LAPPEENRANTA UNIVERSITY OF TECHNOLOGY
Department of Industrial Engineering and Management

EVALUATION OF SUCCESS OF MERGERS AND ACQUISITIONS – CASE FINNISH FOREST COMPANIES

The Department Council of the Department of Industrial Engineering and Management has approved the subject of the thesis on August 14th, 2002.

Instructor: Professor (acting) Timo Kärri
Supervisors: Professor (acting) Timo Kärri and Professor Tuomo Kässi

Lappeenranta 28 August 2002

Katja Antikainen
Suo-kiialantie 250
53100 Lappeenranta
Tel: +358 50 32 54 307

ABSTRACT

Author: Katja Helena Antikainen **Subject:** Evaluation of success of mergers and acquisitions – Case Finnish forest companies	
Department: Industrial Engineering and Management	
Year: 2002	**Place:** Lappeenranta
Master's Thesis. Lappeenranta University of Technology 106 pages, 21 figures, 13 tables, and 2 appendices Supervisors Professor (acting) Timo Kärri and Professor Tuomo Kässi	
Hakusanat: fuusiot ja yritysostot, kannattavuus, metsäteollisuus **Keywords:** mergers and acquisitions, profitability, forest industry	

The objective of this study was to find out what factors affect the success of mergers, what kind of methods there are to measure the success, and what kind of methods are used in Finnish forest companies, and how systematic the measuring is. The success of two Finnish forest industry mergers was evaluated.

A framework for interviews was made on the basis of literature concerning mergers and acquisitions, and this framework was the basis in acquiring a view of the Finnish forest industry on measuring the success of mergers. The success indicators introduced in literature are partly applied in the latter part of this thesis and the success of the mergers is evaluated.

The most significant factors influencing mergers according to the interviewees were the consolidation of the entire industry and the company's own strategy. Measuring the success of the merger was considered to be problematic and there seemed to be no consistent practice. The evaluation shows that Stora Enso and UPM-Kymmene mergers can be considered as successful.

TIIVISTELMÄ

Tekijä: Katja Helena Antikainen

Työn nimi: Fuusioiden ja yritysostojen menestyksen arviointi – Case suomen metsäteollisuus

Osasto: Tuotantotalous

Vuosi: 2002 **Paikka:** Lappeenranta

Diplomityö. Lappeenrannan teknillinen korkeakoulu.
106 sivua, 21 kuvaa, 13 taulukkoa ja 2 liitettä
Tarkastajina professori (ma) Timo Kärri ja professori Tuomo Kässi

Hakusanat: fuusiot ja yritysostot, kannattavuus, metsäteollisuus
Keywords: mergers and acquisitions, profitability, forest industry

Tutkimuksen tavoitteena oli selvittää mitkä asiat vaikuttavat fuusioiden menestykseen, millaisia menetelmiä fuusioiden menestyksen mittaamiseen on ja mitä menetelmiä suomalaisessa metsäteollisuudessa käytetään ja kuinka systemaattista menestyksen mittaaminen on. Lisäksi arvioitiin kahden suomalaisen metsäteollisuuden fuusion kannattavuutta.

Fuusioita koskevan kirjallisuuden perusteella luotiin haastattelurunko, jonka pohjalta saatiin suomalaisen metsäteollisuuden näkemys fuusioiden menestyksen mittaamisesta. Kirjallisuudessa esitettyjä menestyksen mittareita on osittain sovellettu laskentaosuudessa ja niiden avulla arvioitu fuusioiden kannattavuutta.

Tärkeimmät fuusioihin vaikuttavat tekijät olivat haastattelujen perusteella toimialan konsolidoituminen ja yrityksen oma strategia. Fuusioiden menestyksen mittaaminen koettiin ongelmalliseksi, eikä mitään yhtenäistä käytäntöä ole. Stora Enson ja UPM-Kymmenen fuusioita voidaan pitää empiriaosuudessa esitettyjen laskelmien perusteella menestyksekkäinä.

ACKNOWLEDGEMENTS

First, I want to thank my instructor and supervisor Professor (acting) Timo Kärri for his instructions and enthusiasm for my work, and Professor Tuomo Kässi for assenting to be a supervisor with a very short notice.

I want to express my gratitude to all the interviewees for their valuable time and their great comments.

I also want to thank the Foundation of Financial Aid at the Lappeenranta University of Technology for financing this study.

Finally, I want to thank my family, especially my dear ‘husband’ Timo Klemola, for the love and support they have given me during this process.

TABLE OF CONTENTS

1 Introduction

1.1 Background of the study

This thesis has been made for Lappeenranta University of Technology. Studying the success of mergers in forest industry is essential because mergers and acquisitions have increased considerably in the past years. The merger gains are very important to a firm's management and also to its shareholders. The main objective of mergers and acquisitions (M&As) is welfare maximization for every interested party, but the gains are often difficult to measure.

1.2 Objectives and outline of the study

The main objectives of this study are:

- To find out the factors influencing success of a merger
- To examine the different ways and approaches of measuring the success of mergers and acquisitions in forest industry
- To find out how systematical success evaluation is in Finnish forest industry and what methods are used
- To evaluate the success of Finnish forest industry mergers

The objectives, methods and results of this study are depicted in the following process description:

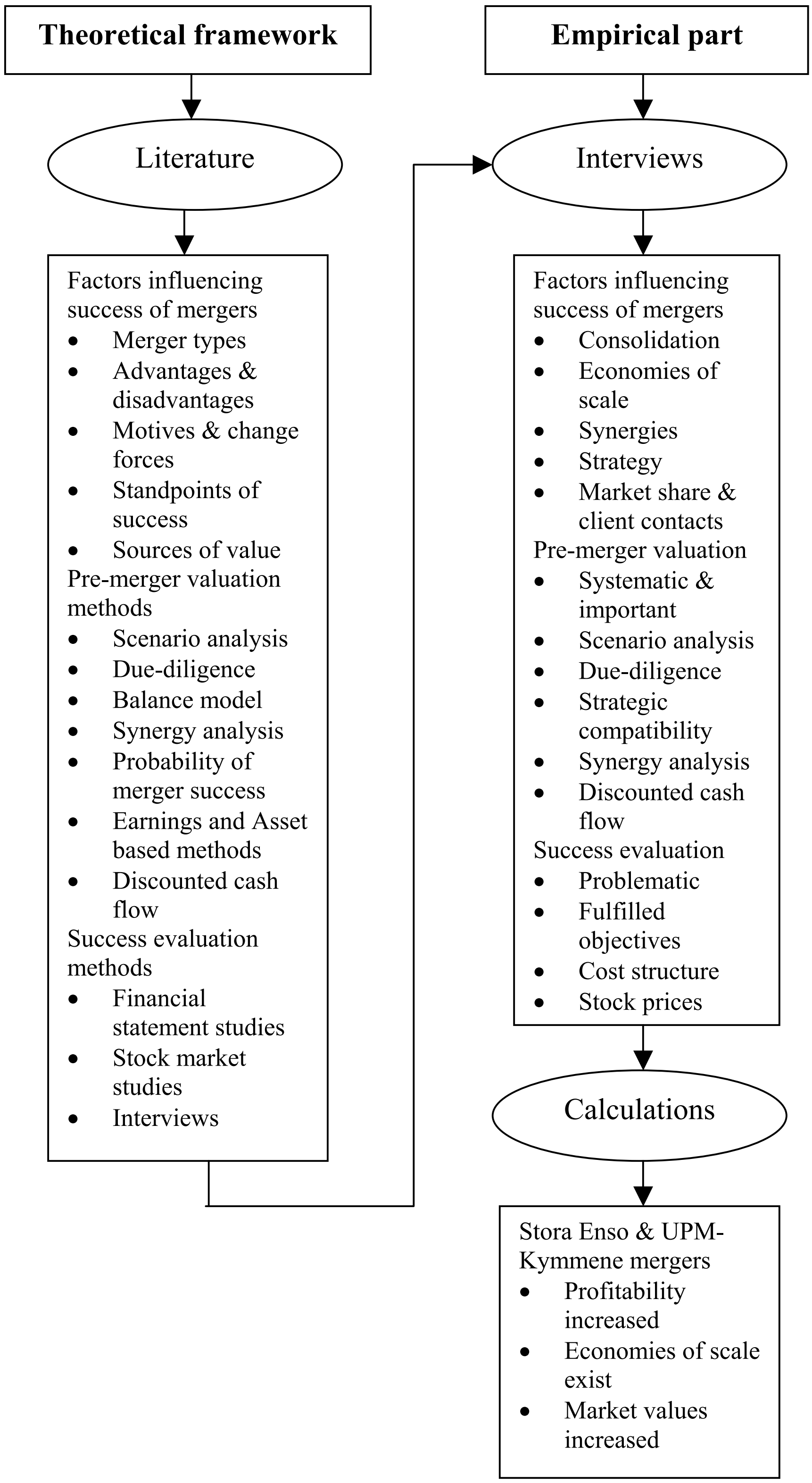


Figure 1. Process description of the study

This study focuses on mergers and the most significant acquisitions in Finnish forest industry companies as well as the success of these mergers and acquisitions. The companies examined are Stora Enso, UPM-Kymmene and M-real. Although these companies are now multinational, they have Finnish origin and in this study they are called Finnish forest industry firms. The time period of this study, including the interviews, is from 1995 to 2002, but the calculations comprise a bit longer time period. The evaluation of the success of mergers in chapter 6 focuses on two major mergers in Finnish forest industry, which are the mergers between Stora and Enso and between Kymmene and Repola. The time period of the evaluation is from 1991 to 2001 in the Kymmene and Repola merger and from 1995 to 2001 in the Stora and Enso merger.

1.3 Structure of the study

The study has been compiled partly on the basis of literature, partly on interviews and public financial information of the firms. Chapters two, three and four are based on literature, chapter five is based on interviews made in Finnish forest industry firms, and chapter six is based on public financial information.

Chapter two presents the basic factors related to mergers and acquisitions, based on literature. First the difference between merger and acquisition is defined and then the different types of mergers are presented, the advantages and disadvantages of mergers and acquisitions, and motives and change forces for mergers and acquisitions are presented. Then the chapter introduces the standpoints for the success of a merger, factors influencing success, and the probable sources of value increase in mergers and acquisitions. Finally the reasons for success or failure of a merger are suggested.

Chapter three focuses on issues concerning target valuation, based on literature. First, scenario analysis is introduced. Scenario analysis helps the firm to identify its growth strategy or whether or not to merger or acquire capacity. Then issues affecting the selection of the target company are presented and a balance model for evaluating firms for acquisition is introduced. The due diligence –process, synergy analysis and a method for calculating the probability of merger success are briefly presented. The latter part of chapter three focuses on mathematical valuation methods. The valuation methods are based on earnings and asset –based valuation and discounted cash flow valuation.

Chapter four deals with post-merger success evaluation methods. The methods are classified to financial statement studies, stock market studies, and survey, interview and case studies. The financial statement studies are classified to basic accounting based measures, economies of scale measures, investment measures and cash flow measures. Finally, problems concerning these measures are discussed.

Chapter five offers Finnish forest companies' view on mergers and acquisitions. First the firms are introduced and then the data collection principles are presented. Chapter 5.3 presents the research results based on the interviews made for this thesis in the studied companies. A list of the interviews is in Appendix 1. The research results are presented in the order which the interview framework follows. The framework for interviews is presented in Appendix 2.

Chapter six includes evaluation of the success in Finnish forest industry, based on financial statement studies and stock market studies, and the changes at the annual Top 150 of Paper & Pulp International (PPI) are briefly analyzed. The financial statement studies include traditional accounting -based indicators, which here are operating profit as percentage of sales, return on equity, financial leverage, net investment rate and employee expense rate, and furthermore cash flow measures, which include operating cash flow return on assets, other operating characters and financial characteristics. The economies of scale are measured with an indicator which measures the relation between costs and production quantity. Then as a stock market study the market values of the studied companies are examined before and after the merger. Finally, as an example, the comparable companies -approach is applied in estimating the value of the companies.

2 Mergers and acquisitions

2.1 Definition of mergers and acquisitions

Mergers and acquisitions (M&As) are a means for firms to expand as an alternative to internal growth. The difference between the terms 'merger' and 'acquisition' are the following: In mergers, the companies combine and share they resources to achieve common objectives. The shareholders of the firms usually remain as joint owners of the combined entity. In acquisitions one firm purchases the assets or shares of the other and the acquired firm's shareholders cease to be owners of that firm. In a merger a new entity may be formed subsuming the merging firms, and in an acquisition the acquired firm becomes a subsidiary of the acquirer. (Sudarsanam 1995, p.1)

2.2 Types of mergers from economic standpoint

2.2.1 Horizontal mergers

When the two merging firms operate and compete in the same kind of business activity, the merger is horizontal. These mergers usually benefit from economies of scale and they also affect market power because they decrease the number of firms in an industry, making it possible for the firms to collude for monopoly profits (Weston & al. 2001, p.6-7). Economies of scale and increased market power can be considered as motives for horizontal mergers.

In forest industry horizontal mergers occur for example when two pulp manufacturing companies merge. Most of the mergers in Finnish forest industry were horizontal during the 1990’s.

2.2.2 Vertical mergers

A merger which occurs between firms in different stages of production operation, is a vertical merger (Weston & al. 2001, p.7). A vertical merger can be made as forward integration or as backward integration. In backward integration the acquirer merges with a company operating prior in the production chain. This usually aims at independence and certainty in getting goods and also obtaining more control and coordination in the production chain. Forward integration occurs when the acquirer merges with a company which operates at product marketing or in the supply chain. This type of merger aims at cost savings and better control over market, and defense against competitors (Immonen 1998, p.438-439).

The big forest companies have been composed through vertical integration over time, and vertical integration has occurred for example with pulp manufacturing companies, paper processing companies, power plants, sawmills etc. Nowadays vertical integration is not the same as it used to be. Vertical integration may occur for example at product marketing.

2.2.3 Conglomerate mergers

A conglomerate merger involves firms engaged in unrelated types of business activity. These mergers can be divided in three categories. In concentric mergers the firms aim at broadening their product lines or market area. Product extension mergers occur between firms in related business activities. A geographic market extension merger occurs when two firms whose operations have been conducted in separate geographic areas merge. Other conglomerate mergers are often considered to be pure conglomerate mergers, and these would not qualify as either product or market extension mergers (Weston & al. 2001, p.7). Conglomerate mergers usually aim at decentralization of business risks and not at bigger market share. Decentralization of business risks is nowadays the role of modern financial markets, as the decentralization of risks is not the company's responsibility but the shareholders' own duties (Immonen 1998, p.439).

In the forest industry conglomerate mergers are quite rare. The forest industry firms aim at synergy gains and bigger market share, where the intention is not to broaden the product range but to concentrate on the firm's core competences.

