RESTRUCTURING AND GLOBALIZATION OF THE FOREST INDUSTRY: A REVIEW OF TRENDS, STRATEGIES AND THEORIES

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Abstract
This paper provides an understanding of the current restructuring trends in the forest industry in the context of globalization. Globalization is likely to be one of the most important drivers of change in the forest industry. The forest industry has become more integrated globally. Evidences on that are presented. Recent strategic choices of some forest industry companies are discussed, mainly with an emphasis on changes in the companies' external environment. It is considered whether it is possible to see any trends in the strategic choices of companies, and how their choices change the structure of the global forest industry. The paper is based on both available literature about the industry in general and specific companies as well as interviews with 11 industry executives and strategic planners in Brazil, Canada, Norway and the United States. There seems to be a shift away from diversified, vertically integrated, locally or regionally based enterprises towards companies that are more focused horizontally and vertically, and more diversified geographically.

Keywords: globalization, restructuring, consolidation, strategy, and vertical integration.

1 Introduction

During the 1990s a period of restructuring in the forest industry started. This process seems to have been characterized by companies consolidating to get bigger and transnational as well as breaking up, becoming leaner, less diversified, and less vertically integrated. One of the main reasons for this development is globalization. Other phenomena and societal trends that have impacted the forest industry during the same period, have been new information technology, new engineered wood products, competition from non-wood substitute products, fast growing plantation forestry, environmental awareness and forest certification. The fundamental questions discussed here are: what processes and structural changes are taking place, what characterizes them, and what are the effects of them on company strategies and industry structure?

One of the most important effects of globalization on forest industry companies is perhaps the effect on vertical integration decisions. The result is that forestry has emerged as a new asset class for investors, instead of as an asset primarily owned by manufacturing companies and small woodlot owners. There is therefore here a review of these changes as they have happened in the United States and in Scandinavia as well as an overview of factors that may influence the strategies of new pure play forest operating companies. Globalization plays an important role in shaping these companies.

In addition to reviewing relevant literature, statistical data and company specific information from a range of sources, interviews with strategic planners, executives and board members in 11 companies headquartered in Brazil, Canada, Norway and the United States were performed. This work resulted in case studies of 13 forest industry companies, describing their strategies and recent development. This information provided impressions and examples

of how this industry is acting and thinking about globalization and strategy. Examples from some of these case studies are used in this review[1].

2 The Globalization processes and globalization as a system

Globalization may be understood in many ways, but a common understanding seems to be that internationally dispersed activities are becoming functionally *integrated* (not only extended across borders as in internationalization) so that many problems have to be studied independently of the nation state. It is a complex interrelated process, not an end-state (Dicken 1998, p. 5, Sklair 1999). We may differentiate between economic, political, social and cultural globalization (Chase-Dunn 1999). Several factors have driven the globalization processes: lower communication and transportation costs, similar tastes and needs across country borders, public policies aimed at liberalizing trade and investment across country borders (Mussa 2000), and maybe also better knowledge of foreign languages. These driving factors interact and influence each other. For example, it can be argued that because of globalization, people's tastes are becoming similar (Mussa 2000). Economic globalization is important because it changes the economic geography; it creates new patterns of trade, investment and human migration; it changes where production and consumption takes place and how industries and economies are structured and companies organized.

Economic globalization can happen in two primary ways (Mussa, 2000): either you trade goods and services, or you shift the movable factors of production, labor and capital. Regarding capital, Bagwhati (1998) has argued that it is important to distinguish between foreign direct investment and short-term capital flows, because of the different characteristics and effects of these processes. We therefore have four different types of economic integration: international trade, international migration, foreign direct investment and short-term capital flows. Hill (2000, p. 5) distinguishes between the terms globalization of markets and globalization of production, which perhaps is more useful in business. Increased trade and market integration may be taken as evidence of the globalization of markets. Globalization of production refers to the tendency among firms to source goods and services from locations around the globe to take advantage of local differences in the cost and quality of factors of production. By doing so, companies hope to lower their overall cost structure and/or improve the quality or functionality of their product offering, thereby allowing them to compete more effectively (Hill 2000, p. 5).

Political globalization in earlier times often meant conquering other states to extract tribute or taxes. In today's political development, international institutions are slowly, but persistently, gaining more power. The outcome of such a development would eventually be a single global state. An important issue concerning political globalization is the balance of power between these political institutions and regional or national institutions and states (Chase-Dunn, 1999). For forestry, political globalization has meant that tariffs on forest products have been lowered. Several different international agreements and frameworks for cooperation regarding biodiversity and forest management have been made. The growth of international environmental organizations like WWF and Greenpeace has impacted the forest sector through the pressure to practice more environmentally friendly forestry. Since many forest products are exported, that pressure is again partly a cause of economic globalization.

We also see a globalization of culture and social networks. First, European and American values are spreading to other parts of the world expressed through social constitutions

[1] Interview sources and their companies are kept anonymous.

recognizing human rights. Second, institutions and practices, like bureaucratic organization, rationality, economic efficiency, belief in a law-like natural universe, and political democracy are adopted in other parts of the world (Chase-Dunn, 1999). The forest industry is impacted by this as ideas about production technology and environmental practices spread.

3 Economic globalization and in the forest industry

Figure 1 and table 1 provides a perspective on how the world forest products markets have become more integrated over time. In several of the product categories, it is evident that export now represents a larger share of world production than earlier. In some of the categories, such as newsprint and the pulp categories, export has amounted to a large share of the production for decades already. In fact, the forest products markets have for a long time been among the more liberalized markets, and the pre-Uruguay Round tariff rates on forest products were the lowest of all major industrial products groups - about 45% lower than the average rate across all products (Barbier 1996). A few studies have tested how well integrated different forest product markets in the world are. Toivonen, Toppinen & Tilli (2002) tested the law of one price between roundwood prices in Sweden, Finland and Austria. They found that roundwood markets in Sweden and Finland were well integrated, but that the results for Austria were ambiguous. Størdal & Nyrud (2002, in press) tested integration between Norwegian and international roundwood prices. The results indicated that domestic Norwegian Roundwood prices were integrated with Swedish import prices. Turner & Buongiorno (2001) determined forest products freight rates based on the trade data of Food and Agricultural Organization. They found that only industrial roundwood and newsprint have seen significant decreases in freight rates from 1961 to

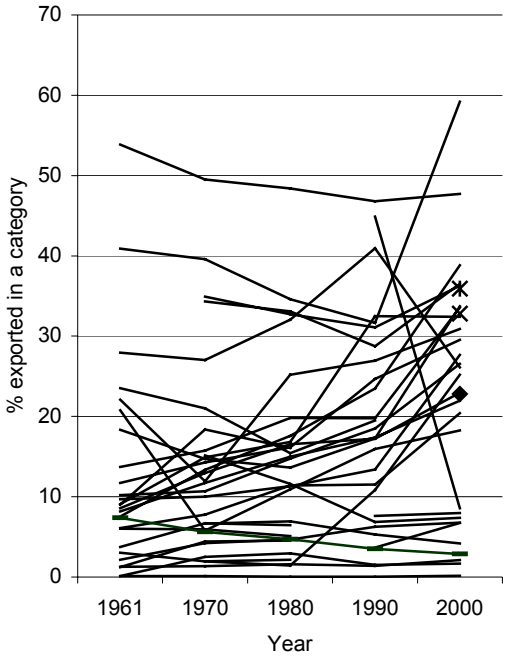

Figure 1 How the export share of the world production of forest products has developed for different categories. See table 1 for the specific values.

Table 1 Export as share of world production (Source: FAO 2001)

Category	1961	1970	1980	1990	2000
Chips and Particles					23
Fibreboard	18	15	14	17	34
Fibreboard, Compressed	24	21	15	19	
Hardboard					33
MDF					36
Industrial Roundwood	4	7	6		
Industrial Roundwood(C)				4	7
Industrial Roundwood(NC)				8	8
Insulating Board	10	10	11	13	28
Other Indust Roundwd	3	2	2		
Particle Board	10	11	15	19	27
Plywood	9	15	17	32	32
Pulpwood+Particles	6	6	5		
Sawlogs+Veneer Logs (C)	1	4	5		
Sawlogs+Veneer Logs (NC)	9	18	16		
Sawnwood (C)	14	16	20	20	34
Sawnwood (NC)	6	8	11	12	20
Veneer Sheets	28	27	32	41	26
Wood-Based Panels	12	14	16	25	30
Wood Charcoal	1	1	2	1	2
Wood Fuel	0	0	0	0	0
Wood Residues				45	9
Bleached Sulphate Pulp		34	33	29	37
Bleached Sulphite Pulp		35	33	31	36
Dissolving Wood Pulp	41	40	35	32	59
Household+Sanitary Paper	2	4	5	6	7
Mechanical Wood Pulp	7	6	5	4	3
Newsprint	54	50	48	47	48
Other Fibre Pulp	0	3	3	2	2
Other Paper+Paperboard	8	12	15	17	22
Paper+Paperboard NES	22	12	25	27	31
Printing+Writing Paper	8	13	18	23	39
Recovered Paper	21	6	11	16	18
Semi-Chemical Wood Pulp		2	1	11	25
Unbleached Sulphate Pulp		7	7	5	4
Unbleached Sulphite Pulp		15	12	7	7
Wrapg+Packg Paper+Board	9	13	17	17	23

1998. They viewed the result for newsprint unlikely to be the case, as long as paper and paperboard freight rates have remained stable. They also suggested that the decline in freight rates for industrial roundwood could be due to technological advances in port handling facilities and log carriers (Turner & Buongiorno 2001). This indicates that lower freight rates are unlikely to be the most important factor increasing market integration.

