

Industrial Timberland Ownership in the USA: Arguments Based on Case Studies

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The forest product companies' ownership of timberland is decreasing in the United States as in many other countries. In aggregate the forest product industry owned 26.5 million hectares (11.6% of the U.S. timberland) in 2002 compared with 28.5 million hectares in 1987 (FIA 2006). Reasons for this decrease of timberland ownership are several and complex. This article presents four case studies of U.S.-based forest product companies. The vertical integration theory and empirical studies about timberland ownership give a base for the study. Four hypotheses are formulated on the basis of the literature. The results give support to two of them. An important reason for timberland ownership is a wish to secure deliveries. Market conditions are important for the need of owning timberland. Two of the companies did not own timberland, the main reason being more profitable alternative uses of capital. The ownership structure of the company, tradition, and culture are other important explanations for timberland ownership. This study did not show the advantage of timberland ownership for information and coordination.

Keywords Backward vertical integration, forest management, pricing, secured supply, owner structure

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1 Introduction

Nearly 2 million hectares of timberland have moved out of U.S. forest industry ownership since 1987. Since 1981, timberland owned by publicly traded companies has declined by 4.6

million hectares (Goetzl 2003). In for example Main, forest product industry owned 1.9 million hectares of the larger tracts of timberland compared with 0.7 million hectares in 2005 (Hagan et al. 2005). The 1990s and onward have produced a substantial number of mergers and acquisitions

all over the world, including Canada, Finland, Japan, Sweden, the United States, which has led to the monetization of nonstrategic assets (e.g., the sale of timberlands) to alleviate debt. (Block and Sample 2001). The North American forest product industry has not undertaken any new greenfield pulp-paper mills, and only a few new paper machines are planned. Thus, it is not necessary for the industry to assemble timberland basins to support new mills or add to timberland holdings to support major plant expansions. Furthermore, at the beginning of the 21st century, the use of recycled fiber has reached about 40% of the fiber furnished compared with 25% at the beginning of the 1990s. Most of the recent and forecasted growth in paper and paperboard production is based on recycled fiber, which suggests that pulpwood demand will remain flat. (Kirk 2001)

While there are various company-specific reasons for some of the major timberland transactions, there are also some general key drivers for these divestitures. In the U.S. the removal of the capital gains federal tax advantage for industrial ownership in 1986 is an important reason for the decline in industrial timberland ownership. Yin and Izlar (2001) mention consolidation and globalization, asset realignment and operation concentration (on manufacturing and marketing). The financial performance of the forest products industry has been weak during the 1990s (Fig. 1) (see also Yin et al. 1998, Diverrio 1999, Yin et al. 2000, Global Forest and Paper Survey 2005); as a result, companies looked for ways to improve profits. Butner and Stapley (1997) point out that closeness to primary resource of trees equates with low return. Many companies have started to move capital away from timberlands in their own countries into lower-cost, higher-productivity timberlands in other regions of the world, as well as into investments in biotechnology research. Both strategies would allow companies to produce more fiber on fewer hectares. Furthermore, the latter part of the 1990s has witnessed a strategic restructuring among forest products companies that has led many of them to focus on their core production manufacturing and less on wood supply.

The purpose of this article is to approach the question from a company-specific perspective

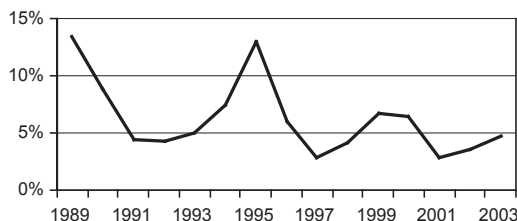


Fig. 1. Rate of return (income/loss before taxes related to total assets) for 16 major U.S. forest products companies. Source: Own calculation based on annual reports

about why some forest products companies disinvest timberland ownership while others don't. The analysis will be based on literature about vertical integration and empirical studies about timberland ownership.

Theoretically the boundary of a company is defined by balancing the costs for using the market solution, i.e., the transaction costs, compared with the costs for internal coordination, i.e., vertical integration (Coase 1937, Williamson 1985). Other references of interest are Mintzberg et al. 1995, Wikström et al. 1994, Perry 1989, Bjuggren 1985, Richardson 1972.

