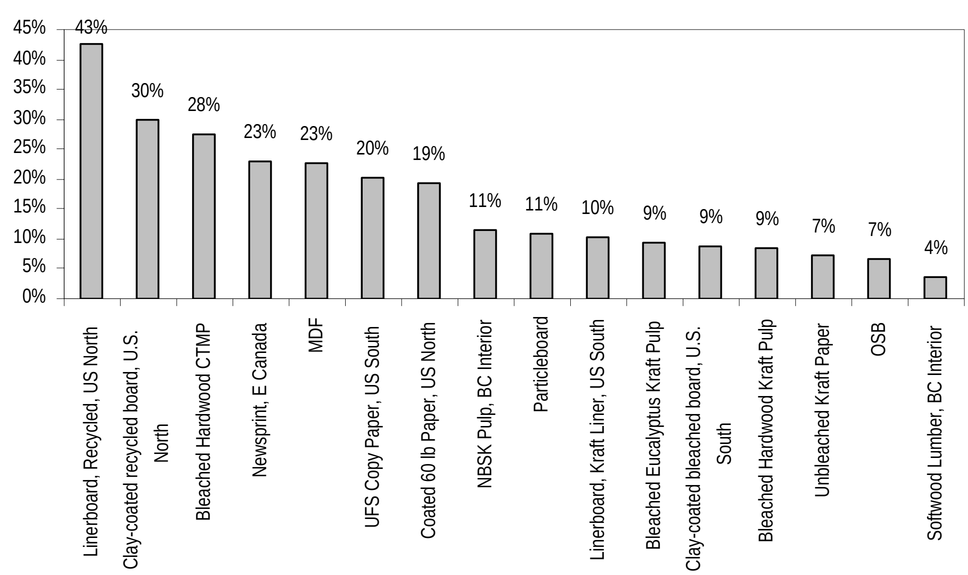
- Products made from recovered paper tend to be the most energy intensive (e.g., recycled linerboard and paperboard). However, essentially none of these are made in B.C.

- Newsprint/groundwood paper and Chemi-Thermo-Mechanical Pulp (CTMP) are the two products made in B.C. that are the most exposed to changes in energy prices. For example, each $10/MW-hr change in electricity prices is associated with roughly a $23-tonne change in paper costs. The reason for the high exposure is that the thermo-mechanical pulping (TMP) process is energy intensive (but much more efficient in the use of wood fibre).

- Sawmills require relatively little energy for the processing of lumber, with energy typically making up less than 4% of the mill-gate operating cost. On average, each $10/MW-hour change in electricity prices will only increase sawmilling costs by about $1/Mbf.

- Kraft pulp is potentially the least energy intensive forest product since the kraft pulp process can technically be a net supplier of energy. Having said that, few of the kraft pulp mills actually do so since they have not generally had the economic incentive to achieve their potential. Energy currently makes up roughly 10% of the mill-gate cost in the typical NBSK pulp mill in the B.C. Interior.

Exhibit 18. Energy As % Of Mill Gate Operating Cost, By Product



Source: RISI, CIBC World Markets Inc.