Not evident from the data presented here is the earlier mentioned heterogeneity of globalization. Not all countries participate by experiencing neither increased export, imports, nor FDI. During the last few decades, the integration of the world forest products markets has been characterized by a few "new forest economies" emerging as major exporters and importers of forest products.

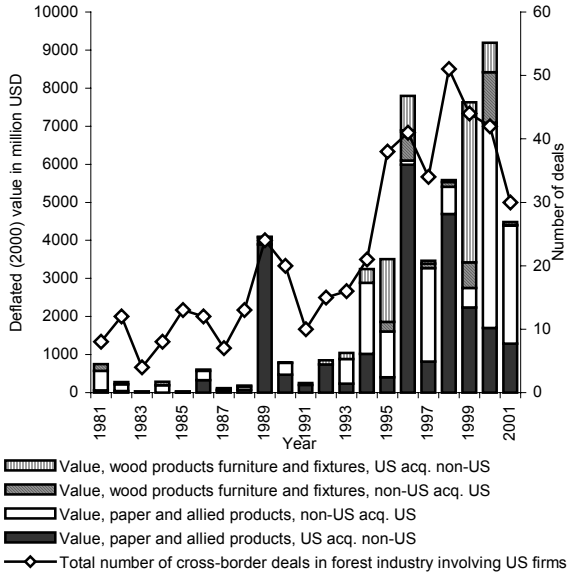

Figure 2 Cross-border mergers and acquisitions involving US firms (either being acquired or acquiring) reported by Mergers and Acquisitions – The Dealmaker's Journal between 1981 and 2001. Values are deflated by the US CPI.).

Foreign direct investment (FDI), may take two main forms: cross-border mergers and acquisitions (M&As) and greenfield investments. As shown by Uusivuori and Laaksonen-Craig (2001) FDI in the forest industry has increased during the last 20 years, at least FDI involving companies in the United States, Finland and Sweden. Note that in general a majority of world total FDI inflows, about three quarters, is directed to developed countries (Sauvant 2001). Most of the increase in forest sector FDI is likely to be cross-border M&As, since, according to Kang & Johansson (2000), the M&A share of world total FDI increased from a bit more than 50% in 1991 to 85% in 1998.

M&As involving forest industry companies in the United States are monthly reported by the magazine "Mergers & Acquisitions – The Dealmaker's Journal" (deals larger than US$ 25 million). The development of cross-border deals involving U.S. firms is illustrated in figure 2. Unfortunately, a large percentage of the deals are reported without value. The data on values cannot be taken as anything but an indication of the activity. It seems from the figure that restructuring activity has been increasing during the 1990s both in terms of number of deals and in terms of the total real value of the deals. In terms of real value, the restructuring activity has been higher in the paper and allied products industry than in the wood products, furniture and fixtures industry.

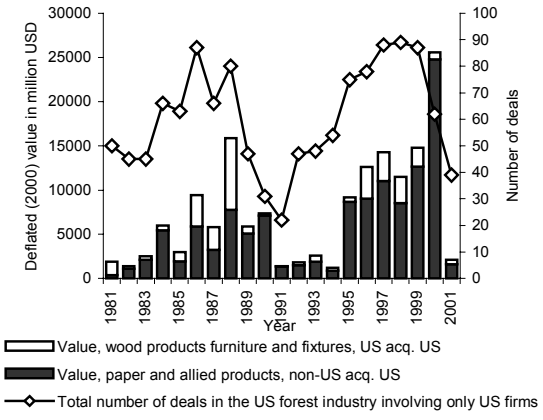

Figure 3 Mergers and acquisitions in the US forest industry, involving only US firms reported by Mergers and Acquisitions – The Dealmaker's Journal between 1981 and 2001. Values are deflated by the US CPI.

Restructuring within the U.S., cf. figure 3, has been more intensive than across the U.S. border. One reason for that is that U.S. companies account for such a large share of the world sales of forest products, almost half of the production of the 100 largest companies. In table 2, it is evident that this share increased during the latter part of the 1990s. Of this and other changes reported in table 2, reasons for change may be that companies in some countries have been more aggressive acquirers that other companies. For example, in 2002 only 40% of paper and paperboard capacity owned by Finnish companies were located in Finland. Note that the share of sales by companies headquartered in Sweden, Australia/New Zealand, and Canada has fallen, indicating that less production capacity is controlled by companies in these countries. Other reasons for the changes observed in table 2 may be changes in currency valuation, such as the appreciating U.S. dollar during the 1990s, and that smaller companies have entered the top 100-list as other companies have been acquired or merged.

Table 2 Share of the sales (in %) of the 100 largest forest and paper companies in the world for companies headquartered in different parts of the world (PricewaterhouseCoopers 1998,2002).

Country	1996	2001
Canada	**7.37**	**5.61**
Japan	**14.79**	**13.32**
USA	**44.11**	**48.76**
Europe		
Finland	7.07	10.61
Sweden	7.57	4.47
UK	2.84	2.11
Other Europe	6.79	6.86
Total Europe	**24.27**	**24.06**
Other		
Australia/New Zealand	4.58	1.90
Other Asia	1.84	2.12
South Africa	1.21	1.38
South America	1.83	2.86
Other Total	**9.46**	**8.26**
Total	100.00	100.00

Another result of the restructuring activity can be seen in figure 4, illustrating total sales from the largest 5, 10, 20 and 100 forest and paper companies in the world during the last 5 years (as reported in PricewaterhouseCoopers' (PwC) Global Forest & Paper Industry Surveys[2]). The total sales revenues for all aggregates have increased. Most notably, sales revenues for the largest 5 companies have increased by 58% since 1996, while sales for the 10 largest companies increased 37%, and 22% for the 20 largest companies. This means that the largest companies have grown their sales more relative to smaller companies. While the sales of the 5 largest companies in 1996 amounted to 20.2% of the sales of the 100 largest, the similar figure was 30.1% in 2001[3]. Of the companies listed among the world's 100 largest forest and paper companies by PwC in 1996, at least 25 have been acquired by then (see table A1 appendix 1). Data similar to the ones in figure 4 is often taken by industry executives and analysts as proof of a low level of concentration in the forest industry compared to other industries where the world's three to five largest companies often account for 70 – 90 % of production. But, the forest industry is not homogenous, with many different sub-industries and segments, in which concentration is higher in some than in others. In several paper grades, such as newsprint, concentration is now comparable to other mature industries. In lumber, for example, the situation is different.

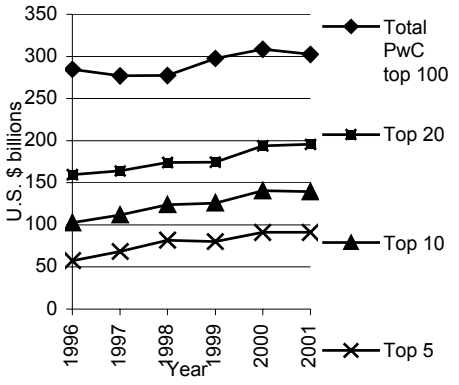

Figure 4 Total sales for the largest 5, 10, 20 and 100 forest and paper companies in the world (PricewaterhouseCoopers 1998-2001) [1]

4 The strategies

Strategy as a term can take several meanings: a plan, a pattern of decisions, a perspective, a position or a ploy (Mintzberg, H., Ahlstrand, B.

[2] Procter and Gamble first time included in list in 2000. Numbers for 2001 are based on annual reports, not PwC's report. 2000 figures were used to estimate 2001 figures for Nippon Paper and Asia Pulp and Paper.
[3] Note that smaller companies entered the top 100 list as other companies were acquired.

and Lampel, J. 1998, p. 9). Globalization may affect strategies in all of these different meanings. The literature on strategy and strategy formation embraces several theoretical schools. Two basic perspectives on strategic thinking can be distinguished: the prescriptive schools, explaining how strategies should be formulated, and the descriptive schools, describing how strategies actually do form (Mintzberg et al. 1998, p. 5). In this study, both ways of thinking were used. Although the questions asked were of the kind that companies often ask themselves during a strategic planning process, it also became evident how important company culture and management cognition is for the development of a company. Many of the world's largest forest industry companies were established as family firms in the late 1800s or early 1900s. Management traditions and business systems established decades ago influence strategic decisions of companies even today. Strategies are not solely the result of external factors and needs for positioning but also internal ones.

In the following, globalization's effect on strategies of forest industry companies will be analyzed on the levels at which a strategy may be influenced: business-level, functional-level and corporate level.

