Journal of Forest Products Business Research
Volume No. 3, Article No. 2

Financial Performance and Internationalization of Operations: Evidence from Finnish Forest Industry Companies

Anne Toppinen, Katja Lähtinen, and Susanna Laaksonen-Craig

The authors are, respectively, Senior Researchers, Finnish Forest Research Institute, Joensuu Research Centre, P.O. Box 68, FIN-80101 Joensuu, Finland, email: anne.toppinen@metla.fi and katja.lahtinen@metla.fi and Assistant Professor, University of Toronto, Faculty of Forestry, 33 Willcocks St., Toronto, ON M5S 3B3, Canada, email: susanna.laaksonen.craig@utoronto.ca.

ABSTRACT

Deepening international integration of markets and consolidation of industries have been major phenomenon in forest-based industry during the previous decade. However, empirical research on the effect of internationalization on financial performance in forest industry companies is still very limited. In this study, we first survey the recent literature on the relationship between internationalization and performance. Second, using panel data we analyze whether several common firm level financial performance indicators differ between internationalized and non-internationalized forest industry companies headquartered in Finland. Results indicate that internationalized companies outperformed non-internationalized companies during 1996–2003 in terms of solvency (according to Equity Ratio-%). Depending on the business cycle, internationalized firms outperformed non-internationalized firms with respect to short-term measures such as Quick Ratio, while the converse was true for profitability measures such as ROI-%. Degree of internationalization, as measured by share of foreign employment, was found to have a positive impact on liquidity and profitability of firms. Overall, our results elaborate how becoming a multinational provides a possibility for risk sharing via market differentiation, but at the same time it brings additional costs caused by investments required, management systems needed, and risks connected to the new business environment.

Keywords: forest industry, financial performance, internationalization, panel data, fixed effects regression models, Finland

Introduction

There has been a considerable increase in the significance of international operations for all industries since the 1970s. Initially, many firms operated only domestically and foreign markets were served through trade. Consolidation in industries, a quest for economies of scale, and the search for wider markets have, however, led to an increasing number of multinational corporations (MNC). In the past decade, institutional investors have also demanded globalization. A fundamental question in international business is, however, whether diversifying operations internationally improves the financial performance of a firm or whether the performance of domestic firms might, at least under certain circumstances, be better than their global counterparts.

With regard to the forest industry, deepening international integration of markets and consolidation of industries have been occurring lately. Empirical research regarding the effect of internationalization on the financial performance of forest industry companies based on financial accounting data is, nevertheless, very limited. This study fills the gap by contributing to empirical literature concerning the effect of the degree of internationalization (DOI) in forest industries on firm-level financial performance. We use empirical data of forest industry companies headquartered in Finland. The individual country perspective is in the core of understanding the internationalization of forest industry due to its unique reliance on the use of natural resources (forests). Also, since the Finnish forest industry has been one of the forerunners in internationalization on forest sector, our results should also be of general interest in forest and business economics.

The data used in this study is mainly drawn from the annual reports of Finnish forest industry companies. The data encompasses a sufficient number of companies to enable fixed effects multiple regression analysis of panel data in years 1996–2003. The economic effects of internationalization are assessed from the perspective of external interest groups without access to management accounting data, which is why they mostly lean on financial accounting information in their decision-making. As this paper presents the first firm-level attempt to quantify the effect of the degree of internationalization on performance in forest industries, we also include background chapter on industry structure and the historical development of Finnish forest industry in terms of financial accounting based performance and international operations.

Theoretical Background

Incentives for Internationalization

There is an increasing body of both theoretical and empirical research analyzing the theoretical background and company motivation for internationalization. The internationalization process may consist of a wide variety of operations from exports to foreign direct investments (FDI), including establishing new ventures, acquiring existing ventures or starting joint ventures with other enterprises (e.g., Lu and Beamish 2001). The theoretical research has concentrated on understanding the impetus for FDI and, since the beginning of the 1980s, on analyzing the behavior of multinational firms. Several approaches have been used to explain internationalization, but no single general theory describes why firms engage in FDI and locate production facilities abroad.

Early FDI research viewed engaging in FDI as a stage in a firm's growth strategy and argued that the capability to create differentiated products and utilize market imperfections encouraged FDI. Vernon's (1966) product life cycle theory of investment perceived FDI as a natural stage of a new product's life cycle. Caves (1971) distinguished between vertical and horizontal FDI, pointing out the significance of product differentiation in horizontal FDI. A follow-the-leader-theory of FDI by Knickerbocker (1973) suggested that, in oligopolistic markets, other multinational enterprises (MNE) follow if one MNE engages in FDI.

The modern theory of FDI stems from Hymer's (1970) theory of firm-specific advantages. Hymer suggests that local firms have advantages over foreign firms in the domestic market due to a better understanding of the local environment, and therefore, in order for a foreign firm to overcome the domestic firms' advantage, it has to have some other firm-specific advantages. According to the

internationalization theory (e.g., McManus 1972, Buckley and Casson 1976) firms become multinational due to their attempts to secure rents from their intangible assets. Similarly to Hymer's theory, internationalization theory assumes market imperfections, which give firms an impetus for international activity allocation.

Arguing that a single theory would not be sufficient to explain FDI, Dunning (1981) developed the OLI (Ownership – Location – Internalization) paradigm, also called eclectic theory, which is based on a theory of firm-specific advantages. In the OLI paradigm, Dunning examines three advantages that, together, explain multinationals' motivation to engage in FDI. The OLI framework involves firm-specific, country-specific, and internalization advantages. The ownership advantage is specific for a firm, such as a patented technology or a brand name. It is possible to transfer this ownership advantage to a foreign country, and therefore overcome the disadvantage of operating in a foreign country. The location advantage refers to the opportunity to earn profits on multinationals' firm-specific advantages by using country-specific factors such as labor or natural resources in the foreign country. The choice of a host country for the investment is affected by these country-specific advantages, which range from resources to macroeconomic and political factors. The internalization advantage addresses the multinational's choices of entry mode, ranging from trade with the foreign country to fully owned subsidiaries. According to the paradigm, to enter the foreign market through FDI, all three advantages must be simultaneously present for a multinational company (MNC).

Resource-based view (e.g., Barney 1991) emphasizes the role of intangible resources and capabilities in providing the basic direction to a firm's economic success in the long-term. According to Peng (2001), it also extends the scope internationalization theory (e.g., Buckley and Casson 1976) and OLI paradigm (Dunning 1981) by defining the nature of the intangible assets or firm-specific resources that support internationalization process to be such as administrative heritage, organizational practices and learning, as well as market imperfections and bargaining power.