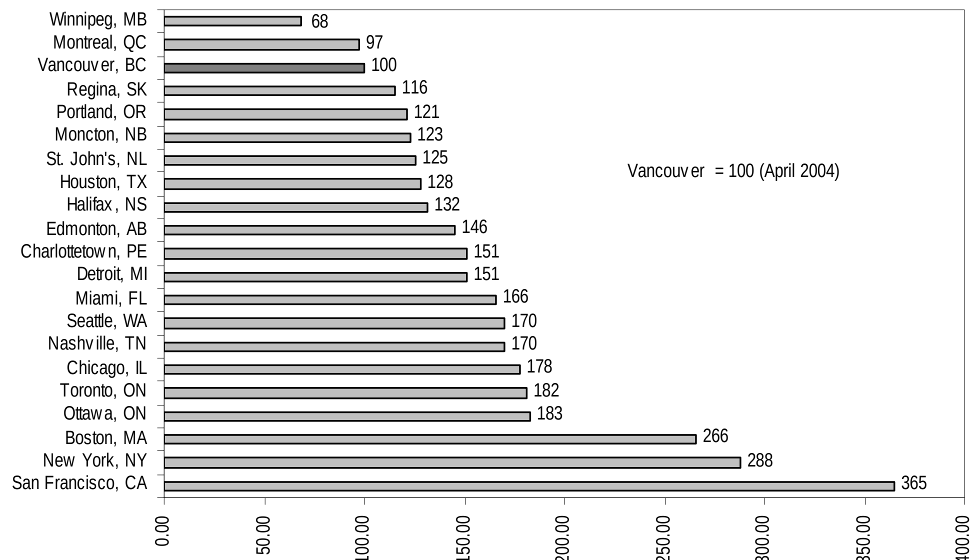
CIBC World Markets

While energy prices are expected to increase in B.C., they are relatively low and are expected to remain so. Exhibit 19 illustrates a comparative index of electricity prices for large power customers in various cities throughout North America. The snapshot is taken as of April 2004, with Vancouver equal to 100.

Due to its heavy emphasis on low cost hydroelectric energy, B.C. is one of the lowest energy cost jurisdictions on the continent. This fact confers the greatest relative advantage on the province's newsprint, groundwood paper and CTMP pulp mills. Furthermore, we expect this advantage to increase steadily over the next several years as electricity prices rise in Eastern Canada — a key competing region. NorskeCanada (NS–TSX, Sector Outperformer), which produces the bulk of the newsprint and all the groundwood paper made in B.C., is B.C. Hydro's single largest customer.

Interestingly, compared to Eastern Canada, it appears to be easier to pursue industrial-imbedded co-generation projects in B.C.

Exhibit 19. Comparative Index Of Electricity Prices For Large Power Customers



Source: Hydro Quebec, CIBC World Markets Inc.

5. Emergence Of China

In our view, the emergence of China as an economic power is arguably the biggest economic shock to the global forest products industry. This is both in terms of its affects on the overall macro-economy, as well as the forest products industry in particular. The following material highlights some of the key issues related to this "shock", and draws on more in-depth analyses presented in some of our earlier work. Readers wanting to delve deeper into the development of the Chinese industry and its impact on the global forest product markets should refer to the following two presentations:

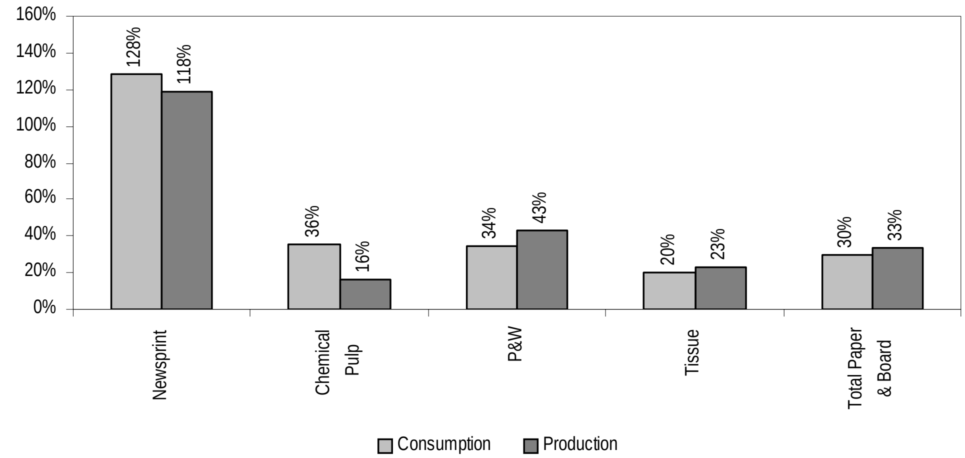
- China and the Global Paper & Forest Products Industry: A Focus on Fiber, presented at The Mega-Trends Workshop, Center for International Forest Research (CIFOR), in Bogor, Indonesia, November 2004.
- The Expanding Chinese Paper & Forest Products Industry: Issues and Implications, presented at the CLSA China Investors Forum, in Qingdao China, May 2004.

It is useful to start this last section by noting the four most distinguishing features of the Chinese forest products sector.