5 Business-level strategies

Business-level strategies entail decisions about what customer needs that are to be satisfied (customer needs), what customer groups that are to be satisfied and how customer needs are to be satisfied (Hill & Jones 2001, p. 203). Michael Porter's five forces model is related to these decisions. The forces were the threat of new entrants, the bargaining power of the firm's suppliers and customers, the threat of substitute products and the intensity of rivalry among competing firms (Hill & Jones 2001, p. 81). Globalization, with thicker markets, fragmentation, consolidating customers, and consolidating suppliers, affects all of these forces, and therefore the effectiveness of business strategies and companies' possibilities for oligopoly pricing. For example, the Brazilian company that was studied in this project, and which previously operated within a closed national economy, now faces competition from abroad, so that customers have become more demanding. Therefore, they had to invest more to improve product quality and lower production costs (interview source).

As an investment, The Boston Consulting group has concluded that the forest industry has performed worse than the average stock market during the 1990s, with a mean total shareholder return of 6% annually during the period 1989 - 2000 (based on 65 publicly listed companies) (Andersson, Harjo & Larjomaa 2002). PricewaterhouseCooper's (PwC) annual surveys of the results of the world's 100 largest forest and paper companies show that the annual average return to capital employed (ROCE) was at a low in 1997 with 3% and at a high in 2000 with 6.5% (calculated by the definitions of PwC). According to PwC, a generally accepted return would be in the area 8% - 11% after tax (PricewaterhouseCoopers 1998, p.1).

These poor economic returns are often attributed to the cyclicity and fragmented nature of the forest industry. Fragmentation leads to overcapacity, poor pricing discipline and an inability to determine the trends in one's own industry (Pricewaterhousecoopers 2000, p. 26). If the industry could reduce the cyclicity in prices and earnings, companies could be valued at higher multiples and increase shareholder return. This is held by many as one of the main drivers of consolidation. By reducing the number of suppliers, they hope to better control capacity, pricing and cyclicity. Globalization is one of the reasons why the forest industry has become fragmented. Since the world markets are more integrated now than earlier, the forest industry companies aim to increase concentration at regional and global levels.

Typically, Scandinavian forest industry companies have tried to exploit economies of scale and integration of pulp and paper production (Saastamoinen 2000). The Norwegian company that was studied has prospered during the last 10 years with a strategy of making standard bulk newsprint of good quality, but at a low cost (interview source). Other companies have opted for differentiation strategies. They try to provide products and services that in some way or another are unique to the customers. Companies such as Boise Cascade Corporation (USA) (Boise Cascade 2002, p. 2), Finnforest (Finland) (Finnforest 2001, p. 1), Industrias Klabin (Brazil) (Industrias Klabin 2001, p. 1) and Smurfit-Stone Container Corporation (Smurfit-Stone 2002, p. 3 – 4) emphasize solutions as a part of their product offerings. Louisiana-Pacific Corporation (USA) emphasizes innovation of specialty products as important parts of their strategy. They have even invested in an Advanced Technology Center, aiming to increase income from specialty products (Louisiana-Pacific 2002a). Södra Cell (Sweden) has recently established their Pulp Academy in order to spread knowledge about tissue production in their company. They have increased their input into the customers' own research and development, and they believe that while today pulp is sold like a commodity, in five years it will be based on specific fiber properties (Jewitt 2001). The tissue producers Kimberly Clark Corporation, Procter & Gamble and Georgia-Pacific Corporation are all companies that profit from branding of their consumer products (Bell 1997).

A recent analysis by Roos, Flinkman, Jäppinen, Lönner & Warensjö (2001) indicates that among 196 sawmills in Sweden, adding value to the products increases profit margin levels. Johansson & Rosling (2002) have noted that it is increasingly common that large quantities of lumber are customized through various value added activities for customers with a firm relation to the sawmill company. The price gap between the anonymous market and regular customers has widened (Johansson & Rosling 2002). An example of this is the story of Boise Cascade Corporation's Western Oregon Lumber. From selling lumber to a customer base of 30, they changed to a strategy of customer intimacy, selling 80 percent of the products to only four customers, with which they intimately cooperated (Peterson, Peters, Watchman & Johnson 1999).

Timwood AB (2002), a Swedish consultancy company, emphasizes the changing needs of the industry's customers, pointing to increased demand for prefabricated units among builders, demand for tailor-made wood-based material solutions among industrial customers and the growing importance of "power retailers". Timwood's philosophy is that the forest industry must develop integrated market strategies of wood-based materials, so that they can provide their customers with the right combination of solid wood, composite materials and engineered wood products (Timwood 2002).

From these examples, it is not possible to determine whether more companies pursue differentiation strategies now than earlier, but, theoretically, globalization should lead to more companies choosing differentiation strategies. Earlier a company may have had an advantageous domestic position as a monopolist, a part of a domestic oligopoly, or the single provider of specific variants of a product. Economic openness leads to thicker markets with higher firm rivalry, which can erode such positions. Companies may view new differentiation efforts and focus on specific customers' needs as ways out of difficult positions as producers of commodity products.

6 Internationalization strategies

Consolidation is not the only motive for cross-border deals. Expanding a business internationally gives a company the possibility to gain learning curve economies, economies

of scale, economies of scope, location economies and the possibility to transfer distinctive competencies (Hill & Jones 2001, p. 267 – 272), as well as to establish themselves in growth markets.

Several of the worlds largest forest industry companies try to achieve these advantages whne expanding internationally. Norske Skogindustrier ASA (Norway) started after they had acquired Fletcher Challenge Ltd.'s paper division in 2000, a process to realize this potential. They created four global councils for the different functions supply, manufacturing, marketing and IT, consisting of the area managers for these functions. The councils identify global targets, synergies, improvements and best practices. Duplication of activities can be avoided (economies of scope). Tasks that previously have been performed simultaneously several places, can be concentrated in fewer locations by fewer units, achieving economies of scale in those units. They also aim at optimizing trade flows. Intercontinental transportation costs are high and account for USD 50 – 70 per ton, about 10% of the newsprint price (interviews source, Reinås 2002a, Goodreau 2001). As a global producer of newsprint and publication paper, they do not have the same incentives as before to dump surplus newsprint in other areas of the world (Reinås 2002b).

Internationalization may also be a way for a company to gain additional rents on distinctive competencies. An example of that is the large door and window producing company that was studied for this project. In the early 1990's, they started to expand outside the United States, first to Canada, then to a number of countries in Europe, Asia, Australia and Latin America. There were three reasons for this: growth limitations in North America due to anti trust regulations, available markets for their products abroad, and the possibility to use their knowledge about how to make doors and windows at a low cost abroad (interview source).

For companies positioned in stagnating forest products markets in industrialized economies, an expansion to growth markets in emerging economies may provide a fundament for further growth. For example, while newsprint markets in Europe and North America only grows with 0 - 2% a year, they grow with 3 - 5% a year in Latin America and Asia (Norske Skogindustrier ASA 2001a).

Some companies choose to focus heavily on one region, instead of expanding globally. An example is the privately owned Hampton Affiliates in Oregon, whose vision is "to become the dominant private lumber company in the Pacific Northwest" (Hamton Affiliates 2002). A lot of the current restructuring of the forest industry has been within regions rather than between them. As seen earlier, there have been few large mergers between European and American companies compared to the high number of deals between North American companies. That may also be taken as a sign that companies prefer to secure their position in their home markets before eventually expanding abroad, and it may be a more realistic target for smaller companies that cannot compete with the Weyerhaeuser Companys, G-Ps and IPs about being the largest.

7 Corporate strategies

The principal concern of corporate strategy is to identify the businesses in which the company should participate in order to maximize its long run profitability. The company has three basic options: it may focus on one single business, it may diversify, and it may pursue vertical integration (Hill & Jones 2001, p. 312). Traditionally, many forest industry companies have both been diversified and vertically integrated. Global economic integration, new information

technologies, and a more widespread knowledge about economics and business management seem to have changed this.

7.1 Extent of diversification

Although diversification may create value, many companies became overdiversfied during the 1960s and 1970s (Hill & Jones 2001, p. 333). The reaction came during the 1980s. Several studies have shown that during the 1980s many companies became more focused (Hatfield, Liebeskind, & Opler 1996). Although it has not been attempted to test the hypotheses here, this has possibly been the case in the forest industry during the 1990s as well. Forest industry companies have in particular divested businesses unrelated to forestry, such as mining, energy production, chemicals, finance and fish farming, or forest industry businesses have been spun off from larger conglomerates, such as Plum Creek Timber Company (Burlington Resources) and Rayonier (ITT). Most large forest industry companies therefore get the majority of their revenues from forest related businesses. Several of the companies studied in this project used to be more diversified. Some of them have also divested forestry and forest products related businesses, and they are now solely focused on a limited number of forest products.

The general argument for a more focused corporate strategy seems to be that they need to focus on core areas in which they need to grow. Globalization may be an important reason for this. Consolidation and international growth within targeted businesses may be financed by selling assets and reduced coordination costs. Another typical reason that many companies want to reduce the number of businesses is that extensive diversification may lead to increased bureaucracy and higher coordination costs (Hill & Jones 2001,p. 332 – 336, 373).