According to the factor-proportions approach, also referred to as vertical models (e.g., Helpman 1984, Helpman and Krugman 1985), foreign investment flows are determined by differences in factor proportions between countries. The main idea of the approach is that single-plant firms allocate their production into stages based on factor intensities and derive the location of their activities from international differences in factor prices. Brainard (1997) stresses the so-called proximity-concentration trade-off, a combination of multinationals' desire to locate close to their markets due to transportation costs and trade barriers and their desire to concentrate their production for economies of scale. According to the horizontal approach (e.g., Markusen and Venables 1998), multinationals arise when firm-level scale economies, tariff costs, and transportation costs are high relative to plant-level scale economies. The knowledge-capital model (Markusen 2002) draws from both trade and investment theories and argues that the knowledge the firm creates in its home-country headquarters and utilizes in foreign production facilities is the origin of vertical and horizontal multinationals. In the model, both horizontal and vertical multinationals may arise depending on differences between country sizes and relative endowments, as well as trade and investment costs. In sum, there are various alternative theoretical platforms for understanding the internationalization process of firms. The common feature among them is that firms are motivated by potential performance gains and efficiency advantages caused by global operations. However, the benefits do not come for free, and as the degree of multinationality becomes higher, certain transaction costs also start to increase.

Internationalization and Company Performance

The motives behind the existence of multinational companies are broadly approached in the FDI and MNC literature. The effects of internationalization on the firm-level financial performance have drawn less attention in the research, and the empirical results have, according to surveys (e.g., Sullivan 1994 and Annavarjula and Beldona 2000), been surprisingly inconsistent. In general, both firm-level resources and industrial structures have been found to be important for company success (e.g., Hawawini et al. 2003).

Early empirical studies, in the 1970s and 1980s, pointed toward a linear relationship between the degree of internationalization and performance indicating that MNCs were more profitable than domestically oriented firms. Research since the 1990s has, however, proven the relationship between DOI and performance to be more complex: internationalization brings not only benefits but at high levels of internationalization also potentially large costs when global complexity starts to stretch company's managerial and organizational capacity (Ruigrok and Wagner 2003). In addition, when comparing Korean and U.S. firms, Hall and Lee (1999) found evidence that the effects of the internationalization are not similar for companies originating from different countries.

Using market-based performance measures, Michel and Shaked (1986) found domestic companies to outperform internationalized companies. Some recent studies (e.g., Riahi-Belkaoui 1998 and Contractor et al. 2003) have established a horizontal S-form relationship between inter-nationalization and performance, while the results of Gomes and Ramaswamy (1999) indicated an inverted J-shape relationship. Ruigrok and Wagner (2003) and Capar and Kotabe (2003) have found U-shaped curvilinear relations. The results of Lu and Beamisch (2001) indicated a U-shape relationship between the level of FDI activity and firm performance, whereas Hitt et al. (1997) found support for an inverted U-shape curve. Although empirical results are rather mixed, there is some evidence that, after a certain point in the degree of internationalization, the positive connection to performance turns into negative due to increasing transaction costs as managerial and coordination costs start to rise.

Previous studies analyzing the internationalization of the forest industry in particular are very few. Siitonen (2003) analyzed the product and location strategies of the 100 largest forest industry companies. Using data for years from 1990 to 1998, she found that internationalization is positively associated with financial performance and that profitability and market valuation of globalizing North American companies outperformed European companies. However, Siitonen (2003) employed mainly qualitative performance measures and no causal modeling about the degree of internationalization or versatile firm-level performance assessments were done. An earlier study by Uusivuori and Laaksonen-Craig (2001), analyzing interrelationships between FDI and forest products exports from the United States, Sweden, and Finland, found that, in the Finnish case, exports have been substitutes for investments abroad. Using a managerial approach, Laurila and Ropponen (2003) have argued that institutional conditions have directed the foreign expansion of Finnish paper industry companies so that changes in the patterns and forms of internationalization have coincided with the changes in corporate ownership and the cognitive construction of organizational actors. Firms were also found to use the mode of investment in competition, where greenfield announcements were used to discourage competitors, while the effects of acquisitions had typically no impact on capacity levels, and thus on market prices.

Finally, there are some important considerations in assessment of the relationship between firm internationalization and financial performance. First of all, the lack of financial data suitable for performance analysis quite often sets limits for research (e.g., Mudambi and Mudambi 2002). Second, using organizational performance as a dependent variable is not without problems (e.g., March and Sutton 1997) and third, the degree of internationalization may be measured with various alternative indicators emphasizing different aspects of development (for a survey, see Sullivan 1994). The share of production capacity located both in the home country and abroad is perhaps the simplest measure. The foreign investments versus domestic investments, the ratio of foreign assets to total assets, or the proportion of employed personnel at home and abroad are among other commonly used measures. Foreign sales' share of total sales describes export orientation, and revenue obtained from foreign and home operations is utilized in comparing financial success of different business units. The scope of internationalization has also been analyzed with regard to geographical dispersion of operations across countries measured by, for example, number of overseas plants or sales countries (e.g., Hsu and Boggs 2003). In his comprehensive review, Bellak (1998) suggests the use of real indicators (such as share of foreign employment) for measuring internationalization instead of statistics on investment flows or stocks, which are prone to measurements errors and extreme volatility due to factors such as exchange rate changes.