2.3 Advantages and disadvantages

There are a number of advantages in mergers compared to internal growth. Mergers and acquisitions do not raise the capacity of the business area and the acquirer may avoid counteractions of the competitors. If the merger or acquisition occurs in an unrelated business activity, it may reduce the risks compared to traditional investments because in acquisition the acquirer gets a fully functional organization, experienced employees and the target already has evidence of success. Acquisition may also make it easier to access the kind of business areas where the entry barriers are high. If the implementation of the investment is urgent, acquisition is faster to implement than internal growth. Finally the availability of resources, for example patents and business locations, may require acquisition. (Koivistoinen 1989, p.78-79), (Rappaport 1998, p.33-35)

The pulp and paper industry benefits from consolidation in many ways. First, the market predictability may be improved with fewer players on the market. It can be assumed that investment allocations could be better managed with fewer and bigger players. Because of their bigger balance sheets, they have the strength to shut down expired and unprofitable capacity when needed. Second, a big player is able to optimize its production better than smaller players. It is possible to increase production capacity by reconsidering the production mix and by dedicating fewer grades per machine without any major capital injections. Third, savings could be made through more cost-effective logistical processes. For example, the location of production near a raw material base or customers could bring savings for a consolidated company. Finally, there may arise savings from reduced corporate and marketing costs. Overlapping operations in organizations should be avoided with consolidation (Lucander 2002, p.5). It is not very commonly said out loud, but one major benefit for the pulp and paper companies may be that fewer players in a given product line should lead to less volatile and possibly higher transaction prices. This may not be the motive for the merger but it cannot be overlooked in the process (Rowland 1999, p.89-93).

It must be remembered, however, that the price of an acquisition is set in a highly competitive market for companies, which tends to limit extraordinary value-creating opportunities. Also integrating the organizational assets, especially the commitment of employees, is a much more challenging task in the case of mergers and acquisitions than in internal growth. (Rappaport 1998, p.34)

According to Katz & al. (1997, p.32-41) the recent mergers and acquisitions have been motivated mainly by the transfer of skills. This kind of growth by M&As might imply a tradeoff between managerial commitment and innovation. Firms lose competitive strength if they focus too much on value-transferring activities (such as M&As) instead of value-creation activities (such as R&D). The reasons for this might be that acquisitions become a substitute for innovation as firms focus on one approach to growth, less attention will be given to long-term bases of competitive advantages and huge firms will suffer from organizational inflexibility or creeping bureaucracy.

2.4 Motives and change forces

2.4.1 General about motives

Merger and acquisition motives can be defined in terms of the acquirer's corporate and business strategy objectives for example to achieve marketing and distribution synergies. Acquisitions may also be motivated by the desire for increased market power, control of a supplier, consolidation of excess production capacity and so on. However, while strategic objectives are the proximate motives for acquisitions, these strategies are made to serve the interests of the stakeholders in the acquiring firm. (Sudarsanam 1995, p.13-14)

Many kinds of motives have been introduced in literature, usually containing such factors as size and growth, economies of scale, profitability, return on shares, profit variability, market share and market power. The most common motives are profitability and size (Goldberg 1983, p.9). Ingham & al. (1992, p.195-208) have listed in their survey the most significant motives for mergers, and the results contain the same kind of motives as presented here. The most significant motives in this survey were increased profitability and market power.

2.4.2 Shareholder wealth maximization perspective

This is a neoclassical perspective, presented by Sudarsanam (1995, p.14-15), in which all decisions made in a firm aim at maximizing the wealth of the shareholders of the firm. This means that the incremental cash flows from the decision, when discounted at the appropriate discount rate, should bring zero or positive net present value. The shareholder maximization criterion is satisfied when the added value from the acquisition exceeds the cost of the acquisition:

Added value from acquisition = Value of the acquirer and the acquired after acquisition - Their aggregate value before (1)

Increase in acquirer share value = Added value - Cost of acquisition (2)

Cost of acquisition = Acquisition transaction cost + Acquisition premium (3)

Acquisition transaction cost is the cost incurred when the acquisition is made, and it consists among others advisers' fees, regulators' fees and stock exchange fees. The acquisition premium is the excess of the offer price paid to the target over the target's pre-bid price. The managers must not only add value, but also make sure that the cost of the acquisition is smaller than the added value. (Sudarsanam 1995, p.14-15)

2.4.3 Managerial perspective

According to Sudarsanam (1995, p.15-21) managers may have four different kinds of motives to undertake acquisitions:

- Managers want to reach for growth in the size of their firm because of their provision, status and power are tied up with firm size (empire-building syndrome).
- They want to expand their managerial talents and skills (self-fulfillment motive).
- They want to diversify risk and minimize the costs of financial distress and bankruptcy (job security motive).
- They want to avoid being taken over (job security motive).

2.4.4 Change forces

Mergers are related to the economic and cultural characteristics of their time and place. Weston & al. (2001, p.3-4) have listed seven powerful forces related to the increasing pace of merger activity:

- Technological change
- Globalization and freer trade
- Deregulation
- Economies of scale and economies of scope
- Changes in industry organization
- Individual entrepreneurship
- Rising stock prices, low interest rates, strong economic growth

2.4.5 Motives for cross-border mergers

The motives for cross-border mergers may be same kind as motives for domestic mergers but some of them apply strongly to international M&As. Weston & al. (2001, p.511) have listed 10 major forces motivating cross-border M&As:

- Growth
- Technology
- Advantages in differentiated products
- Roll-ups
- Consolidation
- Government policy
- Exchange rates
- Political and economic stability
- Following clients
- Diversification

The most important motive for international mergers is growth. Mergers provide instant growth, and merging internationally adds a whole new dimension to this growth. In achieving growth objectives, both the size of a market and the growth rates of the market are important. Size brings economies of scale, which means lower costs and ability for effective global competition. It also improves the firm's ability to carry out worldwide operations. (Weston & al. 2001, p.511-512)

Technological considerations impact cross-border mergers in two ways. A technologically superior firm may make acquisitions to utilize its technological advantage, or a technologically inferior firm may acquire a target with superior technology to improve its competitive position. (Weston & al. 2001, p.512-513)

Advantages in differentiated products means that when a firm has developed a reputation for superior products in the domestic market it may find acceptance for the products in foreign markets as well. This may occur due to production facilities, know-how and image. Roll-ups combine small firms in fragmented industries and give them an opportunity to act internationally. Consolidation aims at reducing worldwide excess capacity. Government policy, regulation, tariffs and quotas can affect M&As in many ways, including export restrictions and environmental regulations (Weston & al. 2001, p.512-513). Taxation is also considered as a motive for M&As. It has been said that mergers occur because inheritance taxes are avoided by selling the company, interest payments on loans are tax deductible, accelerated appreciation of old assets is possible with acquisitions, re-capitalization allows taxation benefits, tax-loss carryovers are captured by M&As, and paying for new companies by stock-for-stock exchanges makes it possible to avoid taxes altogether (Post 1994, p.144-145). Foreign exchange rates and the relative strength or weakness of the domestic versus foreign currency may also affect the effective price paid for an acquisition, its financing, the production costs of running the acquired firm and the value of repatriated profits to the parent (Weston & al. 2001, p.512-513).

Political and economic instability can greatly increase the risks of international mergers. The acquiring firms must consider possible political changes, economic factors and labor relations. Long-term relationships with clients can be vital to some firms. Thus, if clients move abroad the firm may have to follow them in order to maintain its customer relationships. International diversification may reduce the earnings risk inherent in being dependent on the health of a single domestic economy. (Weston & al. 2001, p.514-515)

2.5 Standpoints of merger success

2.5.1 Shareholders' standpoint

According to the shareholder wealth maximization theory, managers' decisions are aimed at enhancing shareholder wealth, but does this theory hold in mergers and acquisitions? To measure the merger success from the shareholders' standpoint there would have to be a benchmark against which the value increase could be judged, and the time scale for assessing the wealth increase would have to be established. The time scale is not very essential with a cash bid but with a share exchange it is. For the acquiring company's shareholders, the long-term is important despite the payment currency. The common approach to measuring shareholder wealth changes is the so-called abnormal returns methodology (presented in chapter 4.3), which compares the returns to shareholders of both bidders and targets during the takeover announcement (event period) to 'normal' returns from a period unaffected by the takeover. (Sudarsanam 1998, p.214-221)

Sudarsanam (1998 p.218) presents evidence of merger success from the United Kingdom. First, the UK evidence argues that at best takeovers are neutral in overall value creation for the shareholders and at worst value destroying. Second, the target's shareholders gain almost exclusively from takeovers. Finally, there is evidence of wealth transfer from the acquirer's shareholders to the acquired company's shareholders. This follows from the negative returns to the acquirer's shareholders and the neutrality of the overall effect. This is explained by the fact that managers tend to pay too much for their acquisitions because they overestimate their own capacity to create value from the acquisitions.

2.5.2 Managers' standpoint

Acquisitions affect differently the managers of the acquirer and the acquired companies. The effect is more positive to the managers of the acquirer. To them it offers opportunities to increase their company's competitive advantage, operational efficiency and financial performance and in that way increase shareholder value. It also allows the managers to maximize their own utility by increasing remuneration and job security. The immediate advantage of the acquisition for managers is that usually the acquisition process itself leads to an increase in managerial remuneration, even in acquisitions with negative abnormal returns. But these advantages may not be permanent, if the managers do not handle the acquisition well. Acquisition failure can be very costly to the acquiring company's managers and they might even end up in financial restructuring or receivership. (Sudarsanam 1998, p.221-223)

For the acquired company's managers the acquisition causes uncertainty and stress due to the expected changes. They have to adapt to new bosses and their culture. The acquisition may mean loss of power, status and freedom to innovate. These consequences depend on the motivation and the strategic logic of the acquisition. For example, a merger based on expected synergies may not lead to redundancies, but one based on rationalization is likely to. One factor is also the nature of the acquisition. In hostile takeovers the acquired company's managers resign more often than in friendly takeovers. (Sudarsanam 1998, p.221-223)

2.5.3 Employees' standpoint

Acquisitions may have twofold effects on employees in the acquired company, on wages, pensions and the rights of the employees. When the merger is based on rationalization, the employees of the head office of the target are probable targets for layoffs. On the other hand, for some employees mergers and acquisitions may be a chance for promotion (Sudarsanam 1998, p.223). There are usually employees who thrive and those who are the victims of corporate consolidations. Increased participation of employees in stock ownership schemes and in management will affect corporate policy towards employees positively. The success rules in mergers and acquisitions for a seller concerning the employees are:

- Maintain corporate culture and ethics, as well as personal integrity
- Negotiate well
- Define takeover objectives and stick to them
- Be competent
- Most importantly, have fun with your colleagues and work

(Post 1994, p. 45-47)

Hubbard & al. (2001, p.17-33) propose that there are four elements to employees' expectations. First, employees have concerns about whether they have jobs in the new company and what type of jobs they are, including the nature of the job and the expectations of job performance required. Secondly, they have concerns on employment transfer, about how the change will affect not themselves as individuals but their group of fellow workers in the acquired firm. This includes the maintenance of group roles and responsibilities, the maintenance of relative autonomy and how they will fit in and work alongside individuals in the new company. Thirdly, individuals have concerns about how they fit into the new firm in terms of status and procedures used in performing job roles, such as codes of behavior, dress and the management of role conflict if such should arise. Finally employees worry about the culture of their new organization, its management style, career management and power relationships. These expectations will vary during the acquisition process and also according to the position of the employee.

According to Hubbard & al. (2001, p.17-33) employees at all levels of the organization want to know the vision, the way forward for the newly acquired company and where they fit in. Once their own position has been made clear, employees are reasonably secure and willing to continue in their work capacity. Unfortunately the management of employees' expectations can easily be mishandled or ignored because the financial, legal and strategic issues dominate senior executives' attention. The prime cause to acquisition failure is said to be the inability to achieve post-acquisition integration. Mismanagement of employee expectations and its consequences are likely to be a major contributory factor to this unhappy outcome.

2.6 Factors influencing merger success

The success of mergers and acquisitions results from the sum of effects of many different factors. Vaara (1992, p.38) divides some of these factors into three categories. The first set consists of factors that change the environment during a merger or acquisition process, and they are called environmental factors. The second set of factors is related to the characteristics of the merging organizations, and they are called organizational factors. The third set of factors comprises the decisions made during a merger or an acquisition process, and they are called managerial factors. The three sets of factors are not independent and they and their relations are depicted in figure 2.

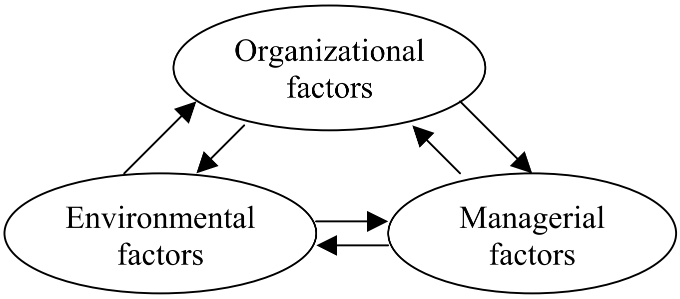


Figure 2. Three sets of factors affecting success in M&As (Vaara 1992, p.38)

Examples of environmental factors are economic conditions, demand fluctuations, technological changes, changes in laws and regulations and competitor's moves. The major part of the research done so far has not been interested in environmental factors and they have not been taken into account in studies. Most of the studies concentrate on organizational factors, such as business relatedness of merging organizations, cultural differences between merging organizations, differences in the relative size of merging organizations, degree of hostility between merging organizations, organizational age of the acquiring organization, the acquisition experience of the acquiring organization and the performance of the acquirer's organization prior to the acquisition. Managerial factors have also a great influence on the success of a merger. Two different phenomena can be identified in non-optimal decisions made by managers. First, managers make mistakes. This is natural considering the difficulties of making decisions under uncertainty, fast pace and high pressure. Second, the efforts of the managers are partly aimed at maximizing their own well being, not necessarily the wealth of the owners or the well being of other constituencies. (Vaara 1992, p.38-42)

2.7 Sources of value increase

2.7.1 Synergies

Campbell & al. (2000, p.4-5) introduce a checklist of six types of synergy, which helps the management to recognize the possible synergies. Synergies may arise through shared know-how, which includes benefits associated with the sharing of knowledge and competencies across the portfolio. It may involve sharing the best practice in certain business processes, or leaving expertise in functional areas, or pooling knowledge about how to succeed in specific geographical areas. The know-how is often less formally documented and it may be more a matter of sharing the way that skilled managers go about in their work. Leveraging core competencies and sharing best practices is a very important type of synergy.

Synergies may arise from shared tangible resources. These operating synergies occur through economies of scale, economies of scope and organizational learning resulting in increased revenues or decreased costs (Juurmaa 1991, p.43). Operational factors ascribing exceptional value are those that bring special benefits to the acquirer, including synergism arising out of the ability to integrate businesses horizontally, vertically and circularly. Operational factors are probably the most important motive for mergers and acquisitions (Lee & Colman 1981, p. 171-172). Economies of scale are present when the production costs of a particular product fall as the number of units produced increases. Economies of scope exist when an increase in the production of one product leads to a reduction in the production cost of another (Nelson 1997).

The theory based on operating synergy assumes that economies of scale do exist in the industry and that the firms are operating at levels of activity, where it is possible to achieve economies of scale. Economies of scale arise because of indivisibilities, such as people and equipment, that result in lower costs if spread over a large number of units of output. In manufacturing operations heavy investments in plant and equipment produce such economies. In marketing, having one organization cover the whole Europe may cause economies of scale because of the increase in the ratio of calling-on customer time to traveling time, which in turn results from the higher density of customers who can be called on by the same number of salespeople. Managerial economies in production, research, marketing or finance are sometimes referred to as economies in the specific management functions. It has also been suggested that economies could be achieved in generic management activity, such as the planning and control functions of the company. (Juurmaa 1991, p.43-44), (Weston & al. 2001, p.140-141)

Economies of scope may exist when the cost of joint production of two goods by a multi-product group is less than the combined costs of production of these goods by two single-product companies (Juurmaa 1991, p.44). Another area in which operating economies could be achieved is vertical integration. More efficient coordination of the different levels may be achieved by combining firms at different stages of an industry, because then costs of communication and various forms of bargaining can be avoided (Weston & al. 2001, p.141).