1. It is large by international standards.
   - After the United States, it is the world's largest producer and consumer of forest products.
   - While the industrial roundwood harvest is relatively small at 40 million m3/year, its aggregate harvest is roughly 224 million m3/year — about three times that of B.C.
   - The Chinese industry produces roughly 43 million tonnes per year of paper and paperboard — more than two times that of Canada.
2. It is really two industries — an old one and a new one.
   - The new industry is amongst the most modern in the world, and highly competitive.
   - The old industry is very fragmented, and amongst the worst in the world with respect to cost, quality, and pollution.
3. The paper & packaging side of the industry is heavily dependent on recovered paper and non-wood fibre. These two products make up 45% and 35%, respectively, of the furnish used to make paper & packaging.
4. Unlike most regions of the world, it is short of wood fibre.
   - The country is only 40% self-sufficient in industrial roundwood.
   - While the official statistics report there are over 50 million ha of forest plantations, less than 2% of this amount (i.e., 850,000 ha) appears to be controlled by larger industrial users.
   - The government is targeting to increase the area in plantations by 13 million ha over the 2001–2015 period, with 45% for pulpwood. Geographically, the bulk of these new plantations will be in North Eastern China and Inner Mongolia.
   - Senior officials in the State Forestry Administration suggest that China's forests will provide 3 billion m3 of timber by 2010, and that this will be sufficient to satisfy the country's domestic demand. However, in our view, the plantation and forest inventory data in China are suspect, and all the estimates must be treated with caution.

China has been the driving force behind global growth in the consumption and production of the paper, paperboard and panels sectors since the late 1990s. Exhibit 20 illustrates Chinese as a percentage of global growth in consumption and production, by major pulp & paper product, over the period 1998–2002. Note that the global newsprint industry would have actually shrunk over this period if it were not for China.

Exhibit 20. Chinese As A % Of Growth In Global Consumption And Production, By Grade (1998–2002)



Source: Paperloop, CIBC World Markets Inc.

As in most industries, China strives to be self-sufficient. It is only in the pulp segment in which growth in production has significantly lagged the growth in consumption, and this reflects the fundamental scarcity of wood fibre in China.

The good news for international markets is that, despite the rapid growth in Chinese capacity, it is only in the printing & writing paper grades in which production has outstripped consumption growth. Overall, the impact on the global paper & paperboard industry has been relatively neutral — 30% increase in consumption versus 33% increase in production.

From a market perspective, it is useful to know whether China will be a customer or a competitor for B.C. The answer to this question is — it depends. Our general conclusion is that:

- For paper, China will be neither;
- For market pulp, China will be a customer; and
- For solidwood, China will be a competitor.

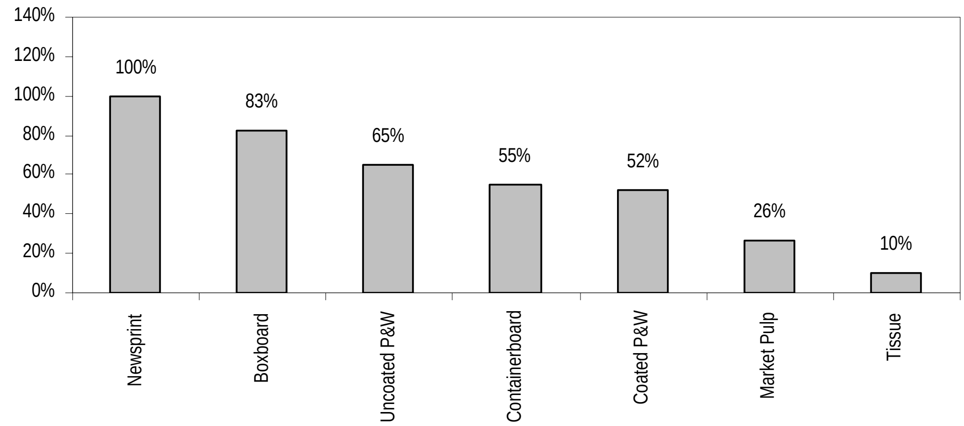
Why do we say this?

Paper

The data shows that while Chinese consumption of paper has grown dramatically in recent years, up to now it has been largely satisfied by an increase in local production. We expect this to continue. The Chinese government has appeared to encourage a policy of import-substitution.