Transaction costs are defined as the costs of running the economic system, i.e., costs besides production costs. Transaction costs are related to concepts such as contact (cost of finding information about possible products and sellers/buyers), contract (cost of negotiations about conditions and writing a contract), and control (cost of implementation and supervision of the contract). If the market is internalized, i.e., the boundary of the company is widened, other costs will arise, such as costs for administration and nonoptimal allocation of resources. There is a tendency that the internal transaction costs are dynamic in size and character. Changes in economies of scale, possibilities for organizing geographically dispersed activities, and new management techniques will result in larger companies. However, these types of innovations will also influence the market solutions.

The basis for Williamson's theory (Williamson 1985) is that individuals' behavior is often characterized by bounded rationality and opportunism, i.e., transaction difficulties that may be present in

the exchange process (compare with Simon 1961). In an uncertain world it is impossible to forecast all possible outcomes of a decision, which means that uncertainty *ex ante* may be costly *ex post*. This explains the existence of bounded rationality. Opportunism means that some people may periodically be selfish at the expense of other people. For example, they may be privy to information that may give them the possibility to take more than motivated by simple profit.

For a specific transaction it is important to try to identify which organizational form, inter- or intrafirm transaction, is the most efficient. According to Williamson (1985), three dimensions distinguish different types of transactions: 1) transaction-specific capital (asset specificity), 2) uncertainty (about the future) and 3) frequency (of transactions). The first dimension is the most important. Transaction-specific capital refers to lasting investments that have a specific use or user, i.e., the investment costs are “sunk” because no alternative use exists. A special concept, quasi rents, is related to transaction-specific capital. This refers to the difference between the value of an asset at its best use compared with its second best use. For very specific purpose assets, such as pulp and paper mills, the second best use value can be close to salvage value. One consequence of transaction-specific capital may be less competition; in extreme cases one buyer and one seller will characterize the market situation. This is of importance when assuming bounded rationality, opportunism, and uncertainty.

The number of empirical studies on backward integration between the first conversion step and timberland is limited. Examples of articles dealing with vertical integration between pulp and paper are Ohanian (1994) and Eklund (1967). Globerman and Schwindt (1986) present what they characterize as a verbal test of the transaction cost approach. They observe that (at that time) all but one of Canada’s largest (in sales) forest product enterprises were integrated backward into the ownership of timber rights. They conclude that the transactional considerations, particularly asset specificity, are robust empirical determinants of governance structures. Zinkhan (1988) demonstrates that financial models trying to maximize the shareholder wealth cannot explain the degree of merger activity by banks. His research shows

that there is a link between degree of merger and prestige. He suggests an improvement of the financial models by incorporating “social wealth” factors along with “economic wealth” factors. In a forest company perspective timberland ownership can be expected to give the company an “identity”. For many customers and employees forest industry products are strongly linked to forest.

Murray (1995) studied the effects of vertical integration on the U.S. pulpwood markets. One conclusion is that having relatively few buyers of pulpwood over the relatively many timber growers is favorable for the buyers (compare with Dawson 2003). Another reason for timberland ownership is to provide some stability to the pulp companies’ procurement divisions in light of the natural supply shocks in pulpwood markets due to weather and other random events. The penalty for a wood procurement shortfall can be substantial (e.g., temporary mill closure). Yin et al. (2000) claim that timberland ownership is rarely considered in the context of overall manufacturing operations. In a numerical example they show that holding timberland can enhance the ability of companies to make decisions that can result in financial success in the long run. Yin and Izlar (2001) apply financial engineering techniques as a way to deal with supply uncertainty through a collar which is a combination of a call option and a put option. The provision guarantees the timber user a steady, long-term supply of wood, and it guarantees the timber supplier a steady, long-term supply of money.

Schmelzle and Flesher (1991) studied three Mississippi-based lumber companies. They conclude that the main reason for backward integration was to gain better control over and ensure a constant supply of raw materials. “It was only when the company purchased its own timberland that the problem of uncertain raw material supplies was finally removed.” Lönstedt (2003) studied three large pulp and paper companies and three family-owned lumber companies in Sweden. The results show that reasons for backward integration are a wish to influence pricing and to secure deliveries. Furthermore, the Chief Executive Officers (CEOs) of lumber companies also mention the information advantage of owning timberland. It is interesting to note that this is not stressed by the CEOs of the pulp and paper companies. The

same applies to coordination advantages. In a calculation for one of the bigger Swedish pulp and paper companies, Holmen, it is shown that rate of return could be improved by selling off part of the timberland ownership (Eriksson and Kreij 2004). Muhammad (2003) in his Ph.D. thesis finds that during the time period 1960–1998 firm size, market share, and equity/sales ratio are the principal factors that contribute to the profitability (net income) of U.S. pulp and paper firms. Timberland ownership, among some other factors, also influences the profitability of these firms. Net income, equity/sales ratio, mergers, firm size, and relative firm capacity are the most significant factors related to timberland ownership and management. Firms that own or manage timberlands have a significant advantage in net income over those that do not.