Even though many forest industry companies are less diversified now than earlier, many companies have still chosen to remain diversified. For example, it does not seem as if Weyerhaeuser Company is planning to withdraw from timberlands, wood products, pulp, fine paper, containerboard, packaging nor recycling.

Typical reasons for diversification are that the different businesses utilize the same competencies and technology, share common service units or distributions systems (economies of scope), or that distinctive competencies are transferred from one business to another. If there are value creation opportunities from diversification, it is also possible to do strategic alliances instead, such as joint ventures, and then avoid some of the disadvantages of diversification (Hill & Jones 2001, p. 328 – 339).

Coordination costs are less if the businesses are not related, and can be run without coordination. The companies then loose opportunities to create value through diversification (Hill & Jones 2001, p. 336). One of the companies studied in this project, a non-integrated sawn wood and pulp producer, look at it as an advantage that their businesses traditionally have been counter-cyclical (interview source). Shareholders can eliminate that sort of risks at a lower cost than corporations can (cf. Hill & Jones p 336).

Unlocking “hidden” values in the company may also be a motivation for companies to break up. When stock prices are high, selling assets is also often good shareholder policy, often better than acquiring assets (which is also reflected in figure 2 and 3). An example of that is AssiDomän, which sold most pulp and paper assets during 1999 and 2001. That program of divestment turned the company into the best performing forest industry company in Sweden in terms of shareholder value during the 1990’s (Braconier 2001a). The restructuring of Assidomän unlocked values in the forest that previously were not reflected in the share price.

7.2 Vertical integration

The three broad determinants of vertical integration are technological economies, transactional economies and market imperfections (Perry 1989, p.187). In transactional economies, asset specificity is the primary determinant of vertical integration. Assets of upstream firms may be specific to downstream firms' assets and vice versa. Investments in specific assets are "sunk cost", and their value is considerably lower in their next best use, or if there is a switch to another trading partner. The difference between the value of the asset in its present use and the next best alternative is the appropriable specialized quasi rent, its opportunity cost. If there are few upstream and downstream firms, and the environment is complex and uncertain, so that writing long-term contracts is difficult and costly, this is an incentive to vertically integrate. In an industry with many upstream and downstream firms, the risk that an upstream firm (USF) tries to take advantage of the downstream firm's (DSF) dependency to opportunistically redistribute its trading partner's quasi-rent, a "hold-up", is smaller. As the number of USFs and DSFs is reduced, the likelihood of hold-up increases (McLaren 2000, Perry 1989, Klein, Crawford & Alchian 1978). A typical example of this way of thinking is one of the companies that were studied for this project. They have large and remote forests areas on lower site indexes. Those forests are specific to the company's sawmills there, and their sawmills are the only ones around. If they were to sell their sawmills, they would become too dependent upon the buyer of these sawmills. They do not want to risk a hold-up or that these mills are shut down. The company also has forests in areas with many potential buyers for their wood. In those areas they have chosen not to own manufacturing facilities (interview source).

In the forest industry, several types of asset specificity may be identified (classification suggested by Williamson 1985). For example, in the states of Oregon and Washington, USA, there are now very few sawmills processing large diameter logs. Yakama Forest Products in Yakima, Washington, has recently invested in a new sawmill processing large diameter logs (13" and up), because they have many large diameter trees on their land (Yakama Forest Products 2002). In this case, there is *physical-asset specificity*, where this particular company's sawmill is designed to fit their forest inventory. In the forest industry, *site specificity* is common too, since forests are immobile, logs have high transportation costs compared to their value, and because converting facilities can only be moved at high costs. A forest industry company may also invest in knowledge, systems (for example quality control systems, such as environmental certification and log grading and sorting systems), and technology that are specific to a downstream unit, *human-asset specificity*. It may be difficult for another company to do such investments if they are afraid of becoming too dependent on the other company. Sometimes manufacturing operations are set up to supply one single customer. In that case, we have *dedicated assets.* That was likely the case when Industrias Klabin in Brazil first established their plantations in the 1940s. "The need to obtain raw material locally led to … the formation of a forestry base with the capacity to meet the company's requirements" (Industrias Klabin 1999).

Yin, Harris & Izlar (2000) have argued that forest ownership may be an advantage for forest industry companies, based on three key features of pulp and paper companies. First, the pulp and paper industry is capital intensive. Second, pulp and paper mills may be viewed as specialized assets, because their value is significantly reduced if they cannot be used for pulp and paper production. Third, markets for forest products are often cyclical. High capital intensity and specificity of the assets make the industry more vulnerable to cyclical markets. If prices, cash flow, and revenues fluctuate too much, management cannot avoid downturns and may get difficulties serving the debt, and shareholders will require a higher risk premium

for holding these assets. That may cause a firm's share price to be discounted to such low valuation multiples that it becomes harder to create shareholder value. The combined effect of this, according to Yin et al. (2000), may be an incentive for forest industry companies to pursue vertical integration. With vertical integration, the company may achieve a more stable cash flow and more stable revenues. When end-product prices are low, the company may use timber from its own forests to supply their mills at a subsidized transfer price. If the company does not own forests, the margin might be eroded by cyclically low end-product prices, and the mill has to take downtime. Vertical integration may therefore reduce risk for the company. As they point out, their analysis does not indicate whether or not a low rate of return from timber assets is necessarily acceptable or that the current holding sizes and management patters of timberlands are necessarily efficient (Yin et al. 2000). It may also be appropriate to consider what the effects on the market are by companies requiring lower prices for the end products to keep the operations running. If all or most forest industry companies are vertically integrated, and if all of them are willing to sacrifice profitability in the forest for profitability in the mill when end-product prices are low, it could potentially depress end-product prices on a constant basis, and give low returns to the forest assets.

As mentioned, vertical integration may lead to higher governance costs. Such costs may increase because of managements propensity to manage. Problems often turn out to be more difficult or managerial competence more limited than anticipated. If markets are unstable, vertical integration may reduce profits because it gets harder to coordinate the different parts of the company. Managers may also use the organization to pursue subgoals, such as maximizing performance-based compensation. Since upstream businesses often do not compete in any market the lack of competition may reduce incentives to minimize costs. Managers of the different business units may be tempted to attempt transferring their costs to other units in the company. If costs unexpectedly increase, these costs may be allocated, not according to where they occurred, but according to the results of negotiation between different units. It is easier for a firm to terminate a bad supplier in the market than a bad upstream unit. The internal politics of an integrated firm and the norm of reciprocity may also lead to inefficient production and procurement decisions (Hill & Jones 2001, p. 320 – 322, Williamson 1985).

These arguments against vertical integration were also mentioned by some of the non-integrated companies that were studied in this project. For companies with investment strategies of increasing market shares, strong vertical integration may be a distraction. There are limits as to how many different businesses the management has a capacity to control. Vertical integration may lead to a sub-optimization of either the upstream or the downstream business. The internal transaction prices of the products do not reflect the true costs of the products, and capital investments do not optimize the value of the assets. In vertically integrated companies, they often say that they use market prices for internal transactions. The purpose is to eliminate such problems. As one interview object put it: in a vertically integrated company it is often easier for a forester to pick up the phone and call one of the company's own sawmills managers when selling timber, rather than actively market the timber. They will then get a market price or a price lower than the market, never higher. The integrated companies are also accused of over investing in silviculture and silvicultural research. In addition, vertical integration may lead to less efficient transport of wood, depending on the fragmentation of land ownership (interview sources).

Several of the companies studied for this project pursue taper integration. One of them only produces 50% of the lumber that they sell through their wholesale business. Then the

wholesaler has to compete in the market with other wholesalers for lumber, so that they operate as efficiently as possible. They cannot blame the sawmill if performance is sub-optimal. The sawmills will likewise be compared to other competing lumber producers.

Economic integration and globalization may theoretically influence the expected profitability of vertical integration. In other industries as well as in the forest industry, there has been a tendency of less vertical integration. "Downsizing" and "outsourcing" are often connected to changes in the vertical structure of an industry. In addition, it has been observed that the differences in industrial "systems" between countries are often related to the vertical structure of the industry. Developments like these are often claimed to have close relationships with international trade (McLaren 2000).

McLaren (2000) analyzed the effects of international openness on the vertical integration decision in industry equilibrium, and suggested that openness can indeed have strong effects on the vertical structure of an industry. To simplify his argument: the reason is that more economic openness and lower trade costs between suppliers and buyers will make it easier for an input supplier to find an attractive alternative buyer, thus strengthening its bargaining power with domestic companies, thickening the market. A decision to pursue vertical integration is often based on a consideration of the tradeoff between the potential danger of being held up and the governance cost of an integrated solution. If the risk of hold-up is high, it is an incentive to pursue vertical integration. The thicker a market is, the less likely a firm is to pursue vertical integration. There is a negative externality of vertical integration, making market solutions less feasible for others. If the firms in an industry are sufficiently similar, there can be two equilibriums: one in which every firm chooses integration, and one in which all input suppliers remain independent. One effect of this is that two countries can develop completely different industrial systems. Another effect is that if economies and markets open up to each other, markets get thicker, thereby decreasing the incidences of vertical integration. McLaren did not analyze how other effects of globalization would interact with the market-thickness effect. But he pointed out that, for example, if trade allows for rationalization of an industry, it could be possible that that would provide an indirect effect that reduces market thickening in one country, thereby reducing the market thickness-effect of globalization, while increasing market thickness in another, thereby increasing the market thickness-effect there (McLaren 2000).