Empirical Approach to Financial Performance Analysis

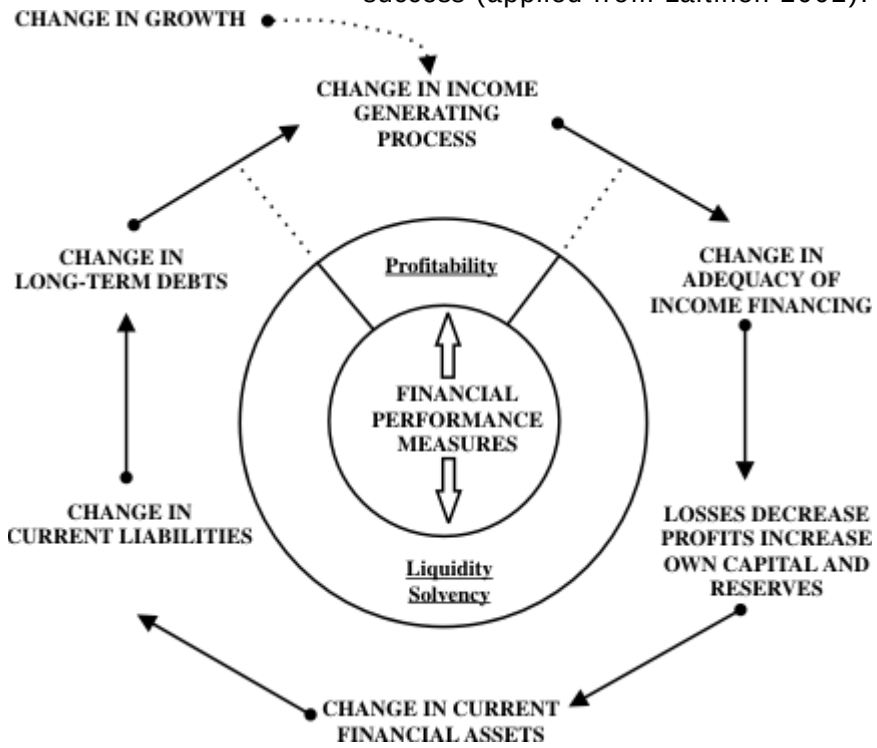
Business analyses are based either on management accounting or financial accounting data. Management accounting information is gathered for the internal needs of the company, and there are no statutory requirements related to the collection or the contents of the data. As a comparison, financial accounting is supposed to provide information of the economic behavior resulting from the firm's activities within its environment (e.g., Riahi-Belkaoui 2000). The methods of gathering and analyzing that information are defined in International Accounting Standards (IAS) (e.g., Epstein and Mirza 2004). In terms of information users, the aim of financial accounting is to fairly and accurately report the true worth of a business to its owners and its true profits to the tax collector. In addition, it is the main source of information for financing institutions and private investors in their risk assessments.

Due to the differences between the data and measures utilized, the time perspectives of analyses based on financial accounting information and management accounting information differ from each other. Performance measures driven from financial accounting information are purely financial ones, while from management accounting information non-financial measures can also be calculated. Non-financial measures provide information on the elements, such as intangible resources and capabilities, that drive future business success (Kaplan and Norton 1992), while financial measures are tools for analyzing whether the objectives set in the past have been achieved (Hass et al. 2005).

Primary characteristics in IAS are understandability, relevance, reliability, and comparability. In this framework, only the identifiable and controllable resources with recoverable values are recognized as assets (e.g., Epstein and Mirza 2004). Thus, even if the importance of intangible resources and capabilities for sustainable business success is recognized in the field of accounting research (e.g., Powell 2003), so far outside of some exceptions such as the value of patents, common methods of reporting intangible resources in financial statements in line with IAS principles have not been found (e.g., Høegh-Krohn and Knivsflå 2000).

We employ indicators from four different approaches and causal connections to evaluate financial performance differences in forest industry (**Figure 1**). The first three approaches concern liquidity, solvency, and profitability of the companies (see **Appendix 1** for detailed descriptions of the performance measures). Liquidity (Quick and Current Ratios) concerns the shortest time frame describing corporate financial position. A company with a good liquidity position is able to meet all maturing payments on time and in the most economical manner: in the short-term a firm can run without profits, but not without adequate cash flow. For a longer-time perspective, solvency ratios describe the degree to which a company relies on debt financing and is able to bear losses and fulfill its engagements over time. Since the foreign capital of an enterprise consists mainly of long-term funding, solvency figures reflect longer time-scales than liquidity measures. In this study, Equity Ratio (%) is used as a measure for solvency. In contrast to liquidity and solvency measures, profitability ratios comprise also the capital used in the business processes of a company by taking into account the company assets (equities and liabilities) needed for generating revenues. (Committee for Corporate Analysis 2000). In this research profitability is measured with Return on Investment (ROI-%) and Return on Equity (ROE-%) Ratios.

Figure 1. The systematic of financial performance measures in describing business success (applied from Laitinen 2002).



Internationalization creates potential for a company growth, and therefore, as a fourth performance assessment measure, the annual growth of turnover is employed. Growth, as such, is not a measure for success: continuous unsustainable growth weakens the financial position of a company and jeopardizes its long-term existence. However, a positive trend in revenue growth with contemporaneous good financial performance indicates positive future business success and vice versa. By combining performance measurements with growth assessment, the time perspective of financial performance analyses can be widened from merely a past view into a more future oriented one, and compensate to some extent the problems caused by the lack of non-financial information.

Testable Hypotheses

Internationalization, or multinational diversification, is a part of corporate strategy comparable to product diversification (e.g., Tallman and Li 1996). The aim of this research is to better understand the effects of multinational diversification on financial performance of the forest industry. However, according to the literature reviewed, the theory does not suggest a unique relationship between internationalization and performance, and the mixed empirical results reflect that. Clearly, corporate performance is also affected by several other factors than its degree of internationalization. Once the effects of obvious variables, such as firm size or industry branch, are taken into account, overseas production has in some cases been either insignificantly or negatively related to profitability (e.g., Grant 1987). Kotabe et al. (2002) also found support for the connection that both R&D intensity and marketing intensity moderate the relationship between DOI and performance. Results by Wagner (2004) have stressed the role of expansion speed and operational performance (e.g., cost efficiency) as important intervening factors. As there are no previous modeling attempts on this issue in the forest industry, we will limit our analysis to the most fundamental factors, and use company size and business cycle effects as covariates when explaining performance. Consequently, the testable Hypothesis 1 is:

> *Hypothesis 1: There is a difference in average firm-level financial performance indicators between non-internationalized and internationalized forest industry companies when controlling for the company size and business cycle effects.*

As was elaborated in the literature review, independent of the theoretical platform chosen, the advantages of foreign expansion seem obvious and versatile. However, the associated empirical evidence has been far from uniform in establishing a positive link between internationalization and performance. As previously mentioned, it must be recognized that there are costs associated with international expansion, including higher requirements for coordination and management of operations. For MNCs, operating in a vastly more complex political and institutional environment than their domestic counterparts is risky, and, beyond a certain point, the organizational costs and complexity of widely scattered operations may outweigh the advantages. Thus, we have derived our second Hypothesis which states:

> *Hypothesis 2: The impact of the degree of internationalization on performance is positive, either linearly or nonlinearly.*

Data and Methods of Analysis

The data used is collected by the Finnish business journal Talouselämä, and it comprises accounting information obtained from the official financial statements of the 500 largest companies in Finland. Financial performance measures in the database are calculated according to the recommendations of the Finnish Committee for Corporate Analysis (Talouselämä 2005, Committee for Corporate Analysis 2000).