Going forward, we think China will become even more dominant in driving changes in global paper capacity. The data in Exhibit 21 examines expected pulp & paper capacity changes over the 2004–07 period, and shows the Chinese share as a percentage of the global total. China is expected to contribute more than one-half of the global growth in all the major grades of paper and paperboard. (Even in market pulp, we expect China to account for about one-quarter of the global increase in capacity.)

Exhibit 21. Chinese As A % Of Global Confirmed Capacity Changes, By Grade (2004–2007)



Source: NLK, CIBC World Markets Inc.

As a whole, the Chinese paper and paperboard industry produced roughly 40 million tpy in 2003. However, the government's stated target is for this to reach between 50 million to 60 million tpy by 2010 (i.e., a 20%–50% increase over seven years). In the meantime, we expect the Chinese central government to make liberal use of anti-dumping duties to protect its newly emerging paper industry.

Pulp

Chinese imports of market pulp have increased from ½ million tpy in 1995 to 6 million in 2003. When expressed as percentage consumption, imports have risen from 26% to 72%. Although Canada used to be China's largest offshore source, Russia is now its biggest supplier of market pulp with roughly a 20% market share. Having said that, we still clearly view China as a customer for Canadian market pulp.

Going forward, China wants to double its virgin pulp capacity to 4.3 million tpy by 2010. Even if this target is met, it appears that annual imports will still need to grow in the 5%–6% range.

Given the currently announced projects, China will account for about one-quarter of the global increase in market pulp capacity over the 2004-07 period (see Exhibit 20). Worldwide, almost 9 million tpy of market pulp could be added over the 2004–08 period. As a result, we do not foresee any global shortage of market pulp even with the increases in Chinese demand. This observation has important implications for the critical "buy versus build" decision which Chinese paper producers must make when considering how they will source their pulp.

Arguably the biggest "wild-card" facing the global forest products industry over the next decade is the fate of the Chinese non-wood pulp industry. China currently produces 14 million tpy of pulp, but 84% of this is non-wood based (i.e., mostly made from wheat straw).

Most of the Chinese non-wood pulp is integrated forwarded into the production of printing & writing paper and paperboard. Furthermore, due to the age of the mills and quality of the fibre, the product produced tends to be of low quality. It is for this last reason that, when estimating the net change in domestic capacity, the Chinese Paper Association has the rule of thumb that for each two new tonnes of paper capacity that is built, one tonne of old, non-wood capacity is closed.

Given the fragmented nature of the Chinese paper & forest products industry and poor quality of data, it is very difficult to verify the accuracy of the above “rule of thumb”. However, during our series of visits with Chinese companies over the past several years, the anecdotal evidence is consistent with the “2-for-1 rule”. Assuming the rule is correct, it has important implications for our estimates for paper capacity and pulp demand. For example, if we apply the rule to our 2005 estimates, the global capacity increases would fall from 2.5% to 1.6% for newsprint; from 3.6% to 2.5% for coated groundwood; from 3.6% to 3.2% for UFS; from 4.9% to 2.9% for coated freesheet; and from 3.8% to 3.2% for containerboard. In other words, there is the possibility that most of the western pundits are meaningfully overestimating the net increases in global paper and paperboard capacity if they are ignoring the closures that are expected to occur in the “old Chinese industry”.

The older processes for producing non-wood pulp tend to be highly polluting and inefficient in the use of water. Chinese industry sources indicate that many of the old non-wood pulp mills use up to 10 times the volume of water to produce one tonne of paper than do the modern mills. This is key, since clean water is arguably the scarcest resource in China, and is a critical input into the important agricultural sector.

Late last year, the Chinese Minister of Water Resources stated that water shortages are already causing $23 billion in losses in Chinese industrial output, and that they are “challenging national security”. It is for this reason that we think water shortages may well be the catalyst for significant closures of non-wood pulp capacity over the next several years. Note that a hypothetical 25% reduction in non-wood pulp production is equivalent to roughly an 80% rise in China’s pulp imports. There is the potential for a large positive shock to the global pulp market, which we have not built into our forecasts.