Two innovations that have made vertical integration relatively less attractive are long-term contracting and long-term cooperative relationships. They facilitate investments in specialized assets, without the high bureaucratic costs of vertical integration (Hill & Jones 2001, p. 322 – 324, 369).

Communication costs are today almost insignificant compared to earlier, partly because of technological development, and that more people today have knowledge about economics and business administration. Earlier, it could be difficult to find people with knowledge about the most basic business terms. Today personnel on different levels of the value chain use the same terminology, and transaction costs are therefore lower than earlier (Drucker 2000).

8 Globalization, economic integration and timberland ownership

During the last two decades, significant changes have taken place in industrial forest ownership, especially in the United States. Now similar changes are happening in Scandinavia, where forest industry companies own large areas of forestland. One of the

results of this is that more companies are solely, or almost solely, focused on owning and/or managing forest assets.

8.1 Recent changes in ownership of U.S. industrial timberlands

Yin, Caulfield, Aronow, & Harris (1998) provide a survey of changes in industrial forest ownership in the United States between 1981 and 1994. They classified companies into three different categories, Major Companies, Diversified Companies and Other Companies. They found that the total land area owned by the Major Companies in the United States had declined significantly, but that the total industrial timberland area had increased. In table 3, a similar survey of the same companies (using their SEC-filings or corporate websites) as they looked at, is performed for the year 2001 and for 1994. The table contains data on area owned and owned or controlled in the United States, Canada and internationally of companies owning or controlling timberlands in the United States. Control of timberlands means contractual relationships such as leases and tree farm licenses (in Canada). In addition to the companies surveyed by Yin et al. (1998), a few new companies were added.

From table 3, it is evident that the trend of declining timberland ownership identified by Yin et al. (1998) has continued since 1994. The total amount of timberland in the U.S. owned by the companies that were classified as Major ones in 1994, has decreased further, from 11.3 million hectares in 1994 to 5.5 million hectares in 2001 (excludes International Paper Company). Owned or controlled land by the same companies has increased slightly. For Other Companies, there has been a decline in the area owned from 1994 to 2001. For the companies classified as Diversified in 1994 the area owned has increased from 1.6 million hectares to 3.9 million hectares. Some companies have increased their land holdings substantially through acquisitions of other companies, but they have also been active divesting lands, so that the total land area owned by the industry has declined. This development seems likely to continue since almost a million hectares more of industrial timberland was put up for sale in 2001 and 2002 (International Paper Company 2001, Molpus Woodland Group 2002, Louisiana-Pacific Corporation 2002b).

In the category Diversified Companies, the two companies that have increased their timberland holdings in the U.S. cannot be characterized as highly diversified, and forest ownership is a part of their core areas. Plum Creek Timber Company restructured to become a Real Estate Investment Trust (REIT) in 1999, and it is the second largest private timberland owner in the United States after International Paper Company.

Forest Systems and U.S. Timberlands have been created for the purpose of acquiring timberlands, while Deltic Timber Corporation, The St. Joe Company, Nexfor, PCA and GNPC were created as spin-offs from other diversified companies.

Note that timberlands owned and controlled in Canada and other countries have increased. That is likely because we are only looking at companies owning lands in the U.S. Several of these have acquired Canadian companies since 1994. In Canada, most land is owned by the government (Crown Land) and leased to companies through various contractual agreements such as Tree Farm Licenses.

One group of owners of industrial timberlands that have not been covered in table A.2. are institutional investors in timberlands, such as pension funds and university endowments. Institutional ownership of timberlands started to accelerate in the mid 1970s. From about USD 0.5 billion in 1988 (Binkley et al. 1996), institutionally owned timberlands increased

Table 3. Forestlands owned by companies owning forests in the United States. 1000 hectares. Sources: For 2001 and most of 1994: Annual reports 10-K, for 1981 and Canadian companies 1994: Yin et al. (1998). Various press releases.

	United States				Canada				Other countries						
	Owned		Owned and/or Controlled		Owned		Owned or Controlled		Owned		Owned or Controlled		Total	Total	Own
	2001/02	1994	2001	1994	2001	1994	2001	1994	2001	1994	2001	1994	2001	1994	1981
Major companies in 1994															
Weyerhaeuser Company [a, b, c]	2,133	2,261	198	63	269	5	13,195	7,223		74		41	15,910	9,552	2,400
Georgia-Pacific Corporation [d, e]		2,320		276									0	2,595	1,867
International Paper Company [f, g , h, i, j]		0	4,209	2,469							935		5,144	2,469	2,793
Champion International Corporation [f]		1,818		234				2,574				92	0	4,719	1,242
Boise Cascade Corporation [k]	820	1,097	129	134				1,214			14		963	2,445	1,239
Scott Paper Company [l, m]		223		55		404		87				49	0	817	1,152
Louisiana-Pacific Corporation [n]	379	651	96	137			19,709						20,183	787	372
Union Camp Corporation [g]		618		13									0	631	699
Westvaco Corporation [o, p]	509	541		564						49	47		558	1,152	516
Kimberly-Clark Corporation [l]					405	162	1,983						2,388	162	270
Potlatch Corporation	620	623											620	623	573
Mead Corporation [o]		503	845										845	503	638
Willamette Industries, Inc. [b, q]	684			500									684	500	225
Chesapeake Corporation [r]	8	133											8	133	147
Longview Fibre Company	232	221											232	221	195
Federal Paperboard Company, Inc. [j]		230		50									0	280	154
The Pacific Lumber Company [s]	89	76											89	76	68
St. Regis Paper [t]													0	0	1,301
Great Northern Nekoosa [u, v]													0	0	1,126
Smurfit-Stone Container Corporation [w]					445								445	0	0
Stone Container Corporation [x]		4				132							0	136	0
Total	*5,474*	*11,318*	*5,476*	*4,494*	*1,119*	*703*	*34,887*	*11,098*		*123*	*47*	*990*	*141*	*48,068*	*27,801*	*16,978*
Other companies in 1994															
James River Corporation [y]		170		73				1,052					0	1,295	78
Temple-Inland Inc.	740	729	94	38									834	767	0
Consolidated Papers Inc. [x]		128				144							0	272	0
Mosinee Paper Corporation [y]		33											0	33	36
P.H. Glatfelter Company	46	45											46	45	0
Sonoco Products Company	32	32											32	32	7
Wausau Paper Mills Company [y]		18											0	18	17
Greif Brothers Corporation	127	129											127	129	128
Pope Resources, A Delaware Limited Partnership [z]	45	30											253	30	53
Crown Zellerbach [aa]													0	0	801
The St. Joe Paper Company [ab]		283											0	283	0
Total	*992*	*1,597*	*94*	*111*	*0*	*144*	*0*	*1,052*		*0*	*0*	*208*	*0*	*1,293*	*2,905*	*1,120*
Diversified companies in 1994															
Rayonier Inc. [ac, ad]	732	457	102	48						32		52	101	917	606	476
Bowater Incorporated [ae]			445	1,497			13,395						13,841	1,497	1,202
Tenneco Inc. [af]		74		332									0	406	179
Jefferson-Smurfit Corporation (U.S.) [w]		307		91									0	398	348
Plum Creek Timber Company, Inc. [ag, as]	3,282	809											3,157	809	1,823
Procter & Gamble													0	0	421
Total	*3,888*	*1,648*	*547*	*1,968*	*0*	*0*	*13,395*	*0*		*32*	*0*	*52*	*101*	*17,915*	*3,717*	*4,448*
Canadian companies in 1994 [ah]															
Abitibi Consolidated	9				206	447	7,285	6,187					7,500	6,634	362
Domtar, Inc. [ai]	59				341	400	14,326						14,726	400	354
McMillan Bloedel [a, aj]						154		1,435						1,589	456
Noranda Forest [ak]						390		5,792						6,182	429
Total	*68*	*0*	*0*	*0*	*547*	*1,391*	*21,611*	*13,414*		*0*	*0*	*0*	*0*	*22,226*	*14,805*	*1,601*
Some new companies since 1994															
Packaging Corporation of America (PCA) [al]			59										59	0	0
U.S. Timberlands Company, LP [am]	198												198	0	0
Deltic Timber Corporation [an]	175												175	0	0
Forest Systems, Inc. [ao]	138												138	0	0
UPM-Kymmene Corporation [ap, aq]	78				16		941			964			1,999	0	0
Stora Enso Corporation [ar, as]	6						600			2,300		232	3,262	0	0
Wausau-Mosinee Paper Mills Corporation [y]	49												49	0	17
Nexfor Inc. [ak]							2,879						2,879	0	0
The St. Joe Company [ab]	364												364	0	0
Great Northern Paper Company (GNPC) [u, v]	162												162	0	0
Total	*1,293*	*0*	*59*	*0*	*16*	*0*	*1,541*	*0*		*3,264*	*0*	*232*	*0*	*6,406*	*0*	*17*

rapidly and constituted just over USD 5.5 billion in the late 1990's, about 0.1 percent of all institutional assets in the United States (Caulfield 1998). By June 2002, this figure has risen to nearly USD 10 billion (Washburn 2002). In the US South in the late 1990s, institutions probably owned 1.7 – 2.5 million hectares (Hyde & Stuart 1999, p. 43). In the mid 1980's there were just a handful of companies, often called timber investment management organizations (TIMOs), providing investment services in timberlands, Hancock Timber Resources Group, Equitable, Wachovia Timberland Investment Management Group and a few smaller niche companies (Forest Systems 2001a). In 2000, there were at least 15 such companies (interview source). Hancock Timber Resources Group is the largest TIMO, managing more than 1.2 million hectares of forestland in the United States, Canada and Australia.