The following hypotheses are formulated on the basis of the literature review:

H₁: Timberland ownership helps to secure supply

This is a main reason that timberland ownership has long been to secure deliveries of wood. An integrated wood-based company secures, at least to a certain extent, deliveries of wood. At least the risk for no deliveries at all for a certain period disappears. This is especially important for such capital intense industries as the pulp and paper industry. Theoretically this hypothesis refers to “transaction specific capital”.

H₂: Timberland ownership increases negotiation power which helps to put downward pressure on wood prices

Timberland ownership is one way of tackling the problem of powerful suppliers, i.e., the distribution of the quasi rent and risk of opportunistic behavior or, stated in another way, an insurance against most of the value added profit ending up in forestry. Furthermore, backward integration will reveal the production cost structure that is used at price negotiations. Theoretically this hypothesis refers to “bounded rationality and opportunism”.

H₃: Timberland ownership reduces transaction costs for information and coordination

Timberland ownership is often seen as an example of coordination advantages. It is easier for companies that own timberland to get accurate and quick forest information. It has recently been more and more important at an early stage, in the forest operations themselves, to observe the requirements that will come at later stages of the processing chain and from end-users. Environmental considerations and the necessity to use fewer chemicals and still maintain the brightness of the pulp and paper are other examples of an increasing need of information about the wood quality. The time it takes to react to unforeseen events may be shorter for companies that own timberland.

H₄: Timberland ownership for a forest product company is from a financial perspective less efficient

Timberland ties up large sums of capital, capital that may be needed downstream to improve the competition position of the company. If the timberland investment is large compared with the ability of the company to finance the investment, the integration may expose the company to strategic risks in other parts of its businesses. In such capital intense industries as the forest industry, the need for investments in new technology advanced machinery is large.

2 Material and Methods

Two different types of U.S.-based forest companies were studied: two pulp and paper and two lumber companies. Three companies are based in the Southeast (Georgia-Pacific Corporation, Jordan Lumber Corporation and New South Lumber Company) and one in the Northwest (Weyerhaeuser Company). The two pulp and paper companies are among the largest in the United States. The target person in each company was the CEO. However, except for Jordan Lumber Corporation, I was directed to the person in charge of the issue. In two cases these were vice presidents and in one of the companies director of

timberlands. This may be a disadvantage as timberland ownership is a strategic question handled by the board and the CEO.

The first contact was made through an e-mail that explained who I am, the background and purpose of the study and what issues I wanted to discuss. In most cases the next step was e-mail(s) to the person I was suggested to contact. A time was also agreed upon for the interview. The interviews were made by phone and recorded. A summary of the interview was typed. The analyses are based on the typed interviews. All interviews are anonymous, i.e., the names of the interviewed persons (I.P.) are not given.

The telephone interviews started with a short presentation of me, followed by giving some reasons why the topic of timberland ownership is of interest and has become a hot topic. After this general introduction, each of the topics expressed in the hypotheses were discussed: timberland ownership related to secured supply, wood prices, transaction costs and financial advantages or disadvantages. The same procedure was followed and the same questions were raised each time.

3 Case Studies

The presentation will start with the two lumber companies and be followed by the two pulp and paper companies.

3.1 Jordan Lumber Corporation

This company produces annually some 350 million board feet of lumber and owns about 28 000 hectares of timberland. The company also owns chip-mills. The first was built more than 30 years ago when the demand for chips increased. The company has three subsidiaries: one for manufacturing, one for old timberland, and one for new timberland. The reason for this organization is to reduce taxes. In the U.S. timberland is taxed favorably. More than half a century ago the present owner's father established the company and is still a typical family-run business. The owner talks about the third and also the fourth generation of owners. The Jordan Lumber Company is

well known in the region and has no difficulty borrowing money.