In this study, the firms are grouped according to whether international business activities are a part of their operations, or whether they are domestically oriented. As a basis for grouping with a dummy variable describing internationalization, we use the company-wise averages of foreign

employment by accounting periods. Limiting value for the internationalization is at least 10 employees abroad in each of accounting periods when the company is included in the dataset. The selection of foreign employment as a grouping variable for internationalization is justified based on suggested use of real indicators of internationalization (Bellak 1998) and on the internationalization process of a firm itself (e.g., Welch and Luostarinen 1999), where trade is in initial stages preferred over foreign investment and production.(1)

(1) For over a century, Finnish forest industry has been exposed to international markets through its high (70% to 80%) dependence on export income because of a small home market. Therefore, an indicator for internationalization used in some previous studies, i.e., the share of foreign sales or exports in turnover, would not properly reflect development in terms of international production, which only became topical during the 1990s.

Few of the forest industry companies (e.g., Kymmene, Veitsiluoto, and Aureskoski) are excluded from the dataset due to mergers into other Finnish companies in 1996–2003. Among the dataset, there are 26 companies that can be classified as having actual processing of forest industry products. Of these, 11 companies fulfill the criteria of internationalization in 1996–2003 defined above (i.e., 63 observations in Group 1), while the remaining 15 forest industry companies in the dataset are classified as operating on non-internationalized basis (i.e., 72 observations in Group 2). Since not all of the 26 companies were included in Talouselämä's list of 500 largest companies in Finland during all years, the panel data set is unbalanced, which with the rather small sample size restricts the generalization of the results. However, sources of data comprising comparable financial accounting information of several accounting periods suitable for undertaking statistical analysis, and including sufficiently large set of forest industry firms are scarce. The description of the data is given in **Table 1**.

Table 1. The data in terms of internationalization by accounting periods.

Accounting period	Internationalized companies	Non-internationalized companies	Total
1996	8	8	16
1997	7	7	14
1998	8	8	16
1999	8	9	17
2000	8	10	18
2001	7	8	15
2002	7	9	16
2003	10	13	23
Total	63	72	135

In assessing financial performance between the two groups of companies, firm size effect on the results should be eliminated. Thus, instead of absolute accounting figures, in this study the comparability of the results of different-sized forestry companies was taken into account by using

proportional accounting ratios such as ROI-% (descriptive statistics of data given in **Table 2**) and by including company size (e.g., log of annual turnover) as an additional covariate in regression models (reported in **Tables 3 and 4**). Since some financial ratios had non-normal distributions, prior to analysis they had to be transformed by taking logarithmic or square roots as indicated later. All statistical analyses presented further (**Tables 4 and 5**) are based on these normalized data values.

Table 2. Descriptive statistics of the data of the study and the forest industry[a] in Finland, 2002.

	Number of firms	Number of workers	Turnover (mill. €)	Quick Ratio	Equity Ratio (%)	ROI-%
Forest industry companies (NACE 20 and NACE 21)	103	53,950	17,753	1.2	57.5	9.2
Wood-working companies (NACE 20)	65	16,846	3,668	0.9	47.5	3.4
Pulp, paper, and paper product companies (NACE 21)	38	37,104	14,085	1.2	58.3	9.6
Companies in this study	16[b]	121,438	35,083	0.9	44.9	7.2

[a] Companies with personnel at least 250, annual turnover over 40 mill. and/or total value of the balance sheet over 27 mill. € (based on domestic operations) in forest industry according to Statistical Classification of Economic Activities in the European Community (NACE), Statistics Finland (2005).
[b] Thus, in year 2002, 9 out of 26 companies were not included in the Talouselämä's 500 largest companies list.

Use of panel regression analysis in analyzing performance differences is justified since business cycles may affect each year differently and therefore observations for each year need to be treated as derived from a different population. The effect of business cycle is taken into account by including time dummies in fixed effects regression models, which are being used to test the difference between internationalized and non-internationalized companies (reported in **Table 4**).

Finally, the effect of degree of internationalization is evaluated in **Table 5** using the share of foreign employment as an explanatory variable with company size and time effects as control variables. Possibly non-linear effects of DOI on performance are taken into account by also including the second degree term of DOI in multiple regression analysis.

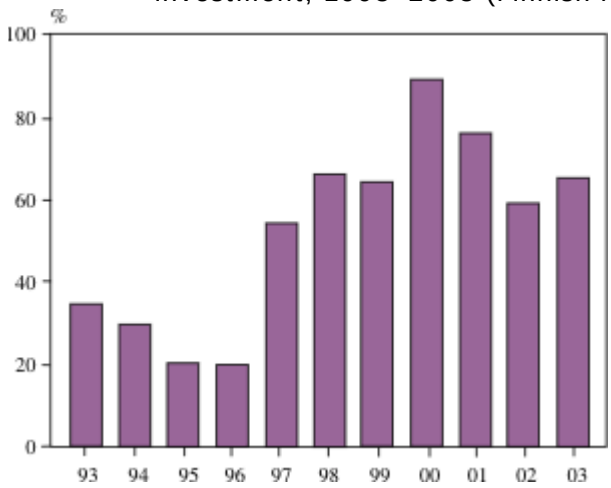
In performing regression analysis in **Tables 4 and 5**, valid distributional properties were ensured by homogeneity of residual variance by inspecting Q-Q plots of model residuals, since the annual number of observations was considered too low for standard normality tests to be reliable. The models were estimated using the mixed linear models estimation procedure in SPSS 13.0.

Background for Internationalization of Finnish Forest Industry

Internationalization of Finnish forest industry was exceptionally rapid during the 1990s, as illustrated in **Figure 2**. Share of foreign investment in total investment activity (summed value of home and foreign investments per annum) varied between 20 percent and 90 percent of total investments during the 1990s, and during the 2000s averaging around 65 percent. The development in the share of employees abroad also clearly summarizes the internationalization of operations in the industry: the share rose from 30 percent in 1996 to close to 60 percent in 2003. Today, in terms of

production, 60 percent of the paper industry and almost 40 percent of the wood-based industry headquartered in Finland is located internationally. However, strong fluctuations in financial performance due to volatile real price development in costs and main product markets, for example, have continued. This suggests that in spite of growing internationalization, company performance is still vulnerable to general business cycles.

Figure 2. Share of Finnish forest industry foreign investment as a percentage of total investment, 1993–2003 (Finnish Forest Industries Federation 2005).



We have included in **Table 2** the latest available data from Statistics Finland (2005) on the forest sector companies (excluding small-sized woodworking firms). In contrast to our data, the Statistics Finland data covers only domestic operations, which is reflected by the larger turnover and number of employees in the relatively few firms of our sample. As compared to the official statistical information for 2002, the main body of turnover in the Finnish forest industry is derived from the pulp and paper sector, while both the number of companies and employees are higher in the woodworking sector.(2)

(2) This result is enforced if we also include the smaller woodworking industry firms with their number of 2,528 firms, 11,340 employees, and the turnover of 1,814 mill. € in 2002.

