



Examining timberland ownership and control strategies in the global forest sector



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ARTICLE INFO

Article history:

Received 26 August 2015

Received in revised form 18 February 2016

Accepted 18 May 2016

Available online xxxx

Keywords:

Timberland
Forest industry firms
Vertical integration
Forest ownership
Strategy
Resource scarcity

ABSTRACT

This is the first study in a global context exploring the state of industrial timberland ownership and control and modelling of the binary choice of ownership strategy. In our sample of the 100 largest forest product companies in 2012, 40 have timberland ownership and 51 are integrated into timberland by ownership or leasing arrangements. The descriptive analysis indicates that the vertical integration strategies vary between companies from different regions. Despite recent timberland divestments in North America and the Nordic countries, the area reported for timberland in ownership and control among the top 100 companies has increased between 2007 and 2012 due to growth in emerging countries. The results of logistic regression analysis indicate that larger, more profitable and pulp-production oriented companies are more likely to be vertically integrated into timberland. The underlying reason can be that the pulp producers are financially more vulnerable to the risks associated with a reliable flow of raw material to their mills. In a dynamic market situation with increasing competition over arable land, more research is required to understand the interplay between global strategies across different forest industry companies, and between forestry and other forms of land use.

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1. Introduction

Natural resources play an increasingly important role in global trade, and are identified as a crucial determinant of success for many economies in the future. However, the demand-supply gap of raw material in the industries relying on wood is widening due to a host of intertwined “megatrends”, such as growth in global population and consumption, and resource scarcity (KPMG, 2012). Furthermore, large-scale shifts in industrial forest ownership have been taking place around the world since the 1980s, when the forest industry started to divest their timberland for institutional forest owners in the United States. In those areas where institutional ownership is predominant, there are implications on the market supply and price of different forest products used as industrial inputs (Flynn and Pahkasalo, 2015). As timberland ownership of forest industry is expected to increase the price negotiation power in wood markets and to reduce the risk of raw material price increases (Lönnstedt, 2007; Lönnstedt and Sedjo, 2012). If predicted resource scarcity is realized in increasing prices for wood and other raw materials, then it might be reflecting on the future industry competitiveness. Access to – and control over – the resource base would therefore become an even more important source of competitive advantage for firms in the natural resource sector.

This phenomenon is becoming evident in the global forest products sector where firms are expanding their supply sources to industrial semi-natural forests and fast-growing plantations (Barua et al., 2014). In recent years, more and more firms have been acquiring large-scale lands for securing access to resources (see, e.g., Deininger et al., 2011). Industrial ownership and control of timberland – a form of backward vertical integration – is becoming an increasingly interesting study area in the global forest sector as the competition for arable land to meet demands for food, fiber, energy and ecosystem services further intensifies (Evans et al., 2012; Barua et al., 2014).

Previous literature has tended to this development and considered its strategic implications. Toppinen et al. (2010), for example, explained how the increase in market demand and the availability of fast-growing forest plantations had especially driven pulp and paper sector firms to relocate their production from a developed country base to Asian and Latin American countries where crop rotation periods are typically much shorter. Simultaneously, the effects of establishment of fast-growing plantations on natural forests has been in particular dividing the opinions of the forest industry, local communities and Non-Governmental Organizations (see Vihervaara and Kamppinen, 2009; Gerber, 2010; or Kröger, 2012).

Fernholz et al. (2007) concluded that forest product companies have been forced to reevaluate the role of their forests as a strategic asset. Until now, the literature on timberland ownership focused only on North America and the Nordic countries, where the companies have

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been divesting forest land during the past two decades (Yin et al., 2000; Clutter et al., 2005; Bull et al., 2006; Lönnstedt, 2007; Bliss et al., 2010; Viitala, 2010; Lönnsted and Sedjo, 2012; Li and Zhang, 2014). Amidst this expanding literature, there is a gap in the strategic research from a global perspective on the analysis of how forest companies organize their access to and control over timberland, and if organizational factors affect the choice of timberland integration.

The fundamental objective of this paper is to fill this gap by presenting a characterization of vertical integration among largest forest, pulp and paper firms globally. To do so, we analyze industrial timberland ownership and control among top 100 companies globally in 2012 based on the list by PricewaterhouseCoopers (2013). Specifically, we examine whether timberland ownership and control is a function of firms' (i) size and financial performance, (ii) business stream (such as energy, pulp and paper) and whether the decision to integrate into timberland differs across the geographical locations. Below, we first review the state of the art of vertical integration in the forest sector and present the theoretical principles of vertical integration, positing our research questions. Then we present our data, methods of analysis and results. The paper concludes with discussion of our results, future research and study limitations.