In the first three decades the company was managed without access to its own timberland. The first timberland was acquired at the end of the 1960s. Since then an average of about 400 hectares per year has been bought, because, as the I.P. stated, "we could not afford to buy more." Sellers were pulp and paper companies and non-industrial private owners. If any of the big pulp and paper companies had been interested in acquiring timberland, the company would not have been able to compete. When chip-mills became more common, it meant that supply increased and pulp mills did not have the same need to own timberland. Nowadays one reason for selling land is that mergers force pulp and paper companies to sell to retire debt. At the turn of the century about 14 000 hectares of timberland was owned. In 2002 some 14 000 hectares was bought from a pulp and paper company, thus doubling the timberland area. This was a challenge in financial terms. The owner states: "We stretched ourselves." However, this was a unique possibility that he did not want to run through his fingers. A little more than one third of the company's demand of sawn timber is supplied by company-owned timberland. Major external suppliers are non-industrial private owners. About one third of the external deliveries are from industrial timberland owners.

For the owner one important reason for timberland ownership, perhaps the most important, is to secure wood deliveries. "If people withdraw, our land will be an insurance." Certainly, if prices go up too much, the company has the alternative to cut its own timber. "If prices go up too far we back out." It should be noted that the roundwood market is functioning quite well. The I.P. states that the company's influence on the market is marginal. The capital costs or alternative use of capital invested in timberland is not a major concern to the owner. "I am financially independent, which means that I do not have to report profit each year as the pulp and paper companies. I can take a long-term view." The owner is convinced that one reason that other companies sell off their timberland is economic analyses made by financial institutions and as a consequence of stockholders' requirements. "Large companies are driven by quarterly reports." The owner is

convinced that in the long run investments in timberland are financially profitable. He expects the price of wood to increase. Certainly this is one explanation for acquiring timberland. Another reason for the latest acquirement was to stop someone else from becoming a major holder in the neighborhood of the company.

3.2 New South Lumber Company

This company is a subsidiary of New South Companies, Inc. The holding company was started in the 1930s and 1940s when some families became engaged in the lumber industry and joined together to build a sawmill. Today it runs three sawmills and a finger-joint stud plant. A major reorganization took place at the beginning of the present century. The purpose was to more effectively manage the different businesses as stand-alone entities. A holding company was created that operates four separate companies. One is the lumber company at which the I.P. works. The three sawmills produce approximately 325 million board feet of lumber annually. The lumber mills' capacities range from 80 to 150 million board feet annually.

The company does not own timberland. It is not motivated from an economic point of view to own timberland, the I.P. claims. Investment in timberland requires a great deal of capital, capital that the company chooses to invest in lumber production and other businesses. "We are good at running these types of businesses. We have no experience of forest management." "Certainly, the procurement would be much easier with own timberland." The long-run supply of wood and the short-run demand for wood is focused. Important suppliers are contractors. They sell both to lumber and pulp mills. In the South, about 70% of the timberland is owned by non-industrial private forest owners. The company merchandizes to pulp companies.

The I.P. states that, given the roundwood market in the Southeast United States, the lumber division has no problems in getting the deliveries they want. "It is a matter of price." Fall is the easiest season and the first quarter the hardest. "In response we build up the inventory in fall and use water to increase storage time." When the market

is booming, price is one reason for getting timber. "Certainly, there will be timber to buy. Probably the timber prices would be somewhat lower with own timberland but this would not outweigh the higher capital and staff costs." One advantage of buying one truck of timber is that the company knows what it gets. "If we planted it would take 20–25 years before we knew."

3.3 Georgia-Pacific Corporation

This company was founded about three-quarters of a century ago as a wholesaler of hardwood lumber and has grown quite substantially through expansion and acquisitions. Today the company has become one of the world's leading manufacturers and marketers of tissue, packaging, paper, building products, and related chemicals. The company employs about 50 000 people at more than 300 locations in North America and Europe. Net sales in 2005 were about US \$20 billion. More than 75% of the company's wood-using facilities are in the South and South Central United States. The wood-using facilities manufacture plywood, oriented strand board, laminated veneer lumber, softwood and hardwood lumber, pulp and paper, particleboard, medium density fiberboard (MDF), and several other specialty panel products. The company's wood and fiber procurement group supplies timber and wood fiber to more than 80 manufacturing operations.