Table 4 Large industrial owners of forestland in the Nordic countries (>100 000 hectares)

Company	Location of forests	Area (hectares)
Sveaskog (owned by the government of Sweden)	Sweden	4 400 000 (of which 3 300 000 are productive)
SCA+ Scaninge	Sweden	2 600 000
Stora Enso	Sweden	1 600 000
Holmen Skog	Sweden	1 000 000
UPM-Kymmene	Finland	930 000 (of which 770 000 are productive)
Stora Enso	Finland	600 000
Korsnäs	Sweden	426 000 (of which 329 000 are productive
Metsäliitto/M-Real	Finland	112 500

8.2 Recent developments in the Nordic countries

The United States is not unique seeing a development as described above. From 1999 to 2001 Assidomän in Sweden had a strategy of divesting all their non-forest assets in order to become a pure-play forest operating company. Much of their vision as a pure-play forest operating company resembled the visions of Forest Systems and Plum Creek Timber Company. Assidomän was acquired by Sveaskog in September 2001, the governmentally owned forestry company of Sweden. Sveaskog, with its 3.3 million hectares of productive forestland, has today a strategy of becoming a pure-play forestry company aiming to divest their industrial activities. As a governmentally owned company, Sveaskog today has a number of policies, such as selling land to private, non-industrial forest owners (Sveaskog 2002, p. 7), aimed at achieving goals set by the politicians. Sveaskog may in the future become privatized since The Moderates, Sweden's leading non-socialist party, have pledged to do so in case they should form government. In Finland, M-Real has consolidated 112 500 hectares of forest and beach areas in order to create a pure play forest operating company as a new investment alternative (Metsäliitto Group 2002, p.16). Similarly, StoraEnso has decided to divest their forestlands in Finland (600 000 hectares) and in the United States (130 000 hectares). In Sweden, they are investigating different options to release the capital tied up in the forests (about 1.9 million hectares or EUR 700 million). Since this forestland provides about 25% of Stora Enso's wood requirements in Sweden, securing this supply is an important prerequisite for them, making a transaction more difficult (Stora Enso 2002). Norske Skogindustrier ASA of Norway has recently sold their forest assets in Sweden and Brazil (Norske Skogindustrier ASA 2001b). Holmen and UPM-Kymmene are less likely to divest their forestlands since they have both emphasized the importance of their forest ownership to their strategy. Table 4 provides an overview of large industrial owners of timberland in the Nordic countries.

8.3 Reasons for timberland divestments

Globalization, economic integration and lower trade costs are parts of the explanation for the increased institutional ownership of forestland in the United States. Binkley et al. (1996) note that more effective logging equipment and transportation systems have expanded wood procurement zones and increased the supply of wood from non-company lands in the United States. In the U.S. South, there have been significant improvements in wood production due to tree improvement programs (Shultz 1999, p. 78). The production of loblolly pine (*Pinus*

taeda L.) at MeadWestvaco's timberlands has increased from 0.8 tons per hectare in the 1950s to 3.2 tons per hectare in the 1990s. Thanks to genetics research, selective cross breeding and seedling production they project a growth of 6.5 tons per hectare in 2010. Since the mills can be supplied from a smaller land base closer to the mill, this frees up the timberlands that are furthest away from the mills so that they can be sold (Watkins 2002). These developments have thickened the markets for wood.

From the institutional investors' perspective, timberland investments have historically yielded high returns at a moderate risk, while being good portfolio diversifiers (Binkley et al. 1996, Caulfield 1998). This has made forest ownership attractive as an investment. During the 1990s it was noted that while forest ownership in the U.S. performed very well, integrated forest industry companies that own substantial amounts of forest lands performed comparatively poor. Many investors and analysts viewed this as a sign that the integrated companies sub-optimized their forest assets, so they put pressure on the forest industry to divest their forestlands (Forest Systems 2002a). There has also been a perception that the forest assets owned by the industry have been undervalued, making companies attractive targets for hostile takeovers (Binkley et al 1996).

8.4 The development of pure play forest operating companies

Since the mid-1990s we have seen the formation of a few publicly listed, pure play forest operating companies. There have been pointed to at least four reasons why there should be a market for publicly listed pure play forest operating companies (Forest Systems 2002a, AssiDomän 2001, p. 4 – 5): first, the market for forest investments among institutional investors is small and shrinking. Further divestments of industrial timberlands must be financed by others. Second, U.S. portfolio managers, especially those running pools of assets for benefit plans and mutual funds, are eager to get forestland into their portfolios. Third, being publicly listed adds liquidity to the asset, and it makes pure play forest operating companies available to many more than just institutional investors, such as smaller investors that cannot buy large forest properties, and to portfolio managers. For individual investors who want to include timberlands in their portfolios, a constraint has been that they need a lot of capital. Timber funds are in the U.S. available to individual investors, but they usually need to invest minimum USD 1 million. In Molpus Woodlands Group (a U.S. based TIMO) they require at least USD 7 million. In addition, they recommend that those USD 7 million do not constitute more than 2 to 5 percent of the portfolio (Goar 2001). Fourth, in publicly traded companies forest management may be easier aligned with the interests of the owners through performance based compensation. We have seen the formation of such companies in the U.S. (Plum Creek Timber Company), Canada (TimberWest Forest Corp.), New Zealand (Evergreen Forest Limited), and Sweden (Assidomän). To what extent being publicly traded is an advantage, depends on several factors. In the United States, taxation has turned out to be very important. The last few years' growth of Plum Creek Timber Company is closely connected to their conversion from an MLP structure to a REIT structure in 1999. REIT is according to Plum Creek Timber Company the ideal way to own forest in the United States (Holley 2002).

A REIT is a corporation or business trust that combines the capital of many investors to acquire or provide financing for all forms of real estate (Plum Creek Timber Company 2002a, NAREIT 2002). Due to taxation at company level as well as shareholder level, and a progressive income tax system, the effective tax rate on capital gains from timberlands in a C-corporation (such as International Paper Company, Weyerhaeuser Company, Rayonier, Deltic Timber and Longview Fiber Company) is often almost 62% (interview source). Under

Federal income tax law an entity that invests principally in real estate, and that would otherwise be subject to tax as a corporation, may elect to be treated as a REIT for Federal income tax purposes. A REIT will generally not be subject to federal corporate income tax on taxable income that it distributes currently to stockholders (Plum Creek Timber Company 2001, p. 145). In a REIT the forest assets are viewed as property, a capital investment, where capital gains on the timber is viewed as other capital gains, taxed at the maximum rate of 20%. REIT shares are freely traded often on a major stock exchange (Plum Creek Timber Company 2002a).

Compared to being structured as an MLP, Plum Creek Timber Company saw three main advantages of converting to a REIT-structure. They would attract a broader base of investors, including institutional investors and tax exempt investors, allowing them to raise larger amounts of equity capital in any given transaction, reducing reliance on debt capital and potentially facilitating larger acquisitions. Through better access to public debt markets and a broader equity market as well as elimination of certain ownership structures, they could lower the partnership's overall cost of capital. They believed that a REIT structure would maintain the advantages of single-layer taxation enjoyed under the MLP structure with respect to the treatment of taxable income (Plum Creek Timber Company 1999, p. 5).

Plum Creek Timber Company is the only forest REIT listed on the New York Stock Exchange. Because of a new policy of the IRS, there is a now a window open for others to do the same, and we are likely to see more forest REITs in the future. For more REITs to be formed, however, difficult issues related to taxation have to be sorted out[4].

8.5 Factors affecting the strategies of pure play forest operating companies

In the preceding sections, it was documented that in the United States large areas of industrial forestland have changed hands during the last couple of decades, and that a similar development is in its early stages in the Nordic countries. The integrated forest industry companies have reduced their timberland areas, while more land is now held by companies focused on forestry. With the possibility to spin forest assets into REITs we may see in the United States a trend where more companies will be publicly listed as pure play forestry companies. A similar emergence of such companies may be in its early stages in Scandinavia. Considering this development, we may ask what factors will drive their strategies.