Vertical integration means coordinating the flow of products or services from one unit to another. Benefits arise from lower inventory costs, shared production development, better capacity utilization and improved market access. For example in forest product industry well-managed vertical integration can yield major benefits. (Campbell & al. 2000, p.4-5)

Pooled negotiating power can create cost or quality benefits from purchasing scale. It also covers the benefits from joint negotiation with other stakeholders such as customers, governments, universities, etc. Companies may identify surprisingly large benefits through common purchasing of inputs used by several of their businesses. Coordinated strategies also create benefits from aligning the strategies of two or more businesses. This may happen for example by reducing competition between units or coordinating reactions to shared competitors. This may be an important source of synergy benefits, but striking the right balance between corporate intervention and business unit autonomy is not easy. (Campbell & al. 2000, p.4-5)

Combined new business creation may create synergy benefits. The creation of new businesses may happen by combining know-how from different units, by extracting activities from different units to put into a new unit, and by internal joint ventures or alliances between units. This type of synergy should be more emphasized when concerning corporate re-generation and growth. (Campbell & al. 2000, p.4-5)

The ability to finance is unquestionably the one non-operating factor that is crucial to creating exceptional value (Lee & Colman p.172-174). One source of financial synergy is the lower costs of internal financing comparing to external financing. If firms with large internal cash flows and small investment opportunities merge with firms that have low internal funds generation and large growth opportunities, and therefore need additional financing, this may result in advantages from the lower costs of internal funds availability. Another source may be that the debt capacity of the combined firm can be greater than the sum of the two firms' capacities before the merger. This will provide tax savings on investment income (Weston & al. 2001, p.143), (Juurmaa 1991, p.45-47).

2.7.2 Efficiency increase

Efficiency improvements can result from combining firms of unequal managerial capabilities. The acquirer can improve the efficiency of the target or vice versa. The target may have better growth opportunities than the acquirer. Sometimes the combination of two companies will achieve a more efficient critical mass. Investments in machinery may cost a lot and combining firms may achieve better utilization of large fixed investments. Also obsolete plants may be shut down after the merger (Weston & al. 2001, p.139-140). Increased efficiency may rise from the displacement of inefficient managers, a reorientation of company business strategy or the realization of economies of scale or scope (Scherer 1988, p.69-82).

2.7.3 Diversification

Welfare gain may arise from the transfer of capital that is involved in search-motivated, diversifying mergers. The same reallocations may eventually come via external markets but the merger can foreshorten the transfer process and therefore decrease the costs (Goldberg 1983, p.28-30). Diversification of the firm can provide managers and other employees job security and opportunities for promotion, which may result in lower labor costs. If the firm is diversified, the employees can be transferred from unprofitable business activities to growing and profitable activities. This way the diversification may ensure smooth and efficient transition of the firm's activities and continuity of the teams and the organization, and the gathered information on employees formulated over time do not get wasted. Diversification may also help in preserving the firm's reputation capital, which will cease to exist if the firm is liquidated (Weston & al. 2001, p.141-143).

Diversification may also have not so good effects. Empirical studies have shown that the average diversified firm has been worth less than a portfolio of comparable single-segment firms. A number of explanations have been offered to explain this discount, for example:

- External capital markets allocate resources more efficiently than internal capital markets.
- There are political influences that result in subsidizing underperforming divisions in a firm.
- Managers of multiple activities are not as well informed about each activity as the managers of single-product firms.
- Securities analysts are said to be less likely to follow multi-segment firms because of inadequate information on the individual segments.
- Without external market measures of performance, managers of segments cannot be adequately evaluated and stock options cannot be granted on the basis of segment contributions. This leads to less motivated managers of segments than those of single-segment firms.

- Using the basic valuation relationship that asset prices are a function of expected future cash flows discounted at an expected return, it has been found that a diversified firm with high-expected rate of return (relative to single-segment firm) has a low value.

(Weston & al. 2001, p.141-143)

2.7.4 Strategic realignments

The increased merger activity of the 1990's was said to be motivated by strategic considerations. Here the emphasis is on acquiring new management skills to increase the capabilities of the firm in relation to new growth areas or to meet new competitive threats (Weston & al. 2001, p.143). Strategic realignments include also the transfer of technology or knowledge of markets. According to the strategic management theory, businesses are able to transfer certain skills and capabilities among themselves at a lower cost than if they had to build them on their own (Katz & al. 1997, p.32-41). Another issue related to strategic realignments may be innovation. Innovation is often the source of a firm's competitive advantage and in many circumstances involving producers of complementary products, mergers are the most effective way to achieve adequate innovation (Su 2001, p.2).

2.7.5 Inflation

Inflation has a double-barreled impact on mergers and acquisitions. It brings stock prices down and it causes current replacement costs of assets to be much higher than their recorded historical book values. These twin effects result in a decline of the q-ratio because the market value of the firm's securities fall and the replacement costs of its assets increase (Weston & al. 2001, p.143-144). The q-ratio is defined as the ratio of the market value of the firm's securities to the replacement costs of its assets:

$$q = \frac{V}{p_k K} \tag{4}$$

where V is the stock market value of the firm, p_k is the price of new capital, K is the firm's capital and p_kK is the replacement costs of the firm's stock capital (Perktold 2002).

If firm A seeks to add capacity it implies that its marginal q-ratio is greater than one. But if other firms in its industry have average q-ratios of less than one it is efficient for firm A to add capacity by purchasing other firms. For example, if the q-ratio is 0.6 and if in a merger the premium paid over market value is even as high as 50%, the resulting purchase price is 0.6 times 1.5, which equals 0.9. Thus, the average purchase price would still be 10% below the current replacement costs of the assets acquired. This makes it profitable to acquire firms with a q-ratio below one. When a firm's q-ratio is high this implies superior management. A high q-ratio firm may be bought by a low q-ratio firm, which is seeking to augment its managerial capabilities. (Weston & al. 2001, p.143-144)

2.7.6 Information and signaling

The information about an offer made to a target firm may affect share prices positively or negatively. The reason for increasing share prices may be that the tender offer disseminates information that the target shares are undervalued and their value increases when revaluated. This has been called the 'sitting-on-a-gold-mine' explanation. Another reason may be that the offer inspires the target firm's management to implement a more efficient business strategy on its own. This is called the 'kick-in-the-pants' explanation. Share prices may also rise because of the expectations that after an unsuccessful offer the target firm will be acquired later by another firm. This firm would have some specialized resources to apply to the target resources. This kind of value is not constant according to empirical evidence. The share prices of those firms which got a new offer stayed higher than before, but in those firms which did not get a new offer, the share prices came down. (Weston & al. 2001, p.145)(Scherer 1988, p.69-82)

Signaling differs slightly from information. When a firm receives a tender, this is a signal to the market that the bidder sees value in the firm greater than its prevailing market price. On the other hand, in a share repurchase when the management holds a significant proportion of the stock and does not tender stock at the premium in the repurchase price, it signals that the firm's shares are undervalued. (Weston & al. 2001, p.145)

2.8 Why do mergers succeed or fail?

According to Myers (1998, p.7-9), all successful transitions are governed by four elements: speed, timing, leadership and communication. Speed is the most important factor in a successful integration. This is partly due to financial considerations. The faster the combination achieves cost savings and revenue enhancement, the larger the net present value of the cash flows and the quicker the return on investment. Speed is also important for organizational reasons. The management can harness the energy unleashed by a merger to accomplish significant change. Also, merger announcements have a tendency to unfreeze an organization, so the faster the better. While the speed is the key to successful mergers, it must still be remembered to treat people with respect, to be sensitive to their sense of loss and to be supportive of their efforts (Tetenbaum 1999, p. 22-36). Gordon & Mellander (2002) have come to the same conclusion that speed-to-value is a vital corporate capability especially in M&As. Because speed is of essence, the transition should begin before the deal is closed. The integration may require downsizing, the elimination of overhead and the consolidation of major operational functions (Myers 1998, p.7-9).

All successful integration efforts begin with a strong, capable leadership team, which should include top executives who possess both experience and the authority to maintain commitment to the merger (Myers 1998, p.7-9). Organizational capability means having the right people in the right position to effectively perform the tasks that are needed to achieve the organization's goals. The management is in the key position for this work. One major challenge for the management is to manage the culture of the organization. Inculcating the new culture throughout the organization might be difficult. This is because size alone is an issue. It requires integrating all employees to share the same vision, values, norms and commitment. Many mergers are also built upon previous mergers, so the organization can still have many separate cultures. Managing the culture is difficult also because of beliefs and values are the most difficult elements to change (Tetenbaum 1999, p.22-36). Communication to employees has been identified as a critical factor in the overall success of a merger or acquisition. The integration team must also ensure that communication is also directed outward to customers or clients, vendors, the community and the media.

The most important test for leadership during the transition process is the definition of a clear, compelling integration vision, which sets forth the mission of the combined company and the strategies and performance objectives that will be used to accomplish the goal (Myers 1998, p.7-9). Rogel (2002, p.72) points out a four-step process how things can be combined properly. The management must have a clear vision on what the firm wants to become, a sound understanding of where the company is today, what would have to be done internally to take the company to the next level, and companies must have the discipline to stay with their strategy and continually measure their progress against their ultimate goal. In other words the integration team must build a standardized integration plan, which covers the whole merger process (Tetenbaum 1999, p.22-36).

The motives of the merger also affect the final return. According to Stanyard (2000, p.14), the most rewarding motive is to obtain new technology. However, Walker (2000, p.53-67) presents in his article event study results which show that acquirer’s shareholders earn normal returns regardless of takeover strategy. The sole exception, diversification strategies that cite potential overlap, elicits an average unfavorable stock market reaction.

The most important reasons for acquisition fall-out are, according to Post (1994, p.102), the clashing of corporate cultures and too high acquisition prices. One reason for high prices may be the high price/earnings ratios pushed up by companies from outside the sector. Other reasons might be bad timing or unperceived regional obsolescence.

The lack of value creation in M&A can partially have something to do with the integration programs that over-emphasize the importance of tactical synergies, such as sales force consolidation and material sourcing leverage. This normally happens at the expense of other, more market focused value creation opportunities. In forest industry tactical synergies can supply significant value in some mergers and be critical to initial financial success, but these savings are not sufficient and not always easy to capture. The acquirer should use the integration as a 'catalyst' to identify and capture necessary transformational value, which could include performance management initiatives or even redesigning the overall value proposition offer. Such actions can create significant additional value and position the company better for future growth. (Germani & al. 2002)

3 Target valuation

3.1 Scenario analysis

In the study of a firm's future, scenario means a manuscript of the future, which sketches the firm's future business environment/s and the firm's and its competitors' transactions in these environments to achieve their objectives. In other words, a scenario is a hypothetical sketch which predicts future (Meristö 1991, p.40). Scenario analysis can be used when a firm wants to confirm its strategy for example concerning its growth. Scenario analysis can help the firm to decide whether or not to grow with mergers and acquisitions or with internal growth. It also helps the firm to identify its competitive position compared to its competitors and gives a prospect to the future development of the entire industry.

First, the general financial and social scenarios must be made. The scenarios may cover very expansively global, regional, national and local observation levels. They may concern economy, technological development, values and social systems. The general scenarios must be allocated to those questions which are the most important to the firm, and the most significant variables, trends and weak signals must be chosen. At this point the vision of the firm must be clear. When the scenarios are being identified and adjusted to the firm's own business area and the wanted direction is determined, it is possible to build the firm's long-term strategic policies. These include for example the firm's growth, marketing and human resources strategy. (Mannermaa 1999, p.66-68)

At the first phases the scenarios were built for a long time period, typically for 10-20 years as alternative scenarios. Making a strategic development program means that the time period is shortened to middle length and short time periods, for five years and one year. This process requires expertise and it includes valuation of strategic policies and possibly a recognized strategy scenario based on what kind of operation policies it may lead. The firm must be committed to the chosen policies and the policies have to be concretized by shortening the time perspective. (Mannermaa 1999, p.68)

In recent years it has been popular to build so called Top Ten- lists to aid in building scenarios. The purpose and meaning of the lists may vary in different cases. The general purpose of the lists is to clarify a number of phenomena, which are evaluated to have the most significant effect to the future in the studied area. They can be mega-trends, variables or weak signals. Mega-trends or major lines of development usually mean phenomena that can already be seen as a general direction and are believed to continue in the future. A mega-trend itself may include different phenomena, alternative trends and surprises. These should still form an adequate entity. Weak signals or wild cards are emerging phenomena, which usually do not have a history, trend or other clearly identified past, but they may still be essential phenomena and trendsetters. Wild cards are hard to forecast and their appearance is not very likely, but they may have a dramatic impact on the society. (Mannermaa 1999, p.84-92)

Future schedules or morphological boxes are very efficient ways to structure a firm’s operational environment and internal variables. A schedule is static and it gives a flash of the future. The schedule consists of external and internal variables, wild cards and mega-trends and estimated different alternatives for each variable. From this schedule a great number of future forecasts can be identified. The next step is to squeeze the alternatives into one strategic scenario, which happens by estimating how efficient the strategic lines are in each scenario. Based on this evaluation the firm may choose which strategic lines it will commit itself to. The safest alternative is to choose only those strategies which are good in every scenario, but this will depend on the risk preferences of the firm. For example slow and stable growth may be the safest choice but it might not bring the greatest returns. (Mannermaa 1999, p.92-103)

3.2 Selection of target company

Selection of the target company is crucial to any acquisition. The objective of the selection phase is to recognize to most potential alternatives. The strategic objectives of the acquirer determine the alternative targets. Detailed analysis of the target may include the following parts:

- Profitability- and financial analysis
- Product/market analysis
- SWOT analysis (Strengths, Weaknesses, Opportunities, Threats)
- Production machinery analysis
- Research and development (R&D) activity analysis
- Juridical analysis
- Targets strategy analysis
- Control systems and organizational culture analysis

(Koivistoinen 1989, p.76-85)

One good source of good potential acquisition candidates comes from the firm's own employees, suppliers and customers. The utilization of these internal sources must be counterbalanced against having management time drawn away from day to day business requirements (Lee & Colman, p.102). Still, it is extremely important that those employees responsible for the implementation of the acquisition take part in making the analyses and the acquisition plan (Koivistoinen 1989, p.76-85).

There are naturally many methods to rank individual acquisition candidates. The important thing here is that once some sort of ranking system is applied, all efforts will be focused on a small group of targets, which are the most attractive opportunities. (Lee & Colman, p.104)

3.3 Balance model for evaluating firms for acquisition

Rao & al. (1991, p.331-349) present in their article a balance model for evaluating firms for acquisition. The objective of this model is to describe the preferences of the decision maker for subsets to reflect the degree of balance among items in a subset. The model enables an acquiring company to identify an ideal profile of a firm on a series of attributes desired in a possible acquisition candidate that will be compatible with its own profile. A candidate that exhibits such an ideal profile would probably have the greatest likelihood of forming a profitable combination with the acquiring firm. The use of the balance model requires implementation of the following steps:

- Identification of characteristics or attributes to design profiles of acquiring and acquired companies
- Construction of profiles of firms according to a conjoint-type design
- Evaluation of subsets of profiles of acquiring and acquired firms by the relevant decision-maker
- Estimation of the balance model, equation 7 below
- Identification of important attributes and evaluation of actual candidate firms for acquisition by means of equation 7

Figure 3 presents a process by which feasible acquisition candidates can be screened.