In 1990 the merger of another pulp and paper company was completed. This added different types of production facilities, distribution centers, and a substantial area of timberland. After the merger the company held 3.6 million hectares of timberland. Traditionally at this time land management was very much a separate operation managed by foresters. At the end of the 1990s a timber company was created as a separate operating group with its own common stock that tracked the performance and value of the company's timber business. This can be seen as "the first transition step away from a traditional forest company." In this way the value of the company portfolio could be shown. Furthermore some \$US 600–700 million were released; money that could be used to repay debts. Two years later the timber company completed its strategic sale of timberlands in parts

of North America. Some years later this subsidiary of the company merged with another timber company, a real estate company. “The company was no longer a timberland owner.” The I.P. points out that an important prerequisite for the merger was that the merging company was a real estate company. This means that the company is more tax efficient than the studied company and its former subsidiary.

The company that merged the former timber subsidiary supplies 10–15% of the company’s pulp wood consumption. The company has long-term supply agreements in three or four U.S. regions. However, the U.S. Southeast roundwood market is functioning. “The fiber availability for the company is good even with limited access to timberland.” Furthermore the I.P. claims: “Better procurement has offset increased open market dependence.”

The financial division had for some time questioned the economic benefits of the ownership compared with for example repaying debt. Behind this was a market trend where “highs were more infrequent and lows were deeper.” Furthermore, tax-efficient vehicles for owning timberland had been established. A thorough study and discussion had been going for about a year. The result was that, even if risk aspects were included, a free market solution was preferable from an economic perspective. That a favorable tax solution could be found was financially important for this conclusion. One consequence of the spin-off of the former timber subsidiary was that the market expressed the value of the asset portfolio. The shares of the company did not decrease while those of the former subsidiary increased quite substantially. The result was a \$US 3–4 billion increase in value. However, the flip side of the coin is that the variability of the stocks has increased.

The company was in 2005 bought by Koch Industries, Inc.

3.4 Weyerhaeuser Company

This company is also an international forest products company with annual sales of about \$US 20 billion. It was founded over 100 years ago and currently employs about 50 000 people in

many different countries. When the company was founded it had a single focus: timberlands. The company is today principally engaged in the growing and harvesting of timber, the manufacture, distribution and sale of forest products, and real estate construction, development, and related activities. The name of the company is the same as the founding family’s name. This family still owns a substantial number of shares in the company even if the major holders all are institutional and mutual funds. The following groupings are distinguished: building products; pulp, paper and packaging; timberlands, real estate; and transportation. The company is among the world’s largest private owners of merchantable softwood timber and manages millions of hectares of privately owned and publicly owned forests in North America. In the United States, the company manages almost 2.4 million hectares of company owned and leased commercial timberland in 10 states. The I.P. comments: “We have a lot of timberland at quite a low book value, and we feel that we can manage this asset.”

The I.P. describes the company as a “timberland owner company.” This means that the primary interest is profit and value of timberland. Management of timberland is and has been since the establishment of the company a strategic advantage. The I.P. goes so far as to claim that the company has an interest in sawmills “as conversion facilities contributing to the profit and value of the timberland. Pulp mills are of interest because they take care of sawmilling residues. We can take advantage of the supply chain all the way back to the genetics.” The timberland strategy focuses on solid wood; fiber for pulp is a by-product and is not a focus of timberland management. The company has plans for unique mills to take advantage of unique timberland assets. A large R&D component focuses not only on capacity but also on finding unique, premium markets.

The company sells logs internally and externally. Transfer prices within the company reflect timberlands as a separate profit center. This sends, says the I.P., correct economic signals internally and externally. “We would rather keep buyers of timber than driving out competition for mills.” More and more long-term wood supply contracts are signed with mills. No strategic goal exists for the company to be self-sufficient. The company

mills in the Southern U.S. have an average of about 40% self-sufficiency. The experience is that “20–30% of wood supply needs to be ‘locked up’.” The I.P. further says “We observe that nonindustrial private owners take wood off the market if prices are low; we do little of that.”

The roundwood market of the Northwestern U.S. is dominated by few and large timberland owners. (NIPF owners own only about 20% of the timberland.) Today the main purpose of federal timberland is environmental. Thus, the ownership pattern favors timberland ownership and in that way assures wood availability. The company can take advantage of this. Another way of influencing the price formation is exports to Japan. The I.P. stresses that it is not in the interest of the company, being a timberland company, that other pulp and paper companies dominate the roundwood market, as this could be harmful for the timberland business.

Timberland ownership is profitable in the long run because the prices of land increase even in the face of declining commodity prices. “Timberland has been a tremendous performer as an investment. In the short run we know that it can vary between good and bad. Every few years we get a windfall. The advantage depends on wood-basket specifics. However, in the future engineered products may reduce the specific asset value of timberland.”