Hancock Timber Resources Group's research has indicated that geographically diversified portfolios of timberland properties can deliver a target return with less uncertainty than a portfolio of properties from just one single region (HTRG 2001a, 2001b). Plum Creek Timber Company clearly looks at it as an advantage that their properties are spread out across 19 U.S. states. By adjusting harvest levels in response to changing conditions in local markets, geographical diversification may reduce the impact of local or regional changes in supply and demand of timber (Plum Creek Timber Company 2002b, p. 7). Forest Systems, a U.S. forest investment and management firm aspiring to become a pure play forest operating company, is of the same reasons concerned about type of assets, type of markets and geographical location when making investments. In a document on their website they list a number of likely and possible investment locations including countries in the Americas, Oceania and in Europe (Forest Systems 2002b). As a timber investment management organization (TIMO) Hancock Timber Resources Group has during the last two decades built diverse portfolios of forest properties in US South, US Northwest, US Northeast, Australia and Canada. UBS Timber Investors and Weyerhaeuser Company Forestland International have made investments in

[4] For a review of the changing tax environment for investors in U.S. forestlands c.f. Smith & Bradley 2002.

several countries outside the United States. The Danish TIMO International Woodlands Company A/S has facilitated forestry investment internationally, among others in Ireland, France, Australia and Uruguay.

It has been raised concerns that equity investors and analysts are unwilling to properly value timberlands, especially immature timberlands, when they are publicly traded. When valuing timberlands, several methods should be used; among them, the discounted cash flow method. Terry Schumacher, an analyst in First Security Van Kasper, does not believe that the discounted cash flow method will reach widespread use among stock market investors in the near future. He is afraid that the preoccupation with near-term profitability among investors may tempt managers of securitized timberlands to increase harvest levels in soft markets to satisfy the stock markets (Schumacher 2000). Geographical diversification may reduce the likelihood of behavior like that, since a company can increase harvest levels in regions where prices are high and decrease harvest levels in regions where prices are low.

Forestry companies may achieve efficiency and returns to scale as well as learning curve economies. It may be easier for established companies with a track record, such as Plum Creek Timber Company, to raise capital for acquisitions and become accepted as a supplier to the companies that are going to spin off their timberlands. Better learning internally may improve a forest owning company's competitive position in the markets for forest management services. Such services may also become a reason for companies to expand outside their own country. Assidomän looked at forest management consulting as way for the company to expand outside Sweden (Assidomän 2001, p. 18). Companies specialized in owning and/or managing forests may therefore have an inclination to grow bigger.

In the United States, companies with a REIT and MLP structures are, because of the way they are taxed, able to bid higher than C-corporations interested in acquiring a forest property. Plum Creek Timber Company may therefore grow significantly larger than today.

Consolidation of forest ownership also seems to be a motivation for pure play timber companies. Plum Creek Timber Company has even marketed themselves towards private woodland owners. Families and investors can sell their forest to Plum Creek Timber Company against cash or shares in the Plum Creek. That may be a desirable option in a family where a forest property is to be transferred from one generation to the next. While some of the descendants might want to keep the parents' investment in forestland, others might want reduce their exposure to forestland and timber revenues. By offering to buy the property for shares and cash, Plum Creek Timber Company adds an alternative way for families to decide what to do with the family property (Bergeron 2000).

Pure play forest companies will naturally be concerned about maximizing the value of their properties. Plum Creek Timber Company has therefore now split their forestry business into three distinct businesses: a timber sales unit, a unit identifying, developing and selling higher and better use lands, and a unit that will develop other businesses on their properties related to natural resources other than timber, such as coal deposits, minerals, oils and gas. AssiDomän in Sweden also viewed this as an opportunity. Selling conservation easements to conservation groups and communities is now common among U.S. timber growers. Identifying properties, that may have a higher value to others or for other purposes than timber production, has become important for companies owning large forests areas. Forest properties close to cities, or with other attractive features, may be sold for profit. Rayonier is an example of this. They have a strategy of selling 2 –4 % of their land area on an annual basis. The properties that will

be sold will largely be higher and better use lands and outlying, non-strategic parcels. Their timberland acquisitions will be opportunistic; they will buy properties when they can do so at a discount to low-term price trends (Rayonier 2002). Hancock Timber Resources Group has also found that in the U.S. there an inverse relationship between the per-acre sales price and size of the forest properties, a wholesale discount for large properties (HTRG 1999).

The relationship to the environmental movement will be important for pure play forest operating companies. As managers of ecosystems, they will be under pressure to manage the land responsibly. Forest Systems is concerned about achieving a "social license" to do forestry (Forest Systems 2002c). Assidomän chose to certify their forests with the FSC certification system. The FSC-certification built a brand name in the investor community. Before being acquired by Sveaskog, they were listed on the Dow-Jones Sustainability Index, and on the FTSE4 Good Index. Plum Creek Timber Company has chosen the industry initiated certification system Sustainable Forestry Initiative. They claim to be a leader in environmental management and that this positions them as a preferred land buyer (Brown 2002). At the same time, a possibly more aggressive approach towards real estate development or extraction of other natural resources may be in conflict with such strategies. For example, several large timberland transactions in the state of Maine that took place during the 1990s caused concerns among local environmental groups and politicians that the forests would be carved up for real estate development. In particular, it caused concern that the new owners of the forests are not local "timber barons", as earlier, but distant profit maximizing companies. The acquiring companies were quick to assure that the forests would be preserved for outdoor enthusiasts and loggers alike (Allen 1998).

9 Conclusions

Together with other societal changes, such as improved production and communication technology, higher educational levels, liberal policies and plantation forestry, globalization is one of the most important reasons for current changes in the forest industry. Globalization should be understood as a complex interrelated process, in which internationally dispersed activities become integrated.

In the forest industry economic globalization is evident both in the form of increased forest product trade and in the form of increase levels of cross-border mergers and acquisitions. Globalization affects strategies of forest industry companies in several ways and at different levels. At the business-level globalization changes a business unit's position in the market place. Globalization leads to thicker markets, with more competitors. The result is that rivalry increases. Cost pressure increases. Advantageous positions in certain market segments may be threatened. The companies seem to respond in two ways. They differentiate their products by trying to identify new market niches and developing new products and services. They also pursue consolidation strategies. At a global basis, the forest industry is in general fragmented, with many competitors. Recent mergers and acquisitions have changed this somewhat, so that in some segments, such as newsprint and tissue, market concentration is higher. Globalization is likely to be the main reason for this recent wave of mergers and acquisitions that have taken place in the forest industry.

At the functional level, globalization offers opportunities for companies to expand internationally within business they have distinctive competencies. Internationalization and consolidation strategies gives companies the opportunity to improve profits by gaining learning curve economies, economies of scale, economies of scope, location economies and to transfer distinctive competencies as well as to establish themselves in growth areas. Several of

the most global forest industry companies view these opportunities as important, and they take steps to gain from them.

At the corporate level strategies are clearly influenced by the changing business-level and functional level strategies. Many companies have decided to focus on narrower portfolios of businesses. By divesting businesses, balance sheets may be improved to purse growth opportunities within core areas. During the later part of the 1990s, companies selling assets also gained from high stock prices. This may also be a reason for a decline in the level of diversification and a decline in the level of vertical integration. Globalization may further reduce the benefits of vertical integration by the market thickening effects. One of the main reasons for vertical integration is the risk of hold up. Globalization, market integration and thicker markets lead to a lower risk of hold-up and reduce the benefit of vertical integration. Regarding integration between forestry and converting facilities, both improved plantation productivity and lower transportation costs have contributed to market integration. In addition, long-term contracting and long-term cooperative agreements have become alternatives to vertical integration. Lower communication costs and higher education levels have also contributed to reduced transactions costs.

What we are seeing in the forest industry seems to be a shift away from diversified, vertically integrated, locally or regionally based enterprises towards companies that are more focused horizontally and vertically, and more diversified geographically. Without more empirical research it is difficult to say how far and to what extent this trend has developed. How far this development will go is therefore also difficult to say. Note that as more companies disintegrates, the thicker the market gets and the less likely is a hold-up. At the same time consolidation may also reduce market thickness, so that the risk of hold-up increases.

These trends have consequences for forestry. During the l990s the total amount of forestland owned by integrated forest products companies in the United States declined significantly as lands were sold off. The buyers have mainly been institutional investors, but some corporations have also purchased large tracts of lands, such as Plum Creek Timber Company, Rayonier and a few other MLPs. In Scandinavia, some of integrated companies seem to follow the example from the United States, with Stora Enso and M-Real divesting forest assets in Finland. To what extent publicly traded pure play forestry companies will spread, is difficult to say. According to Forest Systems, Inc. the number of investors able to undertake the large acquisitions that are necessary to buy all the land that the forest products companies should sell, is small and shrinking. By being publicly traded, a company gets access to a much larger pool of capital than what timber investment management organizations can. On the other hand, by being publicly traded, the investment will loose some of its attractiveness as a portfolio diversifier, since systematic risk will increase. In the United States the possibility to elect to be treated as a REIT for tax purposes may lead to more publicly traded pure play forestry companies.

The strategies of companies focusing on forest ownership and management are likely to be driven by the following factors: geographic diversification and globalization; returns to scale in forest management; consolidation of local timber markets; possibilities for real estate development and use and extraction of other natural resources on the lands; possibilities for selling higher and better use lands; and the relationship with the environmental movement.