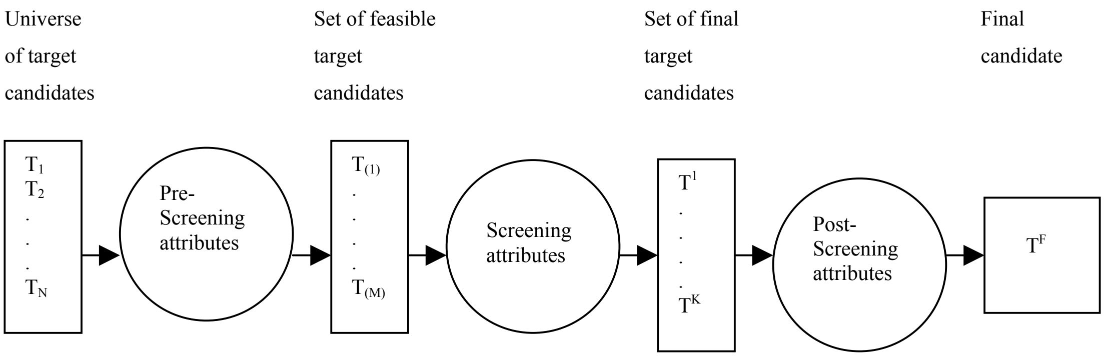


Figure 3. Acquisition screening process (Rao & al. 1991, p.331-349)

The pre-screening attributes are considered to be the minimum criteria that any target candidate should satisfy. These criteria could include the minimum size of the company in terms of sales, antitrust implications and the nature of the ownership, which means comparing privately held versus publicly held firms, or percentage of shareholdings by management or insiders. The screening group contains financial performance and marketing strategy-related variables. This group probably forms the most critical aspect of the evaluation. These criteria reflect the nature of the product market served by an acquisition candidate, its organizational and management style and its financial evaluation measured by salient financial ratios. The post-screening group includes attributes that may be critical in the final stages of the evaluation of any feasible candidate. Even if a candidate is considered to be attractive in the first two groups, the third group determines the ultimate acceptance of the candidate. Post-screening criteria may be expectation of resistance from the management of the target company to takeover overture and possible defensive provisions, which may increase the premium that will have to be offered for the target company. (Rao & al. 1991, p.331-349)

The balance model postulates that in describing a decision maker's preferences for subsets, essential attributes can be grouped into two classes – non-balancing and balancing. Non-balancing attributes are those for which the decision maker wishes to optimize the mean of the items in the subset for these attributes, and balancing attributes are those for which the decision maker wishes to optimize the dispersion of the items in the subset for these attributes. The utility or value of a subset is a weighted combination of the means and dispersions of the various essential attributes. The attributes for which the mean is maximized are called desirable, and those for which the mean is minimized are called undesirable. In the mathematical explication of the balance model for the acquisition decision p denotes the number of attributes on which the acquiring and acquired firms can be described, $X_0=(x_{01}, x_{02},\dots,x_{0p})$ is the acquiring firm and $X_j=(x_{j1},x_{j2},\dots,x_{jp})$ is the j^{th} firm to be acquired, $j=1,\dots,n$. The mean and variance of the t^{th} attribute for the pair (0,j) of the acquiring firm and j^{th} firm to be acquired are denoted by m_{jt} and v_{jt}. These are computed as

$$m_{jt} = \frac{(x_{jt} + x_{0t})}{2} \tag{5}$$

$$v_{jt} = \frac{(x_{jt} - x_{0t})^2}{2} \tag{6}$$

Then the overall preference U_{0j} of a pair (0,j) can be described as

$$U_{0j} = w_0 + \sum_{t=1}^{p} w_{1t} m_{jt} + \sum_{t=1}^{p} w_{2t} v_{jt} \tag{7}$$

where x_{1t} and w_{2t} are the weights for the means and variances and w_0 is an intercept to accommodate the idiosyncratic use of the scale by the decision maker. These weights can be estimated using regression methods with judgmental data on pairs of firms. Table 1 summarizes optimal strategic guidelines that can be inferred by using the signs of these weights to evaluate acquisition candidates. (Rao & al. 1991, p.331-349)

Table 1. Optimal strategic guidelines to evaluate acquisition candidates based on the signs of regression weights for each attribute (Rao & al. 1991, p.331-349)

<table>
<tr><td colspan="3">Subset 1: Only attribute means are significant (w_{1t}): An acquiring firm should search for an acquisition candidate that is highest on the attributes, if w_{1t} is positive and lowest if w_{1t} is negative.
Subset 2: Only attribute variances are significant (w_{2t}): An acquiring firm should search for an acquisition candidate that is as dissimilar to it on this attribute, if w_{2t} is positive and similar to it if w_{2t} is negative.
Subset 3: Both attribute means and variances are significant (w_{1t}, w_{2t}):</td></tr>
<tr><td rowspan="2">w_{2t}: Regression weight for balancing attribute</td><td colspan="2">w_{1t}: Regression weight for desirable attribute</td></tr>
<tr><td>Negative</td><td>Positive</td></tr>
<tr><td>Negative</td><td>An acquiring firm should search for an acquisition candidate that is as similar to it on this attribute as possible</td><td>An acquiring firm should search for an acquisition candidate that is as similar to it on this attribute as possible if $x_{jt} < \lvert w_1/w_2 \rvert$; otherwise look for potential candidate that is as dissimilar as possible on this attribute</td></tr>
<tr><td>Positive</td><td>An acquiring firm should search for an acquisition candidate whose value on this attribute is $\lvert w_{1t}/w_{2t} \rvert$ units more than the acquiring firm.</td><td>An acquiring firm should search for an acquisition candidate that is as dissimilar to it on this attribute as possible.</td></tr>
</table>

3.4 Due diligence

When the target company has been chosen, the next step is to evaluate it. In a due diligence -study the point usually is whether the target firm’s business serves the expectations that the buyer has concerning the acquisition. The objectives of a due diligence -study is to find out deal breakers, pricing issues, structuring issues and acquisition agreement issues. A reduced due diligence -process can be described as in figure 4 below. Figure 4 is not comprehensive, but it emphasizes the interaction between different parts of process. The process may also be emphasized differently in different situations. The due diligence -process varies depending on when the study is included as part of the acquisition process. A due diligence -study can be done before the preparatory contract or letter-of-intent, after the deal is closed, or as is usual, somewhere between these lines. (Blomquist & al. 1997, p.9-10)

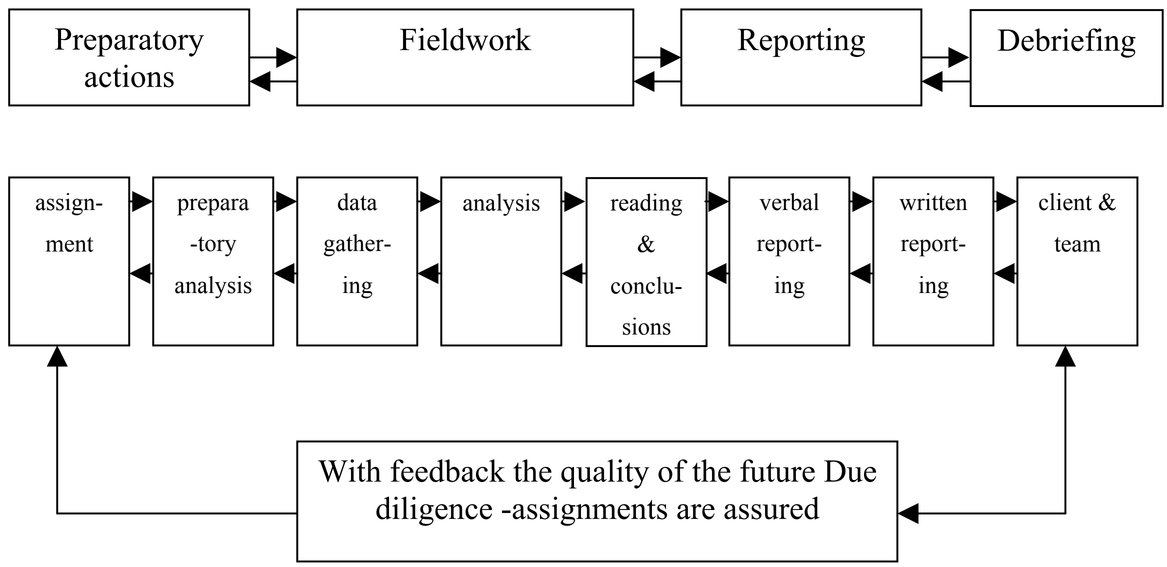


Figure 4. Contact surfaces of the value chain and its interactive nature (Blomquist & al. 1997, p.10)

Although due diligence includes several and repeated phases, it is not an accurately defined set of working methods. Every acquisition is one of a kind and the due diligence -study must be adjusted to each situation and its demands. Usually the due diligence -process tries to find answers to the following questions (Blomquist & al. 1997, p.20):

- Propriety of the target company to acquirer's strategy
- Financial and technical conditions of the business
- Accounting standards of the target
- Reasonableness of the price
- Risks connected to the transaction

The circumstances of the target's activities, its strengths and weaknesses and the risks of its activities are usually clarified in detail and extensively. Due diligence -studies are usually allocated to business due diligence, legal due diligence, financial due diligence and other sectors due diligence. Business due diligence is in a central position in acquisitions. It is important that this study clarifies the competition conditions, budgeting conditions, functionality of the information systems and juridical and environmental issues. Legal due diligence concentrates on charting the risks that do not appear in the balance sheet or its appendices. Financial due diligence covers the balance sheet information and the accounting standards of the target. Other sectors include the target's technical level and the know-how of the employees. It may also cover environmental issues and risks. (Blomquist & al. 1997, p.21-24)

3.5 Synergy analysis

When making decisions concerning mergers and acquisitions it is valuable to identify the sources of synergy. Campbell & al. (2000, p.139) introduce a practical tool which allows managers to be more structured and analytical when making decisions about how to manage synergies. Figure 5 is a flowchart describing this tool.

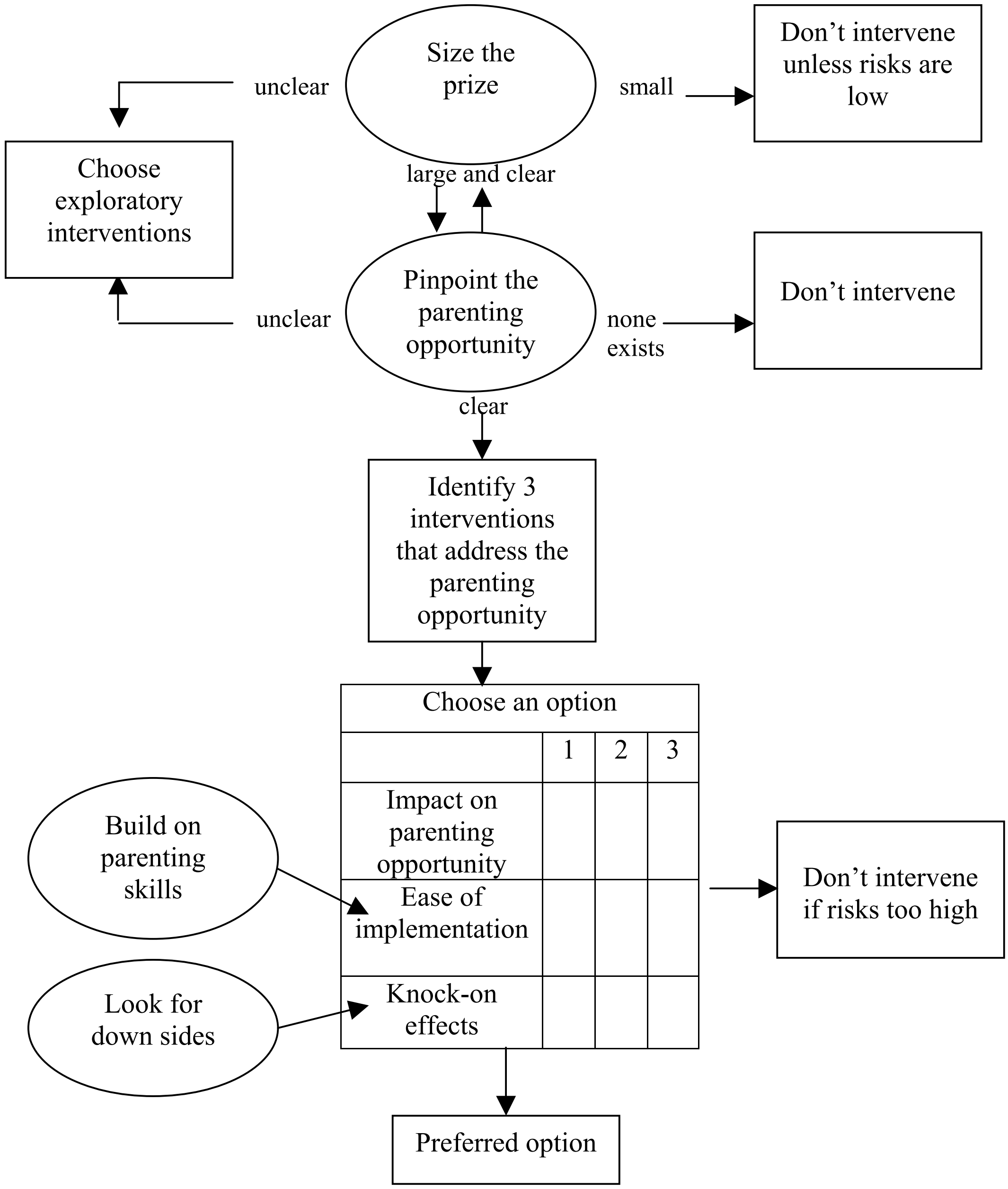


Figure 5. Choosing interventions (Campbell & al. 2000, p.140)

Most managers make decisions in a holistic, intuitive way. They expose themselves to the issue and then, drawing on their knowledge of the people, the organization and the company’s strategy, they intuitively synthesize some intervention. But in some circumstances structured analysis and formal comparison of options can be valuable. The process presented in figure 5 is a decision aid that harnesses four mental disciplines, size the prize, pinpoint the parenting opportunity, build on parenting skills and look for downsides, into a flow chart with three possible outcomes – choose an 'implementation' intervention; choose an 'exploratory' intervention; do nothing. (Campbell & al. 2000, p.139)

The flow chart starts with the mental discipline of 'sizing the prize'. Parent managers need to articulate the primary benefit and estimate its value. There are three practical steps that help managers size the benefits and reduce the impact of synergy bias. They have to disaggregate the benefits to gain greater clarity and precision, frame the initiative to help separate primary from secondary benefits and give focus for action, size the prize by making order-of-magnitude financial and strategic judgments and noting opportunity costs and compromise costs. If the benefit is small, the answer is probably to do nothing. If the benefit is unclear, the answer is to do something that will elucidate more information about the benefit – an exploratory mechanism. If the benefit is great, the next step is to pinpoint the parenting opportunity. (Campbell & al. 2000, p.31-55, 139-141)

Parenting opportunities occur because business managers have not perceived the benefits, have misevaluated the size of the benefits, are not motivated to help create benefits or do not have the capabilities or mechanisms to create the benefits. Parenting opportunities exist only if there are linkage benefits that will not be realized by the businesses collaborating in a natural self-interested way and there is a role for the parent in helping to obtain the benefits. There are four types of parenting opportunity, which correspond to different steps in bringing linkages to fruition, see figure 6 below. (Campbell & al. 2000, p.63-64)