In 2002, financial performance was higher in the pulp and paper industry, but this result is sensitive to the timing of cyclical price fluctuations, since, for example, in 1999, return on capital employed was higher in woodworking industry. In contrast to industry average turnover, our sample companies are larger (with over 2 bill. € average turnover in 2002 as compared to an average of 172 mill. € in the total group of large Finnish firms). Intra-industry differences in the average financial performance between woodworking and pulp- and paper branches have not been analyzed in this context. In 1999–2002, for example, the Quick Ratio of Finnish woodworking branch was 0.7 to 0.9, and ROI-% 4.4 to 10.8, while in the Finnish pulp and paper branch the corresponding ratios were 1.0 to 1.2 and 6.8 to 12.8 percent, respectively (Statistics Finland 2005). In comparison to the Finnish key figures, for example, the industry level figures for Canadian forest industry in 2002 were 0.78 for the Quick ratio and 5.11 percent for the ROI (Financial Post Industry Reports 2005).

Estimation Results

Descriptive statistics and graphs of annual performance indicators comparing internationalized and non-internationalized companies could provide preliminary evidence on the association between financial performance and internationalization. The means, medians, minimum, maximum, and standard deviations for the liquidity, solvency, profitability, and growth measures for the internationalized and non-internationalized Finnish companies in 1996–2003 are presented in **Table 3**. Benchmarking values of different measures for assessing the level of performance were taken from the guidelines given by Committee for Corporate Analysis in Finland (Committee for Corporate Analysis 2000).

With the benchmark value equaling one, in terms of Quick Ratio averages, the liquidity position of internationalized companies was good, while for the non-internationalized companies the measure indicated only satisfactory liquidity. Current Ratios for both groups of companies were at satisfactory levels. With regard to solvency, the benchmarking values for Equity Ratio (%) were good for both internationalized and non-internationalized companies. The average ROI-% of internationalized companies was 10.6 percent, while for non-internationalized ones ROI-% was 14.0 percent. Another performance measure used for profitability was ROE-%, which was 8.7 percent for internationalized and 13.9 percent for non-internationalized companies. Annual Growth-% was 8.9 percent for the both groups of companies.

Table 3. Means, medians, and standard deviations of variables for internationalized (Int.) (*n* = 63) and non-internationalized (Non-Int.) (*n* = 72) companies, 1996–2003.

Financial measures	Means		Medians		Minimum		Maximum		St. Dev.	
	Int.	Non-Int.	Int.	Non-Int.	Int.	Non-Int.	Int.	Non-Int.	Int.	Non-Int.
1. Quick Ratio	1.085	0.813	0.9	0.7	0.4	0.3	5.5	2.3	0.837	0.390
2. Current Ratio	1.504	1.498	1.3	1.4	0.6	0.7	4.1	3.1	0.668	0.531
3. Equity Ratio	45.000	40.954	44.2	39.0	26.0	17.0	84.0	82.0	11.880	14.474
4. ROI-%	10.593	14.008	10.0	12.9	–2.3	–3.4	24.2	39.2	5.274	10.805
5. ROE-%	8.661	13.926	8.9	15.0	–12.1	–21.5	28.1	71.7	7.626	15.745
6. Growth-%	8.856	8.898	5.6	6.1	–26.9	–34.4	113.1	64.7	17.953	16.813

The means of annual financial performance ratios calculated for the period of 1996–2003 for the internationalized and non-internationalized companies are depicted in **Figures 3 through 8**, and they show large variations between years.[(3)] Formally, the statistical differences in financial performance measures between internationalized and non-internationalized companies were tested in **Table 4** using linear fixed effects regression models when controlling the effects of company size and annual business cycles. The significance of coefficients for group dummy variable between internationalized and non-internationalized companies was evaluated using type III F-tests for fixed effects (complete estimation results of models available from authors upon request). Because some financial ratios were non-normally distributed, they were transformed prior to the analysis by taking logarithmic or square roots of data as shown in **Table 4**.

(3) Using the same Talouselämä 500 database, Ali-Yrkkö and Ylä-Anttila (2003), who studied globalization in the form of foreign ownership above the 20 percent level, found a positive relationship with the financial performance of Finnish companies using t-tests. Their data included all industries and services, so the effects on forest industry could not be separated out.

Figure 3. Means of Quick Ratios *per annum* by internationalization.

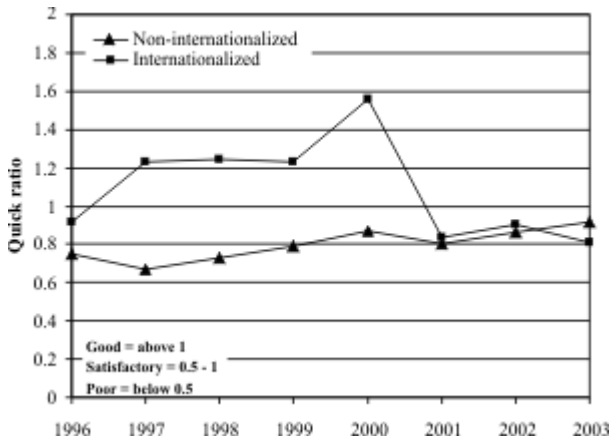


Figure 4. Means of Current Ratios *per annum* by internationalization.

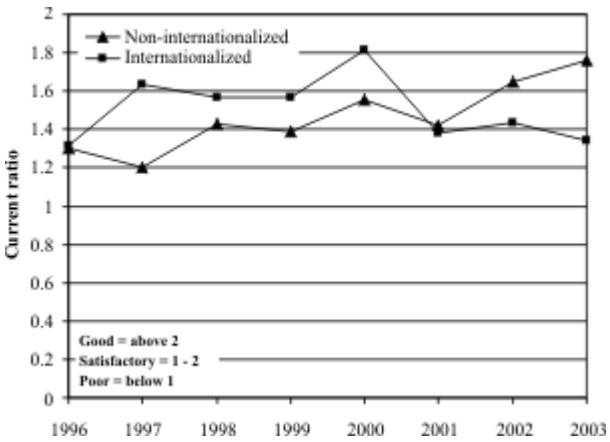


Figure 5. Means of Equity Ratios (%) *per annum* by internationalization.