Solidwood

Although there are likely to be lower-value added segments of the solidwood industry in which China is a net importer from B.C., we think China will generally be more of a competitor than a customer for solidwood.

Over the past several years, there is no question that companies with a presence in B.C. are looking harder at China. In some cases, the companies view China as an export platform for remanufacturing operations [e.g., Interfor (IFP.SV.A–TSX, Sector Underperformer)); and in others, it is viewed as a long-term market (e.g., Weyerhaeuser (WY–NYSE, Restricted)]. Canfor appears to fall in the latter category — anecdotal evidence suggests Canfor is the largest shipper of B.C. lumber to China, and it is trying to understand how it can grow with its major customers [e.g., Home Depot (HD–NYSE, Sector Outperformer)], which are now expanding into China.

The demand for wood in housing in China is still largely limited to the “Villa World”, and is very much a niche market. Having said that, China’s apparent consumption of lumber increased to almost 18,000 m3 in 2004, which is more than a 60% increase since 2001. The increase in supply required to satisfy this higher consumption was sourced roughly half-and-half by increased domestic production and imports. However, only about one-quarter of the lumber imports are softwood species (i.e., roughly 2,000 m3).

An appreciation for the cost competitiveness of China’s sawmilling industry can be gained from the chart in Exhibit 22, which compares sawmilling conversion costs (excluding wood costs, but including kiln drying) for the various regional industries in 2002. Primarily due to low labor costs (and despite having old equipment and far higher drying costs) the data suggests that China enjoys a significant advantage over other producing regions.

Even before we factor in the roughly 25% appreciation of the Canadian dollar against the Chinese Yuan over the 2002–2005 period, the average conversion cost in China is estimated to be less than one-half that prevailing in the B.C. Interior. Furthermore, we expect conversion costs in China to decline over time as newer sawmills are constructed. This will provide the Chinese an even larger margin with which to cover the cost of imported logs.

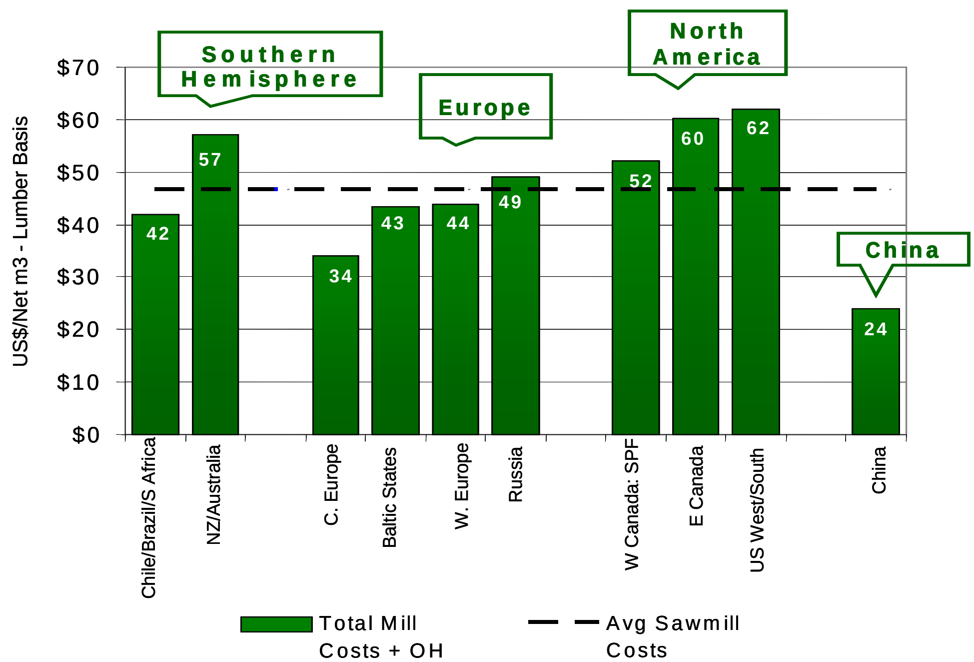
Turning to other solidwood products, there is currently an excess supply in China of plywood, flooring and wooden furniture.