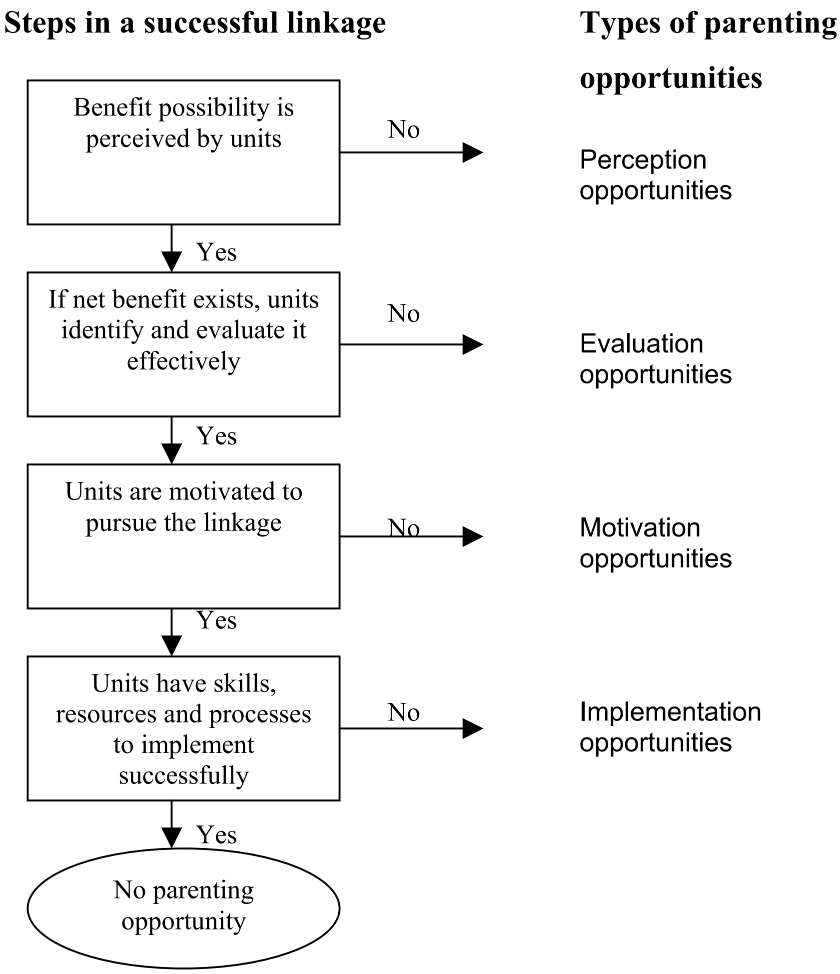


Figure 6. Four types of parenting opportunities (Campbell & al. 2000, p.64)

If there is no parenting opportunity, the answer is to leave well alone. If the parenting opportunity is unclear, explore the issues further. If the parenting opportunity is clear, move on to identify the intervention options as presented in figure 5. When the benefit and the parenting opportunity are clear, managers can narrow down the choice of intervention. But there will still be options. So the next step is to identify some reasonable options. It has been suggested that three options should be selected and compared with each other in a simple evaluation grid, which has three evaluation criteria – the degree to which the option addresses the parenting opportunity (and hence releases the benefit), the ease with which the option can be implemented, and the balance of knock-on effects. The ease of implementation has a close contact with building on parenting skills. The chances of success are low if the company does not have either a well-grooved mechanism, which means an intervention that has been used successfully before to achieve similar kinds of synergy benefits; or a natural champion, which means an individual with the specialist knowledge, organizational respect, people skills, and time and desire to make the intervention work. The balance of knock-on effects is related to looking for downsides. Downsides and upsides can occur in business mindsets, organizational dynamics, other parenting influences such as performance management, and motivation/innovation. Managers need to look out for the downsides because of the mental bias in favor of upside thinking. Normally a preferred option emerges from the evaluation grid presented in figure 5. (Campbell & al. 2000, p.98, 118, 139-141)

3.6 Probability of merger success

Kudla and McInish (1999, p.27-31) have presented a model which generates calculations on the probabilities of success or failure of mergers and acquisitions. It is necessary to evaluate the target's corporate objectives, appraisals of the management, marketing activities and operations. To combine these criteria, Kudla and McInish suggest a weighting system for key corporate elements associated with the merger. The probability of merger success is determined as follows:

$$P = P_z \times P_m \times P_o \tag{8}$$

where P is the probability of merger success, P_z is the probability of achieving corporate objectives, P_m is the probability of marketing success and P_o is the probability of operational success. Each of these measures is subdivided by its most influential components. This model assumes that achieving corporate objectives, marketing success and operational success are independent events, but the process will tie them together. The management must decide what factors to include in the model and assign weights (w's) to those factors on the basis of their importance to the buyer. The ability to identify the key factors and assign them proper weights helps the management to focus on the most important things and it also helps the comparison of the candidates. (Kudla & al.1999, p.27-31)

The next step in the screening process is to correlate the probability outcomes with a merger valuation. This can be made by using the standard investment appraisal techniques, for example, weighted average cost of capital -method (presented in equation 12). The gain from the merger is defined as the difference between the present value of the cash flows for merged firms and the sum of their values if they do not merge:

$$Gain = V_{ab} - (V_a + V_b) \tag{9}$$

where gain is the synergy or gain from the merger, V_{ab} is the value of the combined firm, if the merger is successful, V_a is the value of firm A, and V_b is the value of firm B. To adjust the results of the valuation calculations for the probability of merger success, the following risk adjustment must be made:

$$Adjusted\ Gain = P \times Gain \tag{10}$$

where P is the probability of merger success (from equation 8) and gain is the increase in value from the merger (from equation 9). The merger is recommended if the adjusted gain is higher than the total costs of the merger, which include the premium paid to the target company. (Kudla & al. 1999, p.27-31)

3.7 Earnings and asset-based valuation

3.7.1 Price/earnings ratio

With earnings and asset-based valuation models the earnings and assets are estimated after taking into account any possible changes in the post-acquisition period. The price/earnings ratio (PER, also known as P/E or PE) expresses the relationship between the firm's earnings for equity and its equity market capitalization. (Sudarsanam 1995, p.138-139)

$$\textit{Price/Earnings Ratio} = \frac{\textit{Market value of equity}}{\textit{Earnings for equity}} = \frac{\textit{Share price}}{\textit{Earnings per share}} \tag{11}$$

The PER is often applied by both the bidder and the target during takeover bids to indicate whether the price being offered is generous or deficient. The estimation of target value using the PER model proceeds in the following steps:

- Examine the most recent profit performance of the target and the expected future performance under the current target management.
- Identify the elements of revenue and costs which will rise or decline under the acquirer management.
- Re-estimate the post-acquisition earnings for equity shareholders on a sustainable basis.
- Select a benchmark PER.
- Multiply the sustainable earnings by the benchmark PER to arrive at a value for equity.

(Sudarsanam 1995, p.141-142)

In examining the recent profit and loss accounts of the target, the acquirer must consider the accounting policies accurately and bring those policies into line with the acquirer's policies. The re-estimation should take into account all the possible changes in prices, sales and costs. The benchmark PER may be the target's prospective PER, the PER of the firms comparable to the target, or the average PER of the target sector. When choosing the benchmark PER, its comparability in terms of risk and growth must be ensured, because it is the risk-growth configuration of the target post-acquisition and not its historic profile, which forms the basis of comparison. (Sudarsanam 1995, p.139-144)

The limitations of the PER model are that it estimates the post-acquisition earnings of the target for a single period and it does not recognize the time pattern of the earnings growth. The selection of benchmark PER can also cause problems. Despite these limitations, the model is widely used by the investment community because it provides a valuation based on the capital market consensus view of the value of earnings. (Sudarsanam 1995, p.148)

3.7.2 Comparable companies and transactions approach

In Weston's (2001, p.225-228) approach there are three comparable companies chosen on the basis of their size, similarity of products, age of company and recent trends among other variables. Then for the three companies the ratio of the market value of shareholders' equity to sales, the ratio of the market value of equity to the book value of equity and the PER are calculated. After that the average of these is calculated. With the average ratios the actual data of the target company is adjusted and the result is the average indicated value of equity. This method is presented with examples in table 2 and table 3.

Table 2. Comparable companies -ratios (Weston 2001, p.226)

Ratio	**Company A**	**Company B**	**Company C**	**Average**
Market value /sales	1,2	1,0	0,8	1,0
Market value/book value	1,3	1,2	2,0	1,5
PER	20	15	25	20

In this example it is postulated that the target's sales for a relevant recent time period is \$100 million, the book value is \$60 million and the net income \$5 million. With these figures the estimated market value of the target is \$97 million as shown in table 3.

Table 3. Application of valuation ratios to company W (Weston 2001, p.226)

Actual recent data for target	**Average market ratio**	**Indicated value of equity**
Sales = \$100	1,0	\$100
Book value of equity = \$60	1,5	\$90
Net income = \$5	20	\$100
		Average = \$97

When evaluating a target for merger, it is appropriate to present the data as in the comparable transactions approach, which means that the data would present companies involved in the same kind of merger transactions than the target. In this context, the market value refers to the transaction price in a deal. The premiums paid could be as high as 30%-40% over the prevailing market price. Now the calculations should be made again and compare the new average value to the previous one. Here it is postulated that the premiums over market that were paid caused the ratios to be increased because the companies are now viewed as targets in acquisitions. The market values are now interpreted as the transaction prices that were paid when these companies were acquired. The transaction approach is presented in table 4 and table 5.

Table 4. Comparable transaction ratios (Weston 2001, p.227)

Ratio	**Company TA**	**Company TB**	**Company TC**	**Average**
Market value /sales	1,4	1,2	1,0	1,2
Market value/book value	1,5	1,4	2,2	1,7
PER	25	20	27	24

Table 5. Application of valuation ratios to company W (Weston 2001, p.228)

Actual recent data for target	**Average market ratio**	**Indicated value of equity**
Sales = $100	1,2	$120
Book value of equity = $60	1,7	$102
Net income = $5	24	$120
		Average = $114

The average may be considerably higher due to the acquisition prices. In this case the indicated market value is reflecting a premium of 17,5% over general market valuation relationships. In actual merger or takeover transactions both calculations are useful in evaluating the real value of the target, and it is useful to make additional comparative performance measures as well. (Weston & al. 2001, p.227-228)

3.8 Discounted cash flow valuation

3.8.1 Discounted cash flow model

According to Sudarsanam (1995, p.150) the discounted cash flow (DCF) model applies the following steps:

- Estimate the future cash flows of the target based on the presumptions for its post-acquisition management over the forecast horizon.
- Estimate the final value of the target at forecast horizon.
- Estimate the cost of capital appropriate for the target considering post-acquisition risk and capital structure.
- Discount the estimated cash flows to give a value of the target.
- Add other cash inflows such as asset disposals or business divestments.
- Subtract debt expenses, acquisition costs and other expenses such as tax on gains from disposals and divestments to give a value for the equity of the target.
- Compare the estimated equity value of the target with its pre-acquisition stand-alone value to define the added value from the acquisition.
- Decide how much of this added value should be given away to target shareholders as control premium.

Value drivers are those variables which determine the level of a firm's cash flows, and hence its value to the shareholders. Rappaport (1998, p.41) has identified these key value drivers as the following:

- Sales growth
- Operating profit margins
- Incremental fixed and working capital investment
- Taxes
- The cost of capital
- Forecast period of value growth duration

The bidder's post-acquisition management plan usually aims at modifying these value drivers, so that additional value can be created from the acquisition. It must be realized that changes in driver levels are often interdependent. The weighted average cost of capital (*WACC*), presented in equation 12, is estimated from the target's pre-acquisition costs of equity and debt. If the risk profile of the target changes after the acquisition, the earlier cost of capital has to be adjusted to reflect this change in risk.

$$WACC = K^e \frac{E}{V} + (1 - T^c) K^d \frac{D}{V} + K^p \frac{P}{V} \tag{12}$$

where K^e is the cost of equity, K^d is the cost of debt, K^p is the cost of preference shares, E is the market value of equity, D is the market value of debt, P is the market value of preference shares, T^c is the corporation tax rate and V is the sum of E, D and P, which is the value of the firm (Sudarsanam 1995, p.151-152). The preference shares can also be handled as a part of equity.

Estimating the weighted average cost of capital requires estimation of the costs of the various components of long-term capital, including equity, preference shares and debt. The capital asset pricing model (*CAPM*) may be used to estimate the historic cost of equity. The *CAPM* evaluates the investor-required return as the sum of a risk-free rate and a risk premium based on the overall market risk premium and the risk of the stock in relation to the market. This is the systematic risk, which is measured with beta. Sudarsanam (1995, p.152-153) defines it as follows:

$$\textit{Expected return on stock} = \textit{Risk-free rate} + \textit{Market premium} \times \textit{Beta} \tag{13}$$

$$\textit{Market premium} = \textit{Expected return on the market} - \textit{Risk-free Rate} \tag{14}$$

$$\textit{Beta} = \textit{Sensitivity of stock return to market return} \tag{15}$$

$$= \frac{\textit{Covariance of stock with market returns}}{\textit{Variance of the market return}}$$

Betas are already available for public companies from investment advisory services in different countries. They can be used for private companies, when business activities are similar. When all the individual components of cost of capital have been estimated, they must be weighted by the proportion of each type of capital in the post-acquisition capital structure of the target. (Sudarsanam 1995, p.152-153)

According to Sudarsanam (1995, p.153) the value of the target's free cash flows to the bidder is:

$$TV_a = \sum \frac{FCF_t}{(1+WACC)^t} + \frac{V_t}{(1+WACC)^t} \tag{16}$$

where TV_a is the target's value after the acquisition, FCF_t is the free cash flow of target in period t, and V_t is the terminal value of the target at the time t. The price paid for the acquisition must be lower than this value if the bidder's shareholders wish to receive any gains from the acquisition.

When estimating the value of private companies, the principles are the same as with public companies. Both the PER model and the discounted cash flow model require locating a stock market proxy for the private company. Even if the proxy is well matched with the company, it may not give the right reflection of the target firm. That is why more detailed information is needed and why private company bids are almost always friendly: a friendly takeover gives an easier access to management information and helps the bidder's evaluation. (Sudarsanam 1995, p.156)

3.8.2 Sensitivity analysis

For sensitivity analysis the formula of discounted cash flow (equation 16) is easier to present in a different form. The different formulas give exactly the same numerical result. A widely used equation for free cash flows is:

$$V_0 = R_0\left[m(1-T) - I\right]\sum_{t=1}^{n}\frac{(1+g)^t}{(1+k)^t} + \frac{R_0(1+g)^n\left[m(1-T)\right]}{k(1+k)^n} \qquad (17)$$

using $1+h = (1+g)/(1+k)$, equation 17 becomes

$$V_0 = R_0\left[m(1-T) - I\right](1+h)\left[\frac{(1+h)^n - 1}{h}\right] + \frac{R_0 m(1-T)}{k}(1+h)^n \qquad (18)$$

where V_0 is the value of the firm, R_0 is initial revenues, m is the net operating income margin, T is the tax rate, I is investment as percentage of revenues, g is the growth rate of revenues, k is the cost of capital, n is the number of years of supernormal growth and $1+h$ is the calculation relationship (defined above). (Weston & al. 2001, p.234-235)

Sensitivity analysis of the impact of the size of the value drivers on the valuation can be made with the help of equations 17 and 18. In Weston's (2001, p.235-236) example the starting figures are: R_0=\$1000, m=20%, T=40%, I=10%, g=20%, k=10%, n=3 and $1+h=(1+g)/(1+k)$=1,09091 when V_0=\$1630. Table 6 shows the results of the sensitivity analysis.