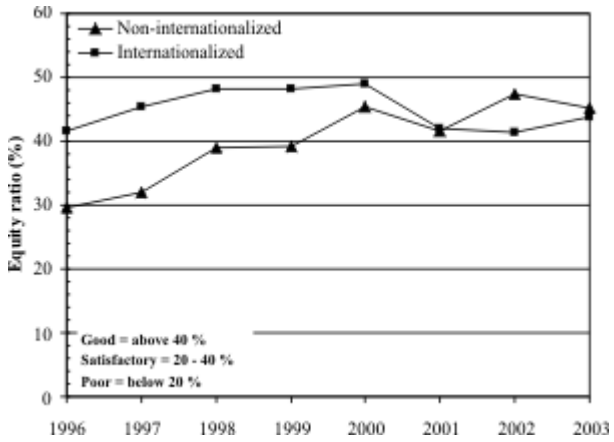


Figure 6. Means of ROE-% *per annum* by internationalization.

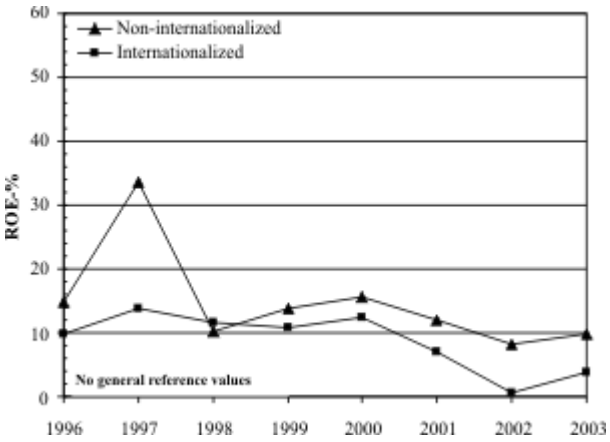


Figure 7. Means of ROI-% *per annum* by internationalization.

Figure 8. Means of Growth-% *per annum* by internationalization.

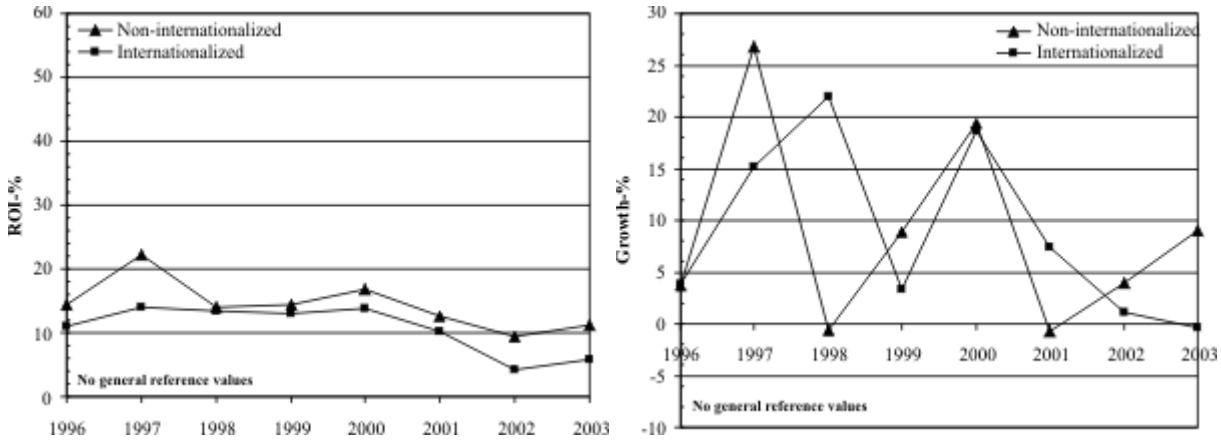


Table 4. F-tests fixed effects in panel regression model for the whole data (*n* = 135), where significance between internationalized and non-internationalized companies is tested with variable INTDUM (0/1 dummy for non-internationalized/internationalized companies).

Financial measures	Intercept		Time		INTDUM		INTDUM*Time interaction effect		Company size	
	F	Sig.	F	Sig.	F	Sig.	F	Sig.	F	Sig.
ln (Quick Ratio)	15.176	0.002	1.086	0.387	**2.418**	**0.141**	0.134	0.995	1.309	0.271
ln (Current Ratio)	32.944	0.001	0.907	0.505	**0.151**	**0.701**	0.477	0.849	0.682	0.417
ln (Equity Ratio)	19.029	0.001	2.553	0.026	**7.682**	**0.016**	1.280	0.282	1.213	0.290
sqr (ROI)	22.096	0.001	5.135	0.001	**0.074**	**0.789**	0.443	0.872	0.058	0.872
sqr (ROE)	52.090	0.001	2.249	0.046	**1.532**	**0.255**	1.550	0.173	0.472	0.518
Growth	0.071	0.795	1.419	0.216	**0.759**	**0.402**	0.978	0.456	2.372	0.157

Table 4 shows that, on average, a statistically significant difference was found between two groups only in solvency (Equity Ratio), where the internationalized companies outperformed non-internationalized ones. For the better value of liquidity (Quick Ratio) in internationalized firms, the difference was not statistically significant over the whole time period (*p*-value 0.14). For profitability (ROI) the situation was opposite, but again not statistically significant.

The effect of the degree of internationalization on financial performance (Hypothesis 2) was tested using fixed effects multiple regression model by controlling the effects of company size, degree of internationalization, and business cycles in **Table 5**. Models were estimated using three main performance indicators: liquidity (as measured by Quick Ratio), solvency (Equity Ratio), and profitability (ROI) as dependent variables. The intercept term in the regression models represents year 2003, which was used as a base year in the analyses. Both linear and non-linear effects of internationalization are allowed to affect performance. Altogether there are 80 observations for foreign employment in the data set, which could be used in regression analysis in **Table 5**.

Table 5. Estimation results for testing non-linearity in degree of internationalization using fixed effects regression models for Quick Ratio, Equity Ratio, and ROI (*n* = 80). Standard errors are shown in parentheses below the regression coefficients. Ten percent, 5

percent, and 1 percent level significant coefficients are denoted with *, **, and ***, respectively.

	ln (Quick Ratio)	ln (Equity Ratio)	sqr (ROI)
Intercept	1.25*** (0.316)	4.078*** (0.377)	0.372*** (0.058)
1996	0.012 (0.065)	−0.254*** (0.074)	−0.072 (0.056)
1997	0.140** (0.062)	−0.162** (0.070)	−0.010* (0.056)
1998	0.108** (0.058)	−0.077 (0.066)	−0.071 (0.054)
1999	0.142** (0.058)	−0.068 (0.065)	−0.088 (0.054)
2000	0.184** (0.056)	−0.027 (0.063)	−0.104* (0.054)
2001	0.097* (0.057)	−0.077 (0.065)	−0.075 (0.056)
2002	0.131** (0.057)	−0.020 (0.065)	0.097* (0.056)
2003	--	--	--
Company size	−0.086* (0.049)	0.012 (0.058)	0.013 (0.095)
INTDUM0	−0.378* (0.202)	−0.689** (0.241)	−0.011 (0.034)
INTDEGREE	−0.038 (0.031)	−0.067* (0.035)	−0.019 (0.014)
$INTDEGREE^2$	0.0001** (0.00003)	0.00003 (0.0004)	0.00004** (0.00002)
AIC	5.451	5.608	5.123
R2	0.10	0.20	0.31

Variables: Intercept term equals effect for year 2003; Company size = log of turnover (mill. €); INTDUM0 for internationalized companies, 1 for domestic companies; INTDEGREE Square of percent international employment in total employment; $INTDEGREE^2$ = INTDEGREE to power 2. AIC is Akaike Information Criteria for model and R2 measures fit of model.