4 Results

The first hypothesis (H_1) is that “timberland ownership helps to secure supply”. This is important for capital intense industries, especially the pulp and paper industry. The hypothesis is supported by the interviews and by earlier studies (Lönnstedt 2003, Schmelzle and Flesher 1991, Yin and Izlar 2001). The importance of secured wood supply is more important on a not entirely well functioning market where a few suppliers dominate. The I.P. from Weyerhaeuser states that they have long-term wood supply contracts. Also Georgia Pacific secured, after selling off its timberlands, the long-term wood supply by contracts. The CEO of Jordan Lumber states that the most important reason for ownership is to secure wood deliveries. It is a form of “insurance”. He also mentions

that he wants to control nearby land. Another advantage is the possibility to cut on own land when the wood prices are high. The vice president interviewed at New South Lumber Company says that it would be much “easier if the company had its own timber land (but not economically efficient)”.

The second hypothesis (H_2) is that “timberland ownership increases negotiation power which puts pressure on wood prices”. Support for the hypothesis is given in all four interviews through statements about how important it is with a functioning wood market (compare with Dawson 2003, Murray 1995). Such a market exists in Southeastern US for all four companies. One characteristic of the market is quite a number of nonindustrial forest owners where no powerful dominating supplier exists. The market in the Northwestern US where Weyerhaeuser has most of its facilities is dominated by relatively few buyers and suppliers. Thus the I.P. sees a risk for opportunistic behavior if the company sold its timberland (compare with Williamson 1985). The I.P. from Georgia Pacific did not explicitly mention negotiation power and price influence as reasons for keeping its timberland. Neither this was mentioned by the I.P. from the New South Lumber Company. However, this should not be interpreted such that this argument for holding timberland does not exist. Market influence and price control are sensitive issues. Of course, the influence on the market very much depends on the size of the company. The owner and CEO of Jordan Lumber Company stress that the company has a marginal role on the market. In a Swedish study the six interviewed CEOs all mentioned as an important reason for timberland ownership the influence on price (Lönnstedt 2003).

The third hypothesis (H_3) is that “timberland ownership reduces transaction costs for information and coordination”. If a company coordinates forestry and mill operations, a possibility exists to reduce the transaction costs. A company with its own timberland can more easily obtain accurate and quick information about the wood. The need for accurate information about the wood quality is increasing due to customer requirements and possibilities to increase the production efficiency. This hypothesis is not supported by the interviews; at least it is not mentioned

or stressed as an important issue for timberland ownership. Certainly, the vice president of New South Lumber Company points out that when buying wood he can demand certain qualities. If the company owns the timberland itself, more or less, the mills have to process the wood that they get. He mentions also the role of stocks but then as a way to handle seasonal fluctuations. This person and the I.P. from Georgia Pacific talk about the importance of efficient procurement departments. In the Swedish study the CEOs of lumber firms mentioned information advantage as one reason for timberland ownership (Lönstedt 2003).

The fourth and last hypothesis (H_4) is that from a financial perspective timberland ownership for a forest product company is a disadvantage because capital tied up in timberland may be used more efficiently in the production process. It is no surprise that this hypothesis is supported by the two companies that do not own timberland (Georgia Pacific and New South Lumber). The I.P. from Georgia Pacific claims that the strategic decision to sell the timberland was economically efficient. "The increase in the company's stock prices showed this." The I.P. from the New South Lumber Company also states that it is not economic to own timberland. "The capital can be used better in other investments where they have their expertise. We are not foresters!" The interviewed person from Weyerhaeuser says that buying and owning timberland is good business because the market value of timberland increases all the time. However, he admits that the book value of timberland that has been in the hands of the company for a long time is low. This may give a wrong impression of the rate of return. The owner and CEO of Jordan Lumber Company points out that he is independent of financial analysts. "I do not need to be short sighted. I do not run a quarterly based business." He buys timberland when it is available and affordable. He is convinced, as the I.P. from Weyerhaeuser, that in the long run timberland ownership is profitable. Binkley et al. (1996) point out that it is no longer valid for integrated companies to regard owning timberland as a prerequisite to financial success. In a hypothetical calculation Eriksson and Kreji (2004) find that the rate of return would increase for Holmen, a Swedish pulp and paper company, if its timberland were sold.