Table 6. Sensitivity analysis of varying the value drivers (Weston & al. 2001, p.236)

	k	*g*	*I*	*m*	*n*	*T*	Valuation	2nd term as percent of total
Initial case								
1.	10%	20%	10%	20%	3	40%	$1630	96%
Change g, I, and m:								
2.	10%	15%	10%	20%	3	40%	$1437	95%
3.	10%	20%	15%	20%	3	40%	$1451	107%
4.	10%	20%	10%	15%	3	40%	$1133	103%
Back to initial case, but vary k:								
5.	9%	20%	10%	20%	3	40%	$1852	96%
6.	11%	20%	10%	20%	3	40%	$1449	95%
Back to initial case, but vary n:								
7.	10%	20%	10%	20%	2	40%	$1474	97%
8.	10%	20%	10%	20%	5	40%	$1985	93%
Back to initial case, but vary T:								
9.	10%	20%	10%	20%	3	35%	$1795	94%
10.	10%	20%	10%	20%	3	45%	$1464	98%

In the initial case shown on line 1, the valuation is $1630. On line 2, the growth rate in revenues is reduced and the valuation predictably declined. On line 3 the investment requirement percentage is increased to 15% when the valuation declines because free cash flows are reduced by the higher investment requirements. On line 4 the operating profit margin is lowered and the valuation declines sharply, indicating that the profitability rate is a powerful value driver. On line 5 the cost of capital is reduced when the valuation increases substantially, showing that the cost of capital is another powerful influence. Line 6 indicates that an increased cost of capital has a strong negative influence on the valuation. Lines 7 to 10 show that the impact of the number of periods of supernormal growth, or period of comparative advantage or variations in the tax rate operate in predictable directions. The second term (the present value of the terminal value) in table 6 represents higher proportion of the valuation. This is true in many practical cases, which should alert those who are performing the valuation to be quite careful as to the assumptions made about the factors that affect so-called exit or terminal values. (Weston & al. 2001, p.236)

4 Success evaluation methods

4.1 General about success evaluation methods

Most of the empirical studies concerning the success of mergers and acquisitions can be categorized to financial statement studies, stock market studies, or survey, interview and case studies. Financial statement studies analyze the effects of the acquisition to the acquirer's and the target's balance sheet. Stock market studies analyze the effect of the acquisition by comparing the expected market value of the share and the market value that has come true. The expected market value is calculated with CAPM. Survey, interview and case studies of acquisitions usually analyze the acquirer's management's subjective valuation. Financial statement and stock market studies are emphasize testing the hypothesis of motives and profitableness of economics. Survey, interview and case studies emphasize the augmentation of the knowledge based on the management's experience of acquisitions (Koivistoinen 1989, p.17). A summary of these measures of success, the different methods used and different points of view are presented in table 7.

Table 7. Summary of three methods used in measuring success of M&As (Vaara 1992, p.37)

	Measure of success	**Primary methods used**	**Primary point of view**
Stock market studies	Development of stock prices	Statistical analysis	Shareholders
Financial statement studies	Development of accounting -based indicators	Statistical analysis	Shareholders or managers (depending on indicator)
Survey, interview and case studies	Measured on the basis of assessments of managers	Surveys, interviews, case study methods	Managers

4.2 Financial statement studies

4.2.1 Accounting -based measures

In financial statement studies the problem is to find out the profitability effects of the acquisition. Koivistoinen (1989, p.18-20) presents two main methods which tend to isolate the effects of the acquisition from other factors influencing profitability indexes:

- Matched pair-technique, in which the profitability of the firms taking part in an acquisition are being compared on the basis of size and business to those that do not take part in the acquisition.
- The profitability of the firms taking part in acquisitions is compared to the profitability development of the entire line of business, and no specific matching group is being established.

When studying the effects of acquisitions on the basis of balance sheets, it is important that the period is long enough. This is due to the fact that the effects of acquisitions may appear after several years, especially if the main source of the increased profitability is new investments that are possible because of the acquisition. (Koivistoinen 1989, p.18-20)

The indicators used in the studies have roots in merger and acquisition motives. When considering the market power view of mergers and the efficiency theory, the indicators may be the development of profitability, the development of strategic position and the achievement of functional synergies. The development of profitability describes how the financial performance of an organization involved in a merger changes over time. The development of strategic position shows the major effects of the merger in relation to the competitors, suppliers and customers of the organization. The achievement of functional synergies shows the major effects of the merger in the different functions of the organization. (Vaara 1992, p.43-44)

Vaara (1992, p.44-45) has measured the development of profitability in two ways:

- Earnings before interests and taxes as percentage of turnover
- Return on equity; profit before extraordinary items minus the taxes for the financial period in relation to the average equity; where the average equity comprises the shareholders' equity, reserves, minority interests and valuation items; where the average equity is computed as the average of the beginning and the end of the accounting period

4.2.2 Economies of scale measurement

Kärri (1999) has presented indicators to measure the economies of scale. The indicators are based on costs and production quantity.

$$b = \frac{\ln(C_1 / C_0)}{\ln(q_1 / q_0)} \tag{19}$$

A simpler measure for economies of scale is presented in equation 20.

$$e = \frac{(C_1 / C_0)}{(q_1 / q_0)} \tag{20}$$

where C_1 is the total costs or certain cost item after the merger, C_0 is the total costs of a certain cost item before the merger, q_1 is the production quantity after the merger and q_0 is the production quantity before the merger. If the value of this ratio is below one, there are economies of scale, and if the value is more than one, there are diseconomies.

In a multi-product firm the net sales can be used as the firm's capacity measure instead of production quantity, because net sales describe the firm's practical capacity, not the theoretical one. The total costs are taken from the company's income statements and grouped in the following way:

Net sales
- Material expenses
- External services
- Personnel expenses
- Other expenses
- Capital expenses

= Net income before extraordinary items

(Kärri 1999)

4.2.3 Merger as an investment

Koivistoinen (1989, p.36-37) consideres the acquisition like a normal investment. He defines the acquisition as a success if the value of the target (V_B) will be at least as high as the price paid for the target (P_B).

$$V_B \geq P_B \tag{21}$$

The price to be realized (V_B) means the ex post-value of the target or the maximum price, wherewith the target would be expedient to buy if the realized consequences would be known for the acquirer. The price paid for the target is composed of the purchase price paid for the seller (K) and the transaction costs for the buyer, such as stamp duty and premium (T_B). Now $P_B = K + T_B$. (Koivistoinen 1989, p.37)

The expected value of the company (V_B^e) can be defined with annual net earnings. Although the expected value (V_B^e) and the realized value (V_B) of the company are separated here, there is no clear difference between these concepts. The realized value will come true when all the consequences of the acquisition are realized. This is often impossible to define because the consequences may be distributed over the whole lifetime of the company. The net earnings -based model for expected value of the company is the following (Koivistoinen 1989, p.38-40):

$$V_B{}^e = \sum_{t=1}^{N} \left[\frac{c_{Bt}}{(1+k_B)^t} \right] + \frac{L_B}{(1+k_B)^N} \tag{22}$$

where V_B^e is the expected value of the target for the acquirer, N is the planning horizon, t is some future period, after which the annual net earnings are constantly zero (t may approach infinite), c_{Bt} is the buyer's expected net earnings at period t, k_B is the buyer's earnings demand and L_B is the horizon value of the target at the end of the planning horizon or at the end of period N. The horizon value of the target can be defined with simple net earnings -based model by assuming that net earnings are accrued straight after the planning horizon. (Koivistoinen 1989, p.38-40)

4.2.4 Cash flow measures

Juurmaa (1991, p.78-82) has measured the value creation in acquisitions with the operating cash flow return (OCF) on assets in year t, which measures the cash flow -based earnings before depreciation, interests, taxes and dividends by total assets at the beginning of the year:

$$Operating\ cash\ flow\ return\ on\ assets = \frac{OCF_t}{Assets_{t-1}} \qquad (23)$$

This ratio describes the company's capital utilization. The higher the ratio the better the company uses its capital resources. Juurmaa (1991, appendix 3) has used the following variables to analyze actual performance of target and acquirer groups in the years surrounding acquisitions (table 8).

Table 8. Definitions of cash flow variables (Juurmaa 1991, appendix 3)

Variable	**Definition**
Operating characteristics	
Profit margin	Operating cash flow return as a percentage of turnover
Asset turnover	Turnover divided by total assets at the beginning of the year
Financial characteristics	
Current tax rate	Current taxes as a percentage of operating cash flow returns
Financial leverage	Long-term debt as a percentage of total assets at the beginning of the year
Dividend payout	Dividends as a percentage of operating cash flow returns
Investment characteristics	
Net investment rate	Net investments as a percentage of total assets at the beginning of the year
Employee characteristics	
Employee expense rate	Wages and social costs together as a percentage of turnover

To construct the pre-acquisition performance Juurmaa (1991, p.79) has aggregated the cash flow data for the target and acquiring groups in order to determine the pro-forma pre-acquisition performance measure for the combined group in each of the five years before the acquisition (years –5 to –1). The performance measure for the combined group is the weighted average of the values for the target and acquiring groups separately, where the weights are the relative asset sizes of the two groups at the beginning of each year. The cash flow performance of the post-acquisition group is computed for years 1 to 5. Year 0, the year of the acquisition, is excluded from the analysis because the results for this year are not comparable. Comparing the post-acquisition performance to pre-acquisition benchmark provides a measure of the change in performance.

Because the performance is affected by firm- and industry-specific factors, Juurmaa (1989, p.80-82) uses the industry-adjusted performance of the target and acquiring groups as the primary benchmark to evaluate the post-acquisition performance. Industry-adjusted performance measures are calculated by subtracting the industry mean from the sample group. The data of the sample groups is excluded when calculating the industry average.

Prior to the acquisition, industry values for the sample groups are constructed by weighted performance measures for the target and the acquiring groups' industries by the relative asset sizes of the two groups at the beginning of each year. In post-acquisition years the target and acquirer industry cash flow measures are weighted by the relative asset sizes of the two groups one year before the acquisition. Industry-adjusted numbers are the difference between the values for the group and its weighted average estimates (Juurmaa 1989, p.81-82):

Average industry-adjusted change of cash flow = (24)

$$\frac{1}{N}\sum_{i=1}^{N}\left[\frac{1}{n}\sum_{t=1}^{n}\left(X_{AB_t}-\left(w_A I_{A_t}+w_B I_{B_t}\right)\right)-\left(w_A\frac{1}{k}\sum_{t=-k}^{-1}\left(X_{A_t}-I_{A_t}\right)+w_B\frac{1}{k}\sum_{t=-k}^{-1}\left(X_{B_t}-I_{B_t}\right)\right)\right]$$

where N is the number of combined groups, n is the number of post-acquisition cash flow years, X_{ABt} is the value of the cash flow variable X of the combined group AB in year t, w_A is the weight of values of group A or total assets of group A at the beginning of the year before the acquisition divided by the total assets of the combined group AB at the beginning of the year before the acquisition, I_{At} is the industry average of group A's industry in year t, k is the number of pre-acquisition cash flow years, X_{At} is the value of the cash flow variable X of group A in the year t, w_B is the weight of values of group B or total assets of group B at the beginning of the year before the acquisition divided by total assets of the combined group AB at the beginning of the year before the acquisition, X_{Bt} is the value of the cash flow variable X of group B in the t and I_{Bt} is the industry average group B's industry in year t.

4.3 Stock market studies

Stock market studies are based on the forecast of the market value that would have come true without the acquisition. The difference between the expected and the realized market value is the prediction error, which is assumed to expose the effect of the acquisition in the market value. The use of this method requires that the development of the stock market can be reliably predicted. The prediction is usually made with the *CAPM* -based market model but it can also be made with the mean adjusted return method or the market adjusted return method. For most cases these three methods yield similar results (Weston 2001, p.171). The prediction error is calculated at the chosen time period with cumulative average residual (*CAR*), usually around the time when the first public announcement of the merger is made (Koivistoinen 1989, p.22-27).

The stock value can be measured with the abnormal returns method, which compares the returns to shareholders of both bidders and targets during the takeover announcement (event period) to 'normal' returns from a period unaffected by the takeover. The abnormal return (*AR*) is

$$AR = R - E(R) \tag{25}$$

where R is the actual return measured during the event period and $E(R)$ is the benchmark return expected without that event. Measuring R requires the calculation of share price changes and dividends paid during the event period. $E(R)$ can be estimated using share price and dividends from the 'estimation period', which may be for example one or two years, ending two months before the announcement. (Sudarsanam 1998, p.214-221)

A common model for estimating the benchmark returns is the 'market model', which measures the relationship between the return of an individual stock and the return on the 'market':

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it} \tag{26}$$

where R_{it} and R_{mt} are the returns during t (a day or a month) on company i's stock and on broad-based stock market index proxying for the market. α is the intercept and β is the systematic risk. e_{it} is a random error, which averages out to zero. α_i and β_i are estimated by running a regression of R_{it} and R_{mt} over an appropriate estimation period. The estimated parameters are then used to calculate normal return $E(R_i)$ for each company i. The abnormal return can be presented with equations 27 and 28.

$$AR_{it} = R_{it} - E(R_i) \tag{27}$$

$$AR_{it} = R_{it} - \{\alpha_i + \beta_i R_{mt}\} \tag{28}$$

If the takeover creates value, then AR will be positive, and it will be zero if the effect of the takeover is neutral. (Sudarsanam 1998, p.214-216)

4.4 Survey, interview and case studies

In survey, interview and case studies more detailed and more diversified information about the acquisitions is collected from the management than is available for the public. (Koivistoinen 1989, p.27)

Vaara (1992, p.45) has used three indicators in his study to analyze the success of mergers concerning mergers and acquisitions between Finland and Sweden 1981-1991. The development of profitability is measured with information based on the balance sheet, and the development of strategic position and the achievement of functional synergies are studied with information based on interviews. The strategic position of an organization may change in different ways in relation to its competitors, suppliers and customers. That is why it is reasonable to examine the success of a merger along these dimensions:

- In relation to competitors; any significant change in the strategic position of an organization in relation to its current or potential competitors
- In relation to suppliers; any significant change in the strategic position of an organization in relation to its current or potential suppliers
- In relation to customers; any significant change in the strategic position of an organization in relation to its current or potential customers

The achievement of synergistic benefits may vary in the different functions of an organization. That is why Vaara (1992, p.45-46) has used five different functional synergy types in interviews:

- Marketing synergy; any significant improvement in the performance of an organization resulting from the shared use of tangible or intangible resources in the marketing function
- Production synergy; any significant improvement in the performance of an organization resulting from the shared use of tangible or intangible resources in the production function

- R&D synergy; any significant improvement in the performance of an organization resulting from the shared use of intangible or tangible resources in the R&D function
- Financial synergy; any significant improvement in the performance of an organization resulting from the shared use of tangible or intangible resources in the finance function
- Management synergy; any significant improvement in the performance of an organization resulting from the shared use of tangible or intangible resources in the management function

4.5 Problems of measuring the success of mergers

Criticism against traditional financial statement studies has been hard. It has been said that they do not take into account the objectives of the owners, and that the long time period required makes it possible for other factors to influence the profitability. (Koivistoinen 1989, p.18-20)

Stanton (1987, p.293-304) has presented that the rates of return in post-merger analysis may vary. The differences in the rates of return are due to the methods by which the merger was financed and not to any differences in the efficiency between the companies.