- With respect to plywood, while apparent consumption jumped by more than 8,500 m3 (+82%) between 2001 and 2004, domestic production and exports rose by almost 12,000 m3 (+130%) and 1,600 m3 (+280%), respectively.

- With respect to wooden furniture, China has exploded onto the international markets in recent years. The country's exports of wood furniture to the United States have risen from US$175 million in 1992 to US$4.3 billion in 2004. As a result, China's share of U.S. imports is up from 5% to 40%, and it is now satisfying 20% of the total U.S. market.

- The foundation for China's wooden furniture industry is its massive and modern Medium Density Fiberboard (MDF) industry. China is now the largest MDF producer in the world, with production having risen from 5 million m3 to 15 million m3 over the 1996–2003 period.

Exhibit 22. Global Sawmilling Conversion Costs – Average 2002



Source: RE Taylor & Associates Ltd, PwC.

While there is a potential long-term market for B.C. solidwood products, we think it is limited for the next 10 years for a series of reasons:

- There is very limited infrastructure to introduce potential homebuyers to wood frame construction.

- Chinese homebuilders and consumers are used to clay brick, concrete and steel, and thus there are significant cultural barriers to the use of wood.

- Consumers and developers have concerns about the price, durability, flammability, and seismic strength of wood.
- The Chinese government is promoting lightweight concrete blocks and steel as a substitute for clay bricks.

The last point above is worth exploring. Clay brick is the dominant building material in most regions of China. However, the government is actively discouraging its use since the production of clay bricks consumes roughly one-quarter of the nations output of coal — a heavily polluting, and increasingly scarce resource. Concrete blocks and steel are now being encouraged as substitute products to help absorb the over supply of these commodities, which has recently developed due to massive investment in new capacity.

Our sense is that China will not be a meaningful market for B.C. solidwood producers until we start viewing the “wood issue” from a Chinese perspective. One logical strategy is to promote the construction of one- to two-story hybrid buildings that use wood on the top in the roof system, but on a concrete base.

In terms of satisfying China’s demand for roundwood and lumber, we think Russia and Southeast Asia will play the biggest role in filling the “gap”. (On the other hand, it is the United States that is expected to primarily fill China’s ”gap” in recovered paper.)

Imports of Russian logs have already risen from 1 million m3 in the mid-1990s to roughly 14 million m3 in 2003. Given that some observers guesstimate that as much as 40% of these Russian logs are from illegal harvests, it is not clear to what extent this fibre flow is sustainable at its current level. However, Russia is expected to begin implementing its new Forest Code in early 2005. Furthermore, there is already anecdotal evidence that the clarification of property rights and the regulatory regime is attracting some new export oriented investment into the Russian forest sector.

The bottom line is that, for the solidwood market as a whole, we think China is more of a competitor than a customer for B.C.’s forest products industry. This is due to a combination of:

1. A predisposition to non-wood materials for construction in China;
2. Relatively low cost fibre from other parts of Asia;
3. Very low conversion costs in China; and,
4. The priority placed in China on self-sufficiency and maximizing value-added production.

Conclusions

We would like to summarize with the following 10 key conclusions:

1. While B.C. is a large producer of forest products, even its recently expanded companies like Canfor and West Fraser are small by global standards.
2. The B.C. (and global) forest products industry has not earned its 10%–13% cost of capital. It is especially difficult to attract capital when the average ROCE has only been around 5%.
3. Pulp is the commodity that has generally generated the lowest ROCE, and its long-term viability in B.C. also threatens the sawmilling sector.

4. Partly in response to low returns, we expect the B.C. (and global) forest products industry to continue to consolidate. (Might this lead to more stable prices?)

5. We expect the secular downward trend in real forest product prices to continue.

6. Although there are some regional shortages, we do not see any global shortage of wood fibre. As a result, the B.C. forest products industry can expect a great deal of competition in both the commodity and capital markets.

7. Given the shifts in regional fibre supply, more Canadian and U.S. solidwood production will likely need to stay in North America. As a result, it is logical for B.C. solidwood companies to place an increased emphasis on producing "housing components" in light of the ongoing softwood lumber dispute with the United States.