5 Discussion

The main question in this article is whether to buy wood or to "internalize" the market? A market solution means that transactions costs will arise, i.e., costs for contacting, contracting, and control. This involves a risk due to bounded rationality and opportunism. However, if the market is "internalized" other costs will arise, such as costs for administration and possible inoptimal allocation of resources. Which solution a company chooses is a matter of how specific the used equipment is, uncertainty, and transaction frequency. Given the specificity and scale of pulp and paper machinery it is no surprise that timberland ownership has been and still is quite common.

The answer to the raised question depends on many factors, for example the requirement from the financial markets and competition on the global and domestic product markets. After commenting on these issues I will discuss the results.

The financial environment of forest product companies has changed since the 1980s. The financial community has started to look at timberland as an asset similar to others. If it will benefit the shareholders it ought to be sold. Sellers are primarily publicly traded corporations. In these companies the board of directors is concerned with after-tax earnings per share, after-tax cash flow, after-tax return on investment and value added to shareholders (Browne 2001). One common element of these indicators is that all are "after tax." Taxes are a major decision making factor for this class of owners. In addition to taxes, the amount of cash that the corporation can generate through time and the timing of these cash flows are critical. Reducing loans and interest payments may thus be essential. Near term cash is more important than cash that is generated at a later date.

The markets and production of forest products, especially pulp and paper products, have become much more global. One consequence is a set of national and international mergers from the beginning of the 1990s and onwards. This has required many companies to monetize nonstrategic assets such as timberland to alleviate debt. Since the end of the 1990s pulp and paper companies have

more and more focused on “core” production. Financially the performance during the 1990s of the American forest product companies was quite weak. In traditional producing regions such as North America and Scandinavia few if any green-field mills have been established for quite some time. The last U.S. virgin fiber, integrated mill was built in 1986. Thus, for existing mills, it has been relatively easy to find the necessary wood raw material for the increase in production that has taken place. At the same time use of recycled fiber has increased quite substantially. Plantations and biotechnological innovations mean that it is and even more in the future will be possible to produce more fibers on fewer hectares. Another piece of the puzzle, at least in the United States, is a change in tax laws. The passage of the 1974 federal Employee Retirement Income Security Act (ERISA) for private pension plans, and subsequent similar state legislation for public pension plans, endowments and foundations, opened the door for institutional investment in timberland (Binkley et al. 2001). These laws encouraged institutional investors to diversify from their traditional reliance on fixed-income securities such as government and corporate bonds. Direct ownership of timberland provided an opportunity for diversification. Timber Investment Management Organizations, TIMOs, were created to handle these investments on behalf of the institutions. Timber has unique properties as an asset and some interesting risk characteristics. It represents relatively low risk with high returns. Investment portfolios with a timberland exposure can offer a higher level of return for a given level of risk (Yin and Izlar 2001).

The first hypothesis deals with the importance of secured wood deliveries and the role of timberland ownership in this context. The results show that this is an important issue. The theory also stresses that secured material deliveries are one reason for internalizing the market, i.e., in this case to secure wood deliveries. The Weyerhaeuser Company and Jordan Lumber Corporation (with timberland) stress this reason (compare also Schmelzle and Flesher 1991, Murray 1995), Gliberman and Schwindt 1986). Certainly the importance depends on the roundwood market. This argument is somewhat weaker if a competitive market with large number of actors exists, as

in the Southern and Southeastern United States. A large number of nonindustrial private forest owners give somewhat of a guarantee for a functioning market. Another reason for timberland ownership is the seasonal fluctuations in deliveries. This was mentioned by the I.P. from the New South Lumber Company. However, he handled this situation through the inventory policy. Jordan Lumber Corporation was buying more land when an opportunity arose. This very much depended on the market for timberland. The price must be at a level that the company can afford. Less interest on the part of pulp and paper companies in buying timberland and also more land available on the market have made this easier.

The second hypothesis is about wood prices. The results show that this is a most important issue as wood prices are one of the major costs for lumber and pulp facilities. However, how crucial the price issue is and also the issue of secured deliveries depends on the wood market situation. In the Northwestern United States it is obvious that the large pulp and paper companies have an influence or could have an influence on the pricing of wood (compare also with Murray 1995). Thus, this is one reason for timberland ownership. This influence is marginal for the lumber companies as they buy much less and often on the timber market face hard competition from other lumber companies. For them what is more important is the possibility that timberland ownership gives to vary the buying of wood depending on the market. The New South Lumber Company (without timberland) handles eventual shortages of wood due to booming markets through offering higher prices.