Measuring the success of mergers in not simple. It is clear that there are many standpoints for merger success and all parties consider the situation from their own point of view. Although the merger could be considered as a success by some stakeholders it might not be that for all of them. In chapter 5.3 the representatives of Finnish forest industry share the opinion on this issue. The most significant problem related to measuring the merger success at every standpoint is the fact that it is not possible to know what is a consequence of the merger and what would have happened if the merger had not occurred.

5 Evaluation of mergers and acquisitions with interviews

5.1 Background information on the firms

5.1.1 Stora Enso

Stora Enso is one of the leading forest industry companies of the world. The main products range from sawn softwood to top-class multicolor printing paper (and almost everything in between). The group's comprehensive selection currently includes press selection, a new product portfolio for publication papers, graphic products, office papers, packaging boards, specialty papers, pulp, timber, forest and other special products. (Stora Enso 2001)

In year 2001 the company's turnover was 13,5 billion euros, and the paper and board capacity was ca 15 billion tons per year. The company has ca 43 000 employees over 40 countries and it's shares are quoted in the Helsinki, New York and Stockholm stock exchanges. (Stora Enso 2001)

Stora Enso was established when STORA of Swedish origin and Enso of Finnish origin decided to merge. The boards of directors of STORA and Enso approved the merger on June 2, 1998, an extraordinary general meeting of Enso's shareholders approved the merger in July 1998 and the European Union competition authorities approved the merger on November 25, 1998. About a month later Stora Enso began its operation. After that Stora Enso has acquired Consolidated Papers Inc., which was combined with Stora Enso in August 2000. (Stora Enso 2002)

5.1.2 UPM-Kymmene

As Stora Enso, also UPM-Kymmene is one of the leading forest product companies in the world. The company's businesses focus on printing papers, converting materials and wood products. The company has production in 17 countries and an extensive sales network comprising over 170 sales and distribution companies. (UPM-Kymmene 2001)

UPM-Kymmene's turnover in 2001 was nearly 10 billion euros and it employs over 36 000 people. The paper production capacity in 2001 was 11,8 billion tons per year. UPM-Kymmene's shares are quoted on the Helsinki and New York stock exchanges. (UPM-Kymmene 2001)

UPM-Kymmene was established in autumn 1995 when Kymmene Corporation and Repola Ltd and its subsidiary United Paper Mills Ltd decided to merge. The new company started its operations on 1st May 1996. The present UPM-Kymmene Group comprises of approximately 100 production facilities, which were originally functioning as independent companies. Among others, the following companies have been merged to the group: Kymi, United Paper Mills, Kaukas, Kajaani, Schauman, Rosenlew, Raf. Haarla and Rauma-Repola's forest industry operations. (UPM-Kymmene 2002)

5.1.3 M-real

M-real is part of the Metsäliitto-group, which is a complex forest product organization. In addition to M-real, the Metsäliitto-group is formed of Metsä-Botnia, Metsäliitto Cooperative and the Finnforest-group. The organization is presented in figure 7 below. Metsäliitto Cooperative is the main corporation of the whole group. Metsäliitto-group is a Finnish group, which focuses on wood business and forest industries. The group operates worldwide. (Metsäliitto 2001)

The turnover of the whole Metsäliitto-group in 2001 was ca 10 billion euros, that of M-real 6,9 billion euros, Metsä-Botnia 1,2 billion euros, Metsäliitto Cooperative 1,0 billion euros and the Finnforest-group 1,4 billion euros. The group employs ca 31 500 people, for which 10 000 work in Finland. (Metsäliitto 2001)

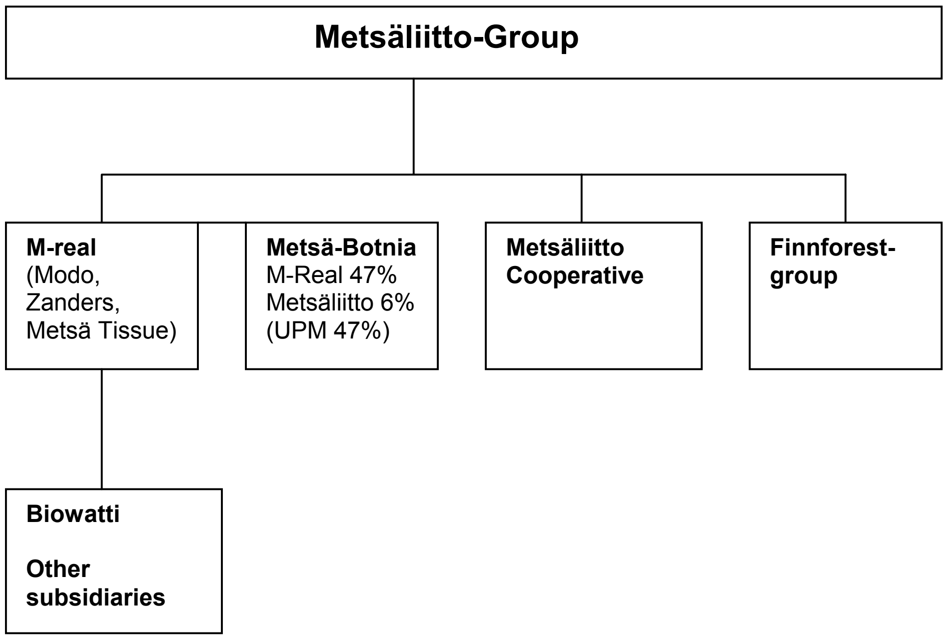


Figure 7. Metsäliitto-group organization (Metsäliitto 2001)

M-real focuses on coated and uncoated fine papers and high quality magazine papers, as well as on packaging boards for consumer products. At present, M-real's annual paper and board production capacity is 6,1 million tons and it employs ca 21500 people. M-Real's and Metsä-Tissue's shares are quoted in Helsinki stock exchange. (M-real 2001)

M-real was formerly known as Metsä-Serla. The new company was formed when Metsä-Serla in 1996 acquired 50% of the German manufacturer MD Papier, in 1997 Biberist in Switzerland, in 1999 UK Paper in Britain, in 2000 Modo Paper in Sweden, and in 2001 Zanders in Germany. In 2001 all the acquired companies were bound under the name M-real. (M-real 2001)

5.2 Data collection

The objective of this part of the study is to survey the methods which the Finnish forest companies presented in chapter 5.1 use and have used in evaluating the success of mergers and acquisitions. The interviewees were also asked about the matters affecting the success of mergers and acquisitions, because these matters are significant when considering the evaluation methods.

The people interviewed represented the strategic management of the studied companies as follows:

- Senior Advisor to CEO, Stora Enso
- President of Industry and Environment Department, Metsäteollisuus Ry
- Senior Vice President, Strategic Development and M&A, UPM-Kymmene
- President of Packaking Materials, UPM-Kymmene, (-2000)
- Professor, D. Tech., Lappeenranta University of Technology, Vice President of the Board of United Paper Mills (-1988), Board member of Kajaani (-1987)
- Associate Principal, Jaakko Pöyry Consulting Oy
- Vice President of Business Development (Strategy), M-real

The above persons represent the Finnish forest companies' view on the valuation of success of mergers and acquisitions in Finnish forest companies. The duration of the interviews varied from 45 minutes to one and a half hours. A typical interview lasted approximately one hour. The interviews were made in May and June 2002. More detailed information about the interviews is presented in Appendix 1.

The interviews were recorded with a mini disc-recorder to make it possible for the researcher to concentrate fully on the interview and its control. The interview reports were transcribed as soon as possible after the interviews, so the interviews and ideas concerning them were documented as accurately as possible. The interviews followed the framework presented in Appendix 2.

5.3 Research results

5.3.1 Motives and change forces

The aim of the first two questions was to survey the factors influencing the increased pace of merger activity. The factors were considered from different standpoints.

Question 1. What are the most important motives for acquisitions and mergers in forest industry?

The interviewees considered the most significant driver for mergers and acquisitions to be the consolidation of the forest industry. Even though consolidation can be seen as an external force, the interviewees considered it both as a motive and as a change force. The size itself, economies of scale and bigger market share were also considered as important motives for mergers and acquisitions.

The consolidation of the forest industry was considered as a major factor behind M&As for several reasons:

- The forest industry is still quite fragmented worldwide and consolidation aims at making the whole industry more profitable.
- Consolidation should lead to more disciplined investments and price determination.
- Consolidation should reduce the cyclical nature of the industry.
- Consolidation affects also through competitors and clients. When they are growing, it is necessary to grow with them.
- Finnish forest companies want to be among the biggest forest industry companies in the world, and so it is necessary to grow.
- Consolidation also makes it easier to rationalize the industry. There has been overcapacity at certain sectors and the rationalization aims at reducing this capacity.

The interviewees considered the size as an important motive partly because of consolidation. The companies consider it important that the supplier is in the same size category as the clients. Size brings also other advantages:

- Investment planning is easier in a bigger corporation.
- The capability of carrying risks increase.
- Maintaining a global marketing network as well as maintaining R&D-activities requires a certain critical mass.
- Size brings also economies of scale, which means possible synergy advantages.
- Overlapping activities can be rationalized, which enables lower unit and total costs.
- It also makes it easier for Finnish forest industry firms to operate in high cost level countries.

The interviewees mentioned a few reasons why getting a bigger market share was a significant motive for mergers and acquisitions:

- With mergers and acquisitions getting a bigger market share is easier and quicker than with organic growth.
- Capturing market shares is inevitable because export is not adequate and clients require local manufacturing in their home countries partly for logistic reasons and minimizing their own risks.
- Global clients often require a global producer.
- Mergers and acquisitions may also be motivated by the desire to be a market leader at a certain sector.

The interviewees thought also that it is necessary for Finnish forest companies to grow geographically near raw material resources. Besides the availability of raw material also its price was considered to be a factor influencing the direction of geographical growth. It was also considered that a global network is an advantage because the products may vary temporally in different geographical areas, which also decentralizes the cyclical nature of the forest industry.

Question 1a. How do the motives of the forest industry differ from other industries?

For this question there were no specific answers. The interviewees' opinion was that the motives are quite the same in every industry. Only thing that ascended from the discussion concerning this question was the consolidation. It was said that forest industry is more fragmented than many other industries so the consolidation has more effect on merger activity in forest industry than in many other industries at the moment.

Question 2. Which forces have affected the activity with mergers and acquisitions?

Besides consolidation, globalization was considered to be a significant driver. As other change forces the interviewees mentioned rationalization of the forest industry, state of the economy, clients, raw materials and capital markets.

Consolidation and rationalization of the industry, clients and raw materials were already discussed as motives for mergers and acquisitions, so here focus is on other change forces. The state of economy was said to affect mergers and acquisitions as it affects all kinds of investments. Also other issues having a major influence on mergers and acquisitions concerning the capital market, were mentioned:

- The big investors invest on big companies because profitability has already improved and it is expected to improve further due to the consolidation.
- The investors are against that kind of new investments which will lead to overcapacity and bad profitability. This means that most firms consider it more advantageous to acquire capacity with M&As.
- Also easy availability of financing may further the activity for M&As.

Question 2a. How extensive are the change forces in forest industry compared to other industries?

As in question 1a, the only answer to this question seemed to be the consolidation of the forest industry. This supports the impression of how enormous an effect the consolidation has on mergers and acquisitions in forest industry currently. It is not obvious whether the consolidation is the cause or the consequence of the mergers. In the interviews it was considered to be significant because it was important to grow with competitors and also because of the benefits that it brings. The most important benefits seem to be making the whole industry more profitable.

5.3.2 Target valuation

The objective of this thesis is to focus on the evaluation methods which measure the success of mergers and acquisitions. This part deals with issues affecting the selection of the target company and evaluation of the candidate firms.

Question 3. What are the factors influencing the selection of the target company?

The most significant matter affecting the selection of the target company according to the interviewees is the target's compatibility to the firm's strategy and how it fits to existing business activities. As one of the interviewees said:

"The firm has to identify its own strategy or what do they want to do. From that ensue all consequences."

An issue all the interviewees wanted to point out was that the acquisition has to be connected to the firm's strategic planning and strategic objectives, and the M&A planning is not just about looking for a cheap deal but to changing the strategic position into a more favorable direction. It was also pointed out that the acquisition is not worthwhile if there is no other logic than to get more sales, which means that the target company has to bring something else to the company so 1+1 is more than

2. The firm's product strategy was also considered very important. The firm has to know where they want to be, where the market is and what position is wanted. This all has to come through strategic analysis. If they want to go to some direction the next question is how: to build new lines or to acquire them. If the firm decides to acquire new capacity then they have to check what is available and make specific comparisons of the possible combinations.

The valuation criteria was said to depend on the motives of the firm. Strategic compatibility is always important but other possible points affecting the selection of the target company were mentioned:

- Market position and geographical focus: If the firm desires a bigger market share in a specific area, that is naturally a major factor influencing the selection of the target company.
- Asset quality: When selecting the target it is also important to check if the target is technically and by its resource and investment needs in the kind of condition that it is possible to utilize it with core competences.

The transaction was considered to be sensible if the target is more profitable and more efficient after the acquisition. The prospect and possibilities often have a greater impact than the present situation. The present situation is beneficial because the calculations about the possible synergies and savings are based on the information available at present. One of the interviewees clarified the main idea of selecting the target company as follows:

"All the time the target's situation has to be compared against own strategic background or what our company wants to do and how much of that wanted position is achieved with this acquisition."

Price was not the main issue in selecting the target company, according to the interviewees. It was said that the price may have an influence due to the state of economy but that it affects mostly the timing of an acquisition. The price was said to be composed of the value of the target and the possible synergies and possibilities that the acquisition may have.

Question 4. How was the profitability of the merger/acquisition evaluated in advance?

The success of the mergers or acquisitions was said to be estimated in advance mostly with synergy analysis, which makes the basis for the value determination of the target. Also discounted cash flow valuation is widely used in Finnish forest companies. The discounted cash flows include synergies and possibilities and they can be modified with sensitivity analysis, which takes into account also the external factors. The interviewees found it problematic that the market situation might be very difficult to estimate in advance. While strategic compatibility was considered to be the most significant issue the calculations were also considered to be significant. Most of the differences were on how the connection between strategy and calculations were pointed out:

"The valuation is more on the strategic side: this is how we will become the leader at this sector."

"The compatibility of the acquisition with our strategy is more important than short term profitability. Profitability issues more from the right strategy than vice versa."

"The kind of acquisition that is characterized as a strategic move is unsuccessful. If the advantages can not be quantified, it is not worthwhile to be accomplished."

The targets are also evaluated with market value at a certain period or earnings and assets -based calculations. Scenario analysis is also in use. The firms make the best, the most likely and the worst possible scenarios to help in the decision-making. Both the calculations and the strategy in most cases are said to have an effect on the price paid:

"The value of the target is defined with cash flows, but what is the price that the firm wants to pay includes more strategic thinking."

Question 4a. How well do the methods fit to forest industry?

The interviewees seemed to be unanimous about the opinion that discounted cash flow is the most appropriate method for evaluating the target in advance. But still there seemed to be doubt about a priori calculations. This is most likely due to the fact that external conditions may change so much that they cannot be observed in advance. But whether there were doubts or not the interviewees were also unanimous about the fact that the calculations should be made both in advance and afterwards.

Question 4b. What role do the investment banks have?