8. We expect increases in the relative prices of energy, and B.C. enjoys a competitive advantage. This is most beneficial to the producers of newsprint/groundwood paper

9. The biggest "shocks" to the global forest products industry are emanating from China and Russia — the change is explosive, in our view. At the aggregate level, will China be a customer or a competitor?

   - Customer for pulp;
   - Competitor for solidwood; and
   - Neither for paper.

10. If there were one "external change" that could have the biggest positive impact on the B.C. forest products industry over the next five years, it would arguably be the closure of the Chinese non-wood pulp & paper sector. However, Canadian industry and government are not currently focused on this issue.

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International Forest Products Limited (12, 2g) (IFP.SV.A-TSX, C$7.22, Sector Underperformer)
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Caraustar Industries (CSAR-NASDAQ, US$13.57, Not Rated)
Empresas CMPC SA (CMPC-CE, [CLP]12350.00, Not Rated)
Glatfelter (GLT-NYSE, US$14.58, Not Rated)
Graphic Packaging International Corp (GPK-NYSE, US$5.00, Not Rated)
Kimberly-Clark (KMB-NYSE, US$65.73, Not Rated)
Longview Fibre Co. (LFB-NYSE, US$17.01, Not Rated)
MeadWestvaco Corp. (MWV-NYSE, US$32.82, Not Rated)
Norske Skogindustrier ASA (NSG-OL, [NOK]134.50, Not Rated)
Plum Creek Timber Co. Ltd. (PCL-NYSE, US$36.69, Not Rated)
Pope & Talbot Inc. (POP-NYSE, US$17.60, Not Rated)
Potlatch Corp. (PCH-NYSE, US$46.31, Not Rated)
Rayonier Inc. (RYN-NYSE, US$49.40, Not Rated)
Rock-Tenn Co. (RKT-NYSE, US$14.34, Not Rated)
Schweitzer Mauduit Int'l (SWM-NYSE, US$34.00, Not Rated)
Smurfit Stone Container Corp. (SSCC-NASDAQ, US$16.74, Not Rated)
Sonoco Products Co. (SON-NYSE, US$29.97, Not Rated)
Stora Enso Oyj (SEO-NYSE, US$15.11, Not Rated)

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S	Suspended	Stock coverage is temporarily halted.
DR	Dropped	Stock coverage is discontinued.
R	Restricted	Restricted
UR	Under Review	Under Review
Sector Weightings**		
O	Overweight	Sector is expected to outperform the broader market averages.
M	Market Weight	Sector is expected to equal the performance of the broader market averages.
U	Underweight	Sector is expected to underperform the broader market averages.
NA	None	Sector rating is not applicable.

**Broader market averages refer to the S&P 500 in the U.S. and the S&P/TSX Composite in Canada.
"Speculative" indicates that an investment in this security involves a high amount of risk due to volatility and/or liquidity issues.
***Restricted due to a potential conflict of interest.
"CC" indicates Commencement of Coverage. The analyst named started covering the security on the date specified.

Ratings Distribution*: CIBC World Markets' Coverage Universe

(as of 14 Mar 2005)	Count	Percent	Inv. Banking Relationships	Count	Percent
Sector Outperformer (Buy)	283	33.3%	Sector Outperformer (Buy)	169	59.7%
Sector Performer (Hold/Neutral)	398	46.9%	Sector Performer (Hold/Neutral)	230	57.8%
Sector Underperformer (Sell)	164	19.3%	Sector Underperformer (Sell)	75	45.7%
Restricted	0	0.0%	Restricted	0	0.0%

Ratings Distribution: Paper & Forest Products Coverage Universe

(as of 14 Mar 2005)	Count	Percent	Inv. Banking Relationships	Count	Percent
Sector Outperformer (Buy)	5	33.3%	Sector Outperformer (Buy)	5	100.0%
Sector Performer (Hold/Neutral)	6	40.0%	Sector Performer (Hold/Neutral)	6	100.0%
Sector Underperformer (Sell)	4	26.7%	Sector Underperformer (Sell)	4	100.0%
Restricted	0	0.0%	Restricted	0	0.0%

Paper & Forest Products Sector includes the following tickers: A, BOW, CAS, CFP, DTC, FPS, GP, IFP.SV.A, IP, LPX, NBD, NS, TBC, WFT, WY.

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