The third hypothesis was about transaction costs as reflected by information and coordination. This issue was hardly commented by the I.P.s. However, the representative for New South Lumber Company (without timberland) mentioned the information and coordination advantages he has in these respects when it comes to buying a truckload as compared with cutting timber from company-owned timberland. In this context another aspect could be mentioned, changes in information technology could mean that the transaction costs of organizing timber supply through markets have fallen and that it is no longer necessary to keep the forestry function within the company.

The last hypothesis claimed that capital invested in timberland by a forest product company could make better use in other parts of the company or outside the company. Nowadays many forest product companies are moving the business focus forward in the vertical integration chain. The tendency is to become only fiber consumers instead of both fiber consumers and producers. The comments received from the interviewed persons depended on whether the company owned or did not own timberland. Representatives for the Georgia-Pacific Corporation and New South Lumber Company (both without timberland) explicitly mention low economic efficiency in capital use as a reason for not owning timberland. This is also mentioned in the theory as one possible drawback of internalizing the market. The Georgia-Pacific Corporation had once been a major timberland owner. One advantage to this company of selling the land was that the total stock exchange value of the company increased. They were also able to repay loans. However, one drawback was that the variability of the shares increased. One reason for initiating this process was the financial performance of the company. This was combined with replacing the foresters as executive officers of the timber company with professional economists. One prerequisite for the change was that it was possible to find a solution without paying a lot of tax for the realized capital gain. For the Georgia-Pacific Corporation it was obvious that this has its "price," for example higher inventory costs and somewhat higher prices for wood during boom periods. It was claimed that these disadvantages were well offset by a better use of the capital in other parts of the company. Both the Georgia-Pacific Corporation and New South Lumber Company stressed that they had very efficient procurement divisions. Besides, the Georgia-Pacific Corporation had long-term contracts for wood deliveries.

Even if the return on capital tied up in timberland may be low for forest product companies one positive side of the coin is cash flow. Timberland can generate superior long-term cash flows because it delivers very high operating margins, yet requires relatively small capital reinvestment. This may be worrisome for investors because it may be easier for the board of directors to invest this money in its own processors even if the rate

of return is lower than for alternatives outside the company.

The results indicate that ownership of the company is important for the chosen timberland ownership strategy. In this study this probably is one of the explanations for the difference between the pulp and paper companies Georgia-Pacific Corporation and Weyerhaeuser Company and also between the lumber companies Jordan Lumber Corporation and New South Lumber Company. If a company is owned by one owner or by an influential owner it is easier to have a long-term view on rate of return. The pressure from other shareholders is not felt to the same extent. The board and CEO don't have to bother so much about the expectations of the financial community for the next quarter's financial reports. The two companies, Jordan Lumber Corporation and Weyerhaeuser Company, with strong family ties, also express a deep conviction that timberland is a profitable investment in the long run. If there is one or only one dominant owner the tradition as forest manager and knowledge about forest management may also have an influence on the chosen strategy. The New South Lumber Company (without timberland) mentioned as one reason for this that they lacked this type of experience but know very well how to do businesses. Company culture may also have an influence on decisions about timberland ownership. It is probably more difficult for a company originally based on timberland to sell its timberlands than for a company that started with manufacturing and later acquired timberlands.

In summary, secured wood supply, wood prices and transaction costs are important issues for lumber and pulp companies. These factors are parts of the same concern, how to supply the production process of the industry at highest possible efficiency and at lowest possible cost. Financial considerations and efficient use of capital must also be considered. Timberland ownership certainly plays an important role in this context but there are other ways for achieving the same aim, for example long term delivery contracts. This study does not give the answer to the question which strategy to choose. However, the results show the importance of company ownership. One owner or an influential owner has a more long-term view than the financial result of the next

quarter and also often another view of timberland as a profitable investment. Ownership is probably also an indication of different risk attitudes. Traditions of forest management and timberland ownership culture are also of importance (compare with Zinkhan 1988).

In a next step of this research effort it would be interesting to try to quantify the importance of timberland ownership for profitability. This could be done through comparing companies with different levels of wood from company-owned timberland and also companies in different countries as Japan and Sweden. The Japanese pulp and paper companies do not own timberland or own it to a very limited extent (Lönstedt and Nordvall 2004). In Sweden this is the case. It would also be of interest to study forest products companies in other parts of the world for confirming or rejecting the conclusions from this study.

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