2. Vertical integration in global forest sector

The global industrial timberland ownership is in flux. The most prevalent trend during the past few decades in the industrial timberland ownership is the rise of private and institutional ownership. A large share of industrial timberland controlled by forest product companies has been taken over by institutional investors such as timberland investment management organizations (TIMO) and real estate investment trusts (REIT), or previously active industrial companies have converted themselves into REITs (Yin et al., 2000; Clutter et al., 2005; Li and Zhang, 2014). For example, in the U.S., in 1994, all of the 10 largest private US timberland owners were industrial companies, but by 2006 eight out of 10 were already TIMOs or REITs (Bliss et al., 2010). While Lönnsted and Sedjo (2012) argued that the parallel changes in the Nordic countries have been smaller, industrial timberland ownership has been changing in the Nordic countries and Europe as well, and it is likely that the institutional investors will increase their timberland there in the future (Flynn and Pahkasalo, 2015). In New Zealand, the majority of industrial forest are nowadays owned by TIMOs and property management companies, and in Australia >50% of the planted forest has shifted from public ownership into private companies, mainly for TIMOs (Rhodes and Stephens, 2014; Flynn and Pahkasalo, 2015).

Table 1
Description of specific indicators in the analysis.

	Indicators	Description	
Corporate demography	Geographical location	Corporate headquarters location.	} Vertical integration in this study
	Product segmentation	Corporate business segments, including pulp, paper, and energy.	
Economic background	Size	Corporate total sales revenue in 2012.	
	Financial performance	Firm's earnings before interest, taxes, depreciation and amortization (EBITDA); margins reported by PwC as financial performance indicator of a firm.	
Timberland status	Industrial timberland	The forests the company reports as its asset.	
	Controlled forests	The forests company reports control, e.g., by leasing contract.	
	Other forests	The forests that are reported as outside production, e.g., natural reserves and protected areas.	

Private companies have also increasingly invested in planted forests of emerging and developing countries (Toppinen et al., 2010; Mendell et al., 2011). Especially, Brazil and Uruguay have been attracting foreign investment during the past ten years, but during more recent years, there has been an increasing interest especially toward other Latin American countries such as Colombia, Panama, Ecuador and Paraguay (Cubbage et al., 2010; Flynn and Pahkasalo, 2015). For private forest product companies, the timberland ownership remains the most preferred option in many areas with high land returns such as Brazil (Kröger, 2012), even though the competition for arable land and increased land prices have led to a search for alternative strategies for organizing forest ownership in emerging areas. As an example, out-growers schemes in which industrial buyers make contracts with local farmers have become increasingly popular in many developing regions (see Desmond and Race, 2000; Cossalter and Pye-Smith, 2003).

Additionally, while large plantation areas also exist in Asian countries, such as China and Indonesia, the large-scale public ownership and large social and environmental risks associated with private ownership are slowing down the private investment activity in the region (see Barua et al., 2014; Flynn and Pahkasalo, 2015 for more detail). However, the structure of ownership remains unstudied, and the existing data bases are not considered very accurate (Siry et al., 2010). This leads to the first research question: *What is the global state of industrial timberland ownership and control among the top 100 pulp and paper companies?*

The backward vertical integration means that the manufacturer has decided to integrate with its upstream suppliers. Traditionally, rationale for vertical integration is based on transaction cost economies (TCE). The TCE theories originate from work by Coase (1937), who focused on writing and enforcing contracts, and these theories have been further developed by Williamson (1971). Vertically integrated companies share the belief that they can respond to market fluctuations more effectively than their competitors relying on sourcing from open markets (Williamson, 1971; Kaufmann and Carter, 2006).

According to Sun et al. (2013), the motivation for vertical integration into timberland ownership at the firm level is the same as at the macro level: to reduce market risk and improve the financial performance of a company (Yin et al., 2000; Rogers and Munn, 2003). Vertical integration into the timberland helps to buffer against financial losses caused by high cyclicity of prices and forest product demand by giving the opportunity to choose between harvesting from their own forests or buying from roundwood markets (Yin et al., 2000). In principle, holding industrial timberland can improve the managerial ability to make decisions that enhance long-term financial success by reducing dependency on raw material sourcing from open markets (Yin et al., 2000; Lönnsted and Sedjo, 2012; Li and Zhang, 2014).

The solid financial performance of a company may affect timberland ownership and control strategies, so that more financially stable firms can more freely decide if ownership of timberland assets fits in the company strategy. For example, according to Flynn and Pahkasalo (2015), a recent and significant shift in timberland ownership from forest industry to institutional investors in Chile might indicate the need for locally operating forest companies to release their less-productive assets to enhance their financial performance. Findings by Li and Zhang (2014) showed in a sample of publicly traded primary forest product firms in the United States between 1988 and 2003 that timberland ownership enhances the financial performance of companies and lowers systematic financial risk, which would appear to challenge the decisions to divest timberland assets. However, timberland prices were on rise during the period of study, which may overemphasize the established positive linkage between financial performance and timberland ownership in the United States.

The rationale for vertical integration beyond the neoclassical economic short-term cost minimization strategy perspective can be also drawn from the resource-based view of the firm (RBV) (Penrose, 1959): Firms acquire resources which are valuable and rare, and

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