During the period of 1996–2003, based on the coefficient for INTDUM, the statistically significant difference for the internationalized companies was found in models presented in **Table 5** regarding solvency (Equity Ratio). This also confirms our previous results in **Table 4**, which did not include the variable DOI and could therefore use all 135 observations. Furthermore, the impact of the degree of internationalization on performance is found to be nonlinear in case of liquidity (Quick Ratio) and profitability (ROI), with the slope zero at low and moderate levels of internationalization, but the second degree term positive and significant at a 5 percent level. This suggests positive impact of DOI on liquidity and profitability even at higher levels of internationalization (i.e., J-shaped relationship). Regarding solvency (Equity Ratio), the impact of degree in internationalization is unexpectedly negative, but significant only at a 10 percent level. Thus, for all three main financial ratios the impact of DOI on performance is found to be inconsistent with an inverted U-shape, for example, which would imply positive impact on lower levels of internationalization turning to negative at higher levels of internationalization. This suggests that even at higher levels of foreign employments there is not yet evidence for increasing transaction costs in the performance of Finnish-based forest industry companies.

For checking the robustness of our results, we also experimented by including the effects of R&D on performance (as measured by degree of investments in turnover), which could be interpreted to also account for the effects of intangible resources (e.g., Barney 1991) on performance (similar to what was done in Hitt et al. 1997 or Mathur et al. 2004), but the results were not statistically significant in any of the models, and they are not reported.

Discussion

This paper examines the effects of multinational diversification strategy on financial performance in Finnish forest industry during 1996–2003. We analyzed firms' financial performance differences using liquidity, solvency, profitability, and growth measures in order to also understand how time-scale affects the overall financial success of the forest industry companies. The results indicate that the time scale of performance indicators indeed makes a difference, since results differed between short-term measures (such as liquidity) and longer-term measures (e.g., profitability). Therefore, it is crucial to include several indicators in an analysis to form a comprehensive picture of the effects of internationalization on the financial performance of companies.

The results further suggest that internationalized firms are not only typically larger but also seem to have, on average, better liquidity (measured with Quick and Current Ratio) and solvency (measured with Equity Ratio). However, on average differences were not statistically significant for Current Ratio or Quick Ratio. In contrast to *a priori* expectations based on previous literature, the non-internationalized firms were found, on average, to outperform the internationalized ones in profitability (ROI and ROE). Yet, statistically significant differences between the two groups of companies were found only very weakly in ROI, which describes companies' profitability in terms of their yield generated on the invested capital as a whole. The higher rate of return on capital in the group of non-internationalized firms found in this study could be partly related to the heavy costs of the rapid internationalization that has been occurring since the mid-1990s. The largest multinational forest industry companies face diverse risks associated with maintaining the acceptability of their operations with respect to environmental issues. Currently, for example, large pulp industry investments are under construction by Finnish companies in South America with backward integration to plantations to ensure roundwood supply, while previous interests in South-East Asian plantation forestry have been partly withdrawn due to environmental concerns and political instability in the region.

Using fixed effects regression models, we found the impact of the degree of internationalization (as measured by share of foreign employment) on performance to be nonlinear in case of liquidity (Quick Ratio) and profitability (ROI). This indicates that internationalization at higher levels of foreign employments has a positive impact on both liquidity and profitability, and there is not yet evidence for increasing managerial and transaction costs in the performance of Finnish-based forest industry companies. On a practical level, our results suggest that managers could still pursue new international opportunities without harming the firm's financial performance and increasing the financial risk of the shareholders and other stakeholders.

Our results show interesting differences in comparison to Siitonen (2003), who found that globalizing forest industry firms outperformed regional companies when using various performance measures from 1990–1998. The differences in the results may, to some extent, be due to the differences

in performance measures utilized, but also due to the time periods used in the studies as the Finnish companies had only started their major phase of internationalization at the time Siitonen's study ended. In addition, our research concentrated only on Finnish companies as a vital aspect of understanding that the internationalization of the forest industry is linked to its reliance on forest resources. Partly, observed differences in the results could also be caused by intra-industry variations in company sizes as well as product and multinational diversification strategies.

Company managers may use both financial accounting and management accounting information in making risk assessments concerning the benefits and disadvantages of multinational business operations, while for the decision-makers outside the company financial accounting data and financial performance measures provide the main source of information. In terms of growth, internationalized and non-internationalized companies were found to be alike. Despite some differences, in both groups of firms, on average all of the financial performance measures were at least on a satisfactory level. Thus, comparing the two groups of companies in terms of goodness of their overall financial performance depends on the perspective of evaluations. In compensating the capital utilized, serving the return on external capital of the company is the first priority, while payments for own capital are done only after the return on external capital is served. Thus, from the investors' point of view, the non-internationalized companies might seem more successful, with higher ROI and ROE values. As a contrast, for external capital providers, better liquidity position of internationalized companies might be assessed as lower financing risk and as a sign of better business practices.

From the managerial point of view, internationalization is an intricate strategic decision affected by market-, industry-, and firm-level factors. While becoming a multinational provides a possibility for risk sharing via market differentiation and a chance for growth, at the same time it brings new costs caused by investments required, management systems needed, and risks connected to the new business environment. In addition, the ratio of benefits and costs born due to internationalization is dynamic over time. Regardless of the branch of industry, at the firm-level the financial and other resources available to a firm account for the rationality of becoming or staying international: multinational strategies require not only adequate financial reserves for starting and maintaining operations abroad, but also the know-how and capabilities that create the basis for their future international operations.

Finally, a note on possible extensions to the research on the internationalization of forest industry companies is deserved. In examining the linkage between the internationalization of firms and their financial performance, a two-sided feedback could also exist: i.e., instead of international production leading to higher profitability, profits could be used to finance foreign investments. Due to the elemental effect of exchange rate variations, further research could also be targeted on the role exchange rate fluctuations play in the profitability of companies. While production facilities in the euro area would be, in the exchange rate sense, similar to the domestic market in Finland, the industry has nevertheless greatly suffered recently from the revaluation of euro *vis-à-vis* the US dollar.