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Appendix

Notes to table 3:

[a] Weyerhaeuser Company acquired MacMillan Bloedel in 1999.
[b] Weyerhaeuser Company acquired Willamette Industries in 2002.
[c] Weyerhaeuser Company's international timberlands are located in Uruguay, Australia and New Zealand.
[d] Georgia-Pacific Corporation acquired Fort James (formerly James River Corporation) in 2000.
[e] Georgia-Pacific Corporation spun the timberland division off as the letter stock "The Timber Company" in 1997, which merged with Plum Creek Timber Company in 2001.
f International Paper Company acquired Champion International in 2000.
[g] International Paper Company acquired Union Camp in 1999.
[h] International Paper Company does not say exactly how much they own, just how much the company or its subsidiaries control in the United States.
[i] International lands comprise 607 000 hectares in Brazil and a 50.4% stake in Carter Holt Harvey, owning 327 800 hectares in New Zealand. Through licenses and management agreements, they also have harvesting rights on Crown-owned land in Canada.
j International Paper Company merged with Federal Paper Board Company in 1996.
[k] Boise Cascade Corporation's international timberlands are located in Brazil.
[l] Kimberly Clark acquired Scott Paper in 1995.
[m] Scott's international timberlands were located in Chile.
[n] Lousiana-Pacific has announced in May 2002 that they will try to sell their timberlands. In 1999 the company acquired Evans Forest Products with its harvesting rights in Canada.
[o] Westvaco merged with Mead in 2002, creating MeadWestvaco Corporation.
[p] Westvaco's International timberlands are located in Brazil.
[q] Willamette Industries only stated how much they owned and controlled in 1994.
r Chesapeake sold 112 500 hectares to Hancock Timber Resources in 1999.
[s] The Pacific Lumber Company is now private. The forest area information for 2001 is from their website, www.paificlumber.com.
[t] St. Regis acquired by Champion International in 1994 (Yin et al. 1998)
[u] Great Northern Nekoosa (formerly Great Northern Paper, 1970) acquired by Georgia-Pacific Corporation in 1990 /Yin et al. 1998)

[v] Great Northern Paper resurrected in 1999 in private ownership after a couple of different owners during the 1990's (source: Great Northern Paper 2002).
[w] Jefferson-Smurfit Corporation (U.S.) and Stone Container Corporation merged in in 1998 creating Smurfit-Stone Container Corporation.
[x] Stora Enso acquired Consolidated Papers in 2000.
[y] Mosinee Paper Corporation merged with Wausau Paper Mills Company in 1998 creating Wausau-Mosinee Paper Corporation.
[z] Totally, Pope Resources has 242 000 hectares of forest under its management.
[aa] Crown Zellerbach was taken over by James River in 1986 (Source: Yin et al. 1998)
[ab] The St. Joe Company is the result of a restructuring of the former industrial conglomerate St. Joe Paper Company. The St. Joe Company is now a real estate operating company. It is difficult to say exactly how much timberland they own in 2001. They have 263 000 hectares of planted pine forests, and approximately 101 000 hectares of mixed timberland, wetlands, and lake and canal properties. They lease hunting rights on 304 000 hectares.
[ac] On October 25, 1999, Rayonier (formerly ITT Rayonier Inc) acquired approximately 968,000 owned and leased acres of forestland in Georgia, Florida and Alabama from Jefferson Smurfit Corporation (U.S.).
[ad] Rayonier's international lands are located in New Zealand. In addition, they manage 42 000 hectares in Australia.
[ae] From their annual report, it is difficult to say exactly how much timberland Bowater owns, but according to a presentation by the CEO Arni Nemerov at the CIBC World Markets 2002 Whistler Institutional Investors Conference, the total land area fee owned in the US and Canada is about 610 000 hectares. According to their annual report, Bowater's Forest Products Division manages 445 000 hectares of timberland owned or leased in the United States and the Canadian provinces of Ontario and Nova Scotia and over 3.3 million hectares of Crown-owned land in the province of Ontario, on which Bowater has cutting rights. Bowater's Canadian Forest Products Division manages 162 000 hectares of owned or leased timberland and over 9.87 million hectares of Crown-owned land in Quebec and New Brunswick on which Bowater has cutting rights.
[af] Tenneco Inc. spun-off Tenneco Packaging Inc. in 1999, which Changed it's name to Pactive Corporation the same year. In April 1999 the company contributed its containerboard packaging business, including approximately 384 500 hectares of timberland, to a new joint venture, called Packaging Corporation of America (PCA). In February 2000 and April 2001, the company sold its interest in PCA.
[ag] Plum Creek Timber Company transformed from a MLP to a REIT in 1999.
[ah] Numbers for Canadian companies for both 1994 and 1981 are from Yin et. al (1998).
[ai] Domtar's fee lands include controlled lands in 1994.
[aj] MacMillan Bloedels were in 1994 located both in Canda in the US South (Yin et al. 1998).
[ak] Noranda was in 1998 amalgamated with NFI Holding Inc. as part of a series of transactions whereby Noranda Inc. transferred the ownership of its 67% common share interest in Noranda Forest Inc. to its common shareholders. The new company is Nexfor Inc. Nexfor owns, has cutting rights, or holds licences on forest lands equivalent in area to 3.0 million hectares. The largest areas of controlled forests are in the provinces of Quebec, New Brunswick, and Ontario and in the state of Maine. The company does not state how much timberland they own in the state of Maine.
[al] The Packaging Corporation of America sold during 1999 and 2000 approximately 323 800 hectares of timberland to various buyers. They have supply agreements on about 243 000 of them.
[am] Formed in 1997 to acquire timberlands near Klamath Falls, Oregon.
[an] Natural resource company. Has two sawmills. Spin-off from Murphy Oil in 1996.
[ao] Was incorporated in 1997. Forest investment company.
[ap] UPM-Kymmene acquired Blandin Paper Company in 1997.
[aq] UPM-Kymmenes international lands are located in Finland, United Kingdom, and Uruguay.
[ar] Stora Ensos international timberlands are located in Finland, Sweden, Portugal and Indonesia.
[as] Stora Enso has announced the divestiture of their forests in the United States and in Finland. In Sweden, various options to release capital tied up in forests will be investigated. 125 000 hectares of their U.S. timberlands were sold to Plum Creek Timber Company in Sep. 2002.

Table A.1. Companies that have disappeared from PricewaterhouseCoopers top 100 list of forest & paper companies since 1996.

COMPANY	COUNTRY	WHAT HAPPENED?	COUNTRY	YEAR OF DEAL	SALES LAST YEAR (U.S. $ MILLIONS)
Willamette Industries	USA	Acquired by **Weyerhaeuser Company**	USA	2002	4,652
Alliance Forest Products	Canada	Acquired by **Bowater Inc.**	USA	2001	731
Pacifica Papers Inc.	Canada	Acquired by **Norske Skogindustrier ASA Canada Ltd.**	Canada/Norway	2001	578
Mead	USA	Merger with Westvaco, forming **MeadWestvaco**	USA	2001	4,368
Daishowa Paper	Japan	Acquired by **Nippon Unipac**	Japan	2001	2,954
AssiDomän	Sweden	Acquired by **Sveaskog**	Sweden	2001	2,696
Haindl	Germany	Acquired by **UPM-Kymmene** and **Norske Skogindustrier ASA**	Finland/Norway	2001	1,545
Gaylord	USA	Acquired by **Temple Inland (transaction pending)**	USA	2001	1,168
St. Laurent	Canada	Acquired by **Smurfit -Stone**	USA	2000	916
Modo Papers	Sweden	Acquired by **Metsä Serla**, owned by Metsäliitto.	Finland	2000	610
Fort James	USA	Acquired by **International Paper Company**	USA	2000	6,827
Champion International	USA	Acquired by **International Paper Company**	USA	2000	5,268
Arjo Wiggins Appleton	UK	The 60% of the stock that **Worms** did not already own was acquired by Worms	France	2000	5,213
Fletcher Challenge paper division	New Zealand	Paper division acquired by **Norske Skogindustrier ASA**	Norway	2000	4,063
Consolidated Papers	USA	Acquired by **Stora Enso**	Finland	2000	1,839
Donohue	Canada	Acquired by **Abitibi Consolidated**	Canada	2000	1,672
Chesapeake	USA	**Georgia-Pacific Corporation** acquired tissue production	USA	1999	950
Trus Joist International	USA	Acquired by **Weyerhaeuser Company**	USA	1999	778
Union Camp	USA	Acquired by **International Paper Company**	USA	1999	4,503
MacMillan Bloedel	Canada	Acquired by **Weyerhaeuser Company**	USA	1999	2,819
Settsu	Japan	Acquired by **Rengo**	Japan	1998	498
KNP BT	The Netherlands	KNP BT changed name to Buhrmann, spun off packaging assets as **Kappa Packaging** and became a pure distribution company.	The Netherlands	1998	8,030
Stora	Sweden	Acquired by **Enso Gutzeit**	Finland	1998	6,009
Stone Container	USA	Merged with Jefferson Smurfit forming **Smurfit-Stone**	USA	1998	4,849
Avenor	Canada	Acquired by **Bowater**	USA	1998	1,438