Acknowledgments

The authors are thankful to Professor Jussi Uusivuori, Senior Researcher Maarit Kallio (Finnish Forest Research Institute, Helsinki), and three anonymous reviewers of this Journal for their valuable comments and suggestions in the final stage of the manuscript. Also statistical consulting by Jaakko Heinonen (Finnish Forest Research Institute, Joensuu) in using SPSS is gratefully acknowledged.

Literature Cited

Ali-Yrkkö, J. and P. Ylä-Anttila. 2003. Globalization of business in a small country – Does ownership matter? *In*: Financial Systems and Firm Performance: Theoretical and Empirical Perspectives. Hyytiäinen, A. and M. Pajarinen Eds. Taloustieto Ltd, Helsinki, Finland. 349 p.

Annavarjula, M. and S. Beldona. 2000. Multinationality-performance relationship: A review and reconceptualization. The International Journal of Organizational Analysis. 8(1): 48-67.

Barney, J.B. 1991. Firm resources and sustained competitive advantage. Journal of Management. 17(1): 99-120.

Bellak, C. 1998.The measurement of foreign direct investment: A critical review. The International Trade Journal. 12(2): 227-257.

Brainard, S.L. 1997. An empirical assessment of the proximity-concentration trade-off between multinational sales and trade. American Economic Review. 87(4): 520-544.

Buckley, P. and M. Casson. 1976. The Future of the Multinational Enterprise. McMillan, London, UK.

Capar, N. and M. Kotabe. 2003. The relationship between international diversification and performance in service firms. Journal of International Business Studies. 34(4): 345-355.

Caves, R.E. 1971. International corporations: The industrial economics of foreign investment. Economics. 38 (1): 1-27.

Committee for Corporate Analysis. 2000. A Guide to the Analysis of Financial Statements of Finnish Companies. Gaudeamus, Helsinki, Finland. 85 p.

Contractor, F.J., S.K. Kundu, and H. Chin-Chun. 2003. A three-stage theory of international expansion: The link between multinationality and performance in the service sector. Journal of International Business Studies. 34(1): 5-18.

Dunning, J.H. 1981. International Production and the Multinational Enterprise. Allen and Unwin, London, UK. 439 p.

Epstein, B.J. and A.A. Mirza. 2004. IAS 2004 Interpretation and Application of International Accounting and Financial Reporting Standards. Wiley & Sons, Inc. USA. 960 p.

Financial Post Industry Reports. 2005. **www.FPinfomart.ca**. Retrieved September 5, 2005.

Finnish Forest Industries Federation. 2005. **www.forestindustries.fi**. Retrieved August 17, 2005.

Gomes, L. and K. Ramaswamy. 1999. An empirical examination of the form of the relationship between multinationality and performance. Journal of International Business Studies. 30(1): 173-188.

Grant, R.M. 1987. Multinationality and performance among British manufacturing companies. Journal of International Business Studies. 18(3): 79-89.

Hall, E.H. and J. Lee. 1999. Broadening the view of corporate diversification: An international perspective. The International Journal of Operational Analysis. 7(1): 25-53.

Hass, S., P. Burnaby, and J.L. Biestaker. 2005. The use of performance measures as an integral part of an entity's strategic plan. Managerial Auditing Journal. 20(2): 179-186.

Hawawini, G., V. Subramanian, and P. Verdin. 2003. Is performance driven by industry- or firm-specific factors? A new look at the evidence. Strategic Management Journal. 24(1): 1-16.

Helpman, E. 1984. A simple theory of trade with multinational corporations. Journal of Political Economy. 92(3): 451-471.

Helpman, E. and P. Krugman. 1985. Market Structure and Foreign Trade. MIT Press. Cambridge, MA, USA. 288 p.

Hitt, M.A., R.E. Hoskisson, and H. Kim. 1997. International diversification: Effects on innovation and firm performance in product-diversified firms. Academy of Management Journal. 40(4): 767-798.

Høegh-Krohn, N. E. and K.H. Knivsflå. 2000. Accounting for intangible assets in Scandinavia, the UK, the US, and by the IASC: Challenges and a solution. The International Journal of Accounting. 35(2): 243-265.

Hsu, C. and D. Boggs. 2003. Internationalization and performance: Traditional measures and their composition. The Multinational Business Review. 11(3): 23-49.

Hymer, S. 1970. The Efficiency (contradictions) of Multinational Corporations. The American Economic Review, Papers and Proceedings of the Eighty-second Annual Meeting of the American Economics Association. 60(2): 441-448.

Kaplan, R.S. and D.P. Norton. 1992. The balanced scorecard – Measures that drive performance. Harvard Business Review. 70(1): 71-79.

Knickerbocker, F. 1973. Oligopolistic Reaction and Multinational Enterprise. Harvard University Press, Cambridge, MA, USA. 236 p.

Kotabe, M., S. Srinivasan, and P.S. Aulakh. 2002. Multinationality and firm performance: The moderating role of R&D and marketing capabilities. Journal of International Business Studies. 33(1):79-97.

Laitinen, E.K. 2002. Strateginen tilinpäätösanalyysi. Strategic Financial Statement Analysis. Gummerus Kirjapaino Oy, Jyväskylä, Finland. 234 p. (In Finnish).

Laurila, J. and M. Ropponen. 2003. Institutional conditioning of foreign expansion: Some evidence from Finnish-based paper industry firms, 1994–2000. Journal of Management Studies. 40(3): 725-751.

Lu, J.W. and P.W. Beamish. 2001. The internationalization and performance of SMEs. Strategic Management Journal. 22(6-7): 565-586.

March, J. and R. Sutton. 1997. Organizational performance as a dependent variable. Organizational Science. 8(6): 698-706.

Markusen, J.R. 2002. Multinational Firms and the Theory of International Trade. MIT Press, Cambridge, MA, USA. 456 p.

Markusen, J.R. and A. Venables. 1998. Multinational firms and the new trade theory. Journal of International Economics. 46(2): 183-203.

Mathur, I., M. Singh, and K. Gleason. 2004. Multinational diversification and corporate performance: Evidence from European firms. European Financial Management. 10(3): 439-464.

McManus, J. 1972. The theory of the multinational firm. *In*: G. Paquet, Ed. The Multinational Firm and the Nation-State. Collier, McMillan, UK.

Michel, A. and I. Shaked. 1986. Multinational corporations vs. domestic corporations: Financial performance and characteristics. Journal of International Business Studies. 16(3): 89-100.

Mudambi, R. and S.M. Mudambi. 2002. Diversifica