The answers to this question were quite similar. Investment banks are used in the acquisition process as advisors because they know the market and they are able to convince the analysts about the advantages of the transaction. They also make detailed calculations for firms and they usually take part in the due diligence process. If a firm wants an independent opinion or estimation about a possible target, the investment banks are the ones to give them. The investment banks were considered to be a valuable tool at the pre-screening process. But still the interviewees shared the opinion that the management has better intuition of the industry's development, which may count more in the decision making process.

5.3.3 How success is measured

This part of the study is the main emphasis of the whole thesis. The aim was to survey different methods used in measuring the success of mergers and acquisitions in Finnish forest companies.

Question 5. How is the success of the merger/acquisition measured afterwards?

Measuring the success of the mergers and acquisitions was considered to be important but difficult. Post-merger evaluation requires detailed pre-merger objectives. The interviewees defined the success of the mergers as getting what was wanted. So the post-merger evaluation was said to be about knowing the starting point, imagining the savings and observing them to be realized. A public company has to announce before the merger what the estimated benefits from the merger are. This will assure the analysts and shareholders about the justification of the transaction. When the pre-merger estimations are made it is important to observe the situation. This was considered to be important also because the firm has to maintain its credibility in front of shareholders and analysts. In the interviews two standpoints were separated: management's standpoint and shareholder's standpoint.

The evaluation methods varied slightly in the studied firms. From the management's standpoint the success was said to be evaluated at least by comparing the cost structure of the units before and after the merger. The synergy benefits were considered quite obvious when the headquarters are united but in other cases it might be difficult. The synergies are also estimated at least verbally case by case if calculations are considered to be too complicated. The important point here is to see what can be learned considering the next transaction. The post-merger calculations cannot be 100% correct, but they are considered more as tools for the management, and it is important that everybody sees that they are observed. Usually the management observes the situation for one to three years and then the merger process is considered to be over.

From the shareholders' point of view the situation can look different. The interviewees speculated that the market obviously does not have faith in the forest industry mergers because the merger announcement usually has a negative impact on the stock prices. The interviewees were quite unanimous about the fact that when observing the merger success on the basis of stock prices it is important to have a time period that is long enough. Getting the synergy benefits from the merger may take a few years. For shareholders the total profitability is the most important not one transaction. This is why all the companies do not see a reason to separate the merger profitability from the total profitability. As was said:

"Thinking back, the history is not so important, or which piece came from where."

Question 5a. What kind of problems may occur in measuring the merger success afterwards?

There are certain difficulties in measuring the post-merger performance. The main issue pointed out in these interviews was that measuring is difficult because the 'other future' cannot be known. This means that it is not certain that the benefits result straight from the merger. The external factors change dynamically, which creates uncertainty about the merger benefits.

"The situation changes from that day and also the external conditions change, so unfortunately no scientifically qualified post-merger calculation can be made."

5.3.4 Sources of value

If the success of mergers and acquisitions is meant to be measured it is also important to know where the value rises from.

Question 6. Which are the most significant sources of value in forest industry M&As?

In the interviews several sources of value were mentioned. These were:

- Synergies
- Ensuring client contacts
- Availability and price of raw material
- Decreased cyclical nature of the industry

- Best practices

According to the interviewees the most valuable sources of value increase in forest industry mergers and acquisitions were said to rise from synergies. If the post-merger integration is handled well then the synergies are fulfilled. This includes personalization of the production capacity, and rationalization and optimization of the capacity, which should lead to increase in cost competitiveness. With right management the operative efficiency can be improved, which will influence profitability directly. The efficiency may also be increased by sharing best practices. This means that knowledge and know-how are transferred between firms, so that the most efficient practices can be applied.

Also ensuring the client contacts was considered to be extremely valuable. When the firm grows, the orders from clients usually increase, and in cross-border mergers the risks of the clients decrease, which will lead to increased orders. It is also significant to major clients to have a producer who has activities in every continent. Also logistics has a great influence on profitability. If there are activities worldwide the cargo and storage costs may decrease significantly. A worldwide network brings benefits also in purchasing. The availability and price of raw materials may be better for bigger, multinational firms.

The consolidation of the entire industry was pointed out in this section of the interview as well, because it was said to have a great impact on the profitability. Earlier the forest industry has been too fragmented, heterogeneous and therefore cyclical. As mentioned above, consolidation should lead to more disciplined investments and price determination. The whole industry aims at a smoother course, which requires reducing the cyclical nature of the industry with consolidation.

In some interviews also the shareholders' point of view was mentioned. The greatest value increase to shareholders should come through better profitability, and dividends, and it should be reflected in the stock prices. It was considered to be extremely important that there are no surprises. Many changes can be anticipated and therefore taken into account in plans. If the firm has an understandable story, which is based on clear industrial logic and it starts to come true, then the transaction will create value to the stakeholders. One of the interviewees said:

"Unpleasant surprises are opposites of value creation. In other words value creation is a matter of trust."

5.3.5 Why do mergers succeed or fail?

There are many reasons why mergers can succeed or fail. Here the view of the Finnish forest companies concerning mergers and acquisitions in forest industry is presented. The role of the employees is discussed in this context, as well.

Question 7. Employees' reaction and role in mergers/acquisitions?

In general the interviewees shared the opinion that employees have a significant role in mergers. It was said that it is easier to motivate employees in a growing company. Even though there is no progress there is always rationalization. So in this way the growth gives employees a sense of security. But also another point of view was mentioned: it is a human aspect that nobody likes a change. The interviewees thought that this is a great challenge for the acquiring company to manage the situation well, because the employees are in a key position in getting the benefits from mergers and acquisitions. Training, sharing information, cooperation and benchmarking were mentioned to be important. The vision, mission and values of the new company have to be gone through with employees so that they internalize them and are committed to them.

Question 8. What are the key factors to a successful merger/acquisition?

There are several criteria for the success of a merger or an acquisition according to the interviewees. The issues discussed at this section were:

- Making the merger succeed requires compatibility of the transaction to the firm's strategy. The buyer has to know exactly why the acquisition is made. This means that the strategic objectives of the acquisition have to be clear.
- The due diligence process is important so that strategic compatibility is assured. A detailed exploratory study and a detailed plan make it possible to act quickly, which has a great influence on success because the transition period is always inefficient.
- Getting an appropriate team to manage the post-merger process is essential. The team can influence the schedule as well as finding the solidarity in the new firm. The management has to reorganize the whole company and set new goals and values to the employees.
- The organizational culture may affect the merger success strongly. Although the culture might be crucial for the merger success, it is extremely hard to anticipate. The employees' attitude depends on their prejudice and the size of the merging companies.

One of the interviewees clarified the idea of takeover as following:

"The takeover should happen on the other hand in a friendly atmosphere but on the other hand very strongly. It is not worthwhile to make any compromises."

Question 9. Which factors may cause the failure of a merger/acquisition?

The reasons for merger failures are quite the same as for merger success, naturally in case the qualifications for success do not come true. The reasons for merger failure according to the interviewees were:

- External factors may cause the merger to fail. When broadening activities to new geographical areas, the cultural issues as well as the political situation may cause problems.
- Changes in the market situation are hard to predict.

- Unclear plan and failure in reorganization may lead to losing the know-how and competent staff.
- One reason for merger failure may also be that the price paid is too high. This will lead to losing the synergy benefits.

The main thing pointed out in the interviews was that success or failure depends on so many factors that one factor does not have a crucial impact. It was also said that the failure or success also depends on the standpoint. Most firms consider that their mergers and acquisitions have been good transactions, but still analysts say that almost all mergers have failed because the shareholder value has not increased. It was mentioned that this might have something to do with the fact that usually the studies concerning changes in stock prices are for a short time period. As said before, it may take a couple of years until the benefits are fulfilled. Another point of view was that the management does not want to admit that they have failed.

5.3.6 The prospects of mergers and acquisitions in forest industry

As a final question in the interviews the interviewees were asked about the future development of the forest industry.

Question 10. Future development?

The future of the forest industry seems quite clear concerning mergers and acquisitions. The consolidation of the industry will continue because in spite of recently increased merger activity the industry is still fairly fragmented. Especially cross-border mergers and acquisitions will increase because at certain areas and sectors the competition authorities restrict expansions. In general the development will be more global but the growth will depend on each company’s own strategy. In general the interviewees thought that expansion will happen primarily focusing on core competences, but vertical integration is not completely out of the question. But again it is all about the firm’s strategy.

6 Evaluation of merger success with numerical analysis

6.1 Changes at PPI's Top 150 list

This chapter gives a view to annual ranking list of Pulp and Paper International (PPI). In every year PPI lists 150 biggest forest industry companies of the world based on sales and earnings. Here the rankings are presented from 1993 to 1999. Unfortunately more recent information was unavailable. The time period in question includes both UPM-Kymmene and Stora Enso mergers, so the effects of mergers can be seen from the development of the rankings.

In table 9 the rankings of Finnish forest companies are based on sales and in table 10 on earnings.

Table 9. PPI's rankings based on sales

	1993	1994	1995	1996	1997	1998	1999
Stora	6	8	10	10	11		
Enso	33	23	14	13	14		
Stora Enso						5	5
UPM	24	20					
Kymmene	23	10					
UPM-Kymmene			4	5	6	6	7
M-real	44	42	34	29	23	19	18

Table 10. PPI's rankings based on earnings

	1993	1994	1995	1996	1997	1998	1999
Stora	5	3	3	11	11		
Enso	20	6	4	10	10		
Stora Enso						20	4
UPM	8	5					
Kymmene	23	10					
UPM-Kymmene			2	3	1	2	3
M-real	36	36	30	32	25	17	12

These tables show how the Finnish forest companies have changed their position compared to other worldwide competitors. When looking the rankings it seems that all the studied companies have managed very well. All the companies have improved their positions. Both UPM-Kymmene and Stora Enso have improved their ranking after the merger significantly. In the earnings -based rankings the situation is same for UPM-Kymmene but Stora Enso's position declined considerably in year 1998, which is the year the merger occurred. This may be due to a lot of reasons, for example inefficiency during the merger process, as Stora Enso improved its placing notably next year.

Drawing some conclusions on the basis of PPI's rankings, it seems that the mergers between Kymmene and Repola and between Stora and Enso improved their positions in this list and they are among the biggest forest industry companies in the world. Without mergers their way to this point would have been harder and slower. M-real's position has also improved considerably, but it is still out of the top ten.

6.2 Traditional accounting based indicators

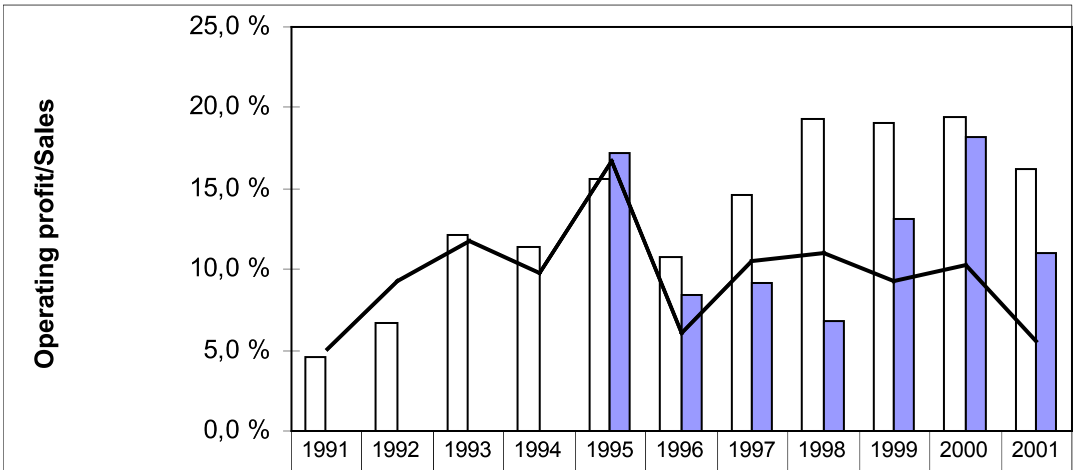
6.2.1 General about the evaluation

In this chapter the evaluation of the mergers of Finnish forest companies is done with two basic accounting -based indicators, which Vaara (1992) has used in his research: operating profit as a percentage of sales, and return on equity. Also other indicators, which Juurmaa (1991) has classified as cash flow measures, are discussed here, because they are not purely based on cash flows: net investment rate, financial leverage and employee expense rate.

In the following the values for UPM-Kymmene for the years 1991-1993 are calculated by combining Kymmene's and United Paper Mills' figures and for the years 1994 and 1995 by combining Kymmene's and Repola's figures. UPM-Kymmene's development is studied five years before and after the merger, and the year 1996 is deducted because the merged company started its operations on May 30th 1996. Juurmaa (1991) has also studied the development of indicators in a similar time period. The values for Stora Enso for the year 1995 are Enso's figures and the values for the years 1996 and 1997 are calculated by combining Stora's and Enso's figures. Stora Enso's development is studied three years before and after the merger, and the year 1998 is deducted because Stora and Enso merged in 1998. For Stora Enso the values are calculated for only three years before and after the merger because it is appropriate to study the development for the same time period before and after the merger. The values for M-real are calculated for the years 1991 to 2001, so the values for UPM-Kymmene and Stora Enso can be compared to them for the whole studied time period.

6.2.2 Operating profit

Here the operating profit is defined as earnings before financing, taxes, minority interests and extraordinary earnings and expenses. The indicator used here is defined as operating profit as a percentage of sales.



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
UPM-Kymmene	4,6 %	6,6 %	12,1 %	11,4 %	15,5 %	10,8 %	14,7 %	19,4 %	19,0 %	19,4 %	16,3 %
Stora Enso					17,2 %	8,4 %	9,2 %	6,9 %	13,2 %	18,2 %	11,0 %
M-real	5,1 %	9,3 %	11,7 %	9,8 %	16,7 %	6,0 %	10,5 %	11,0 %	9,3 %	10,2 %	5,6 %

Year

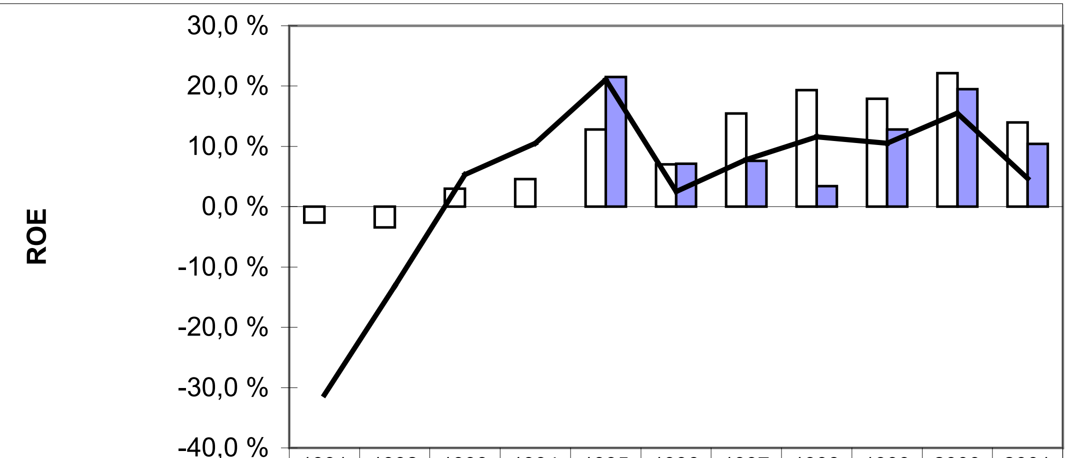
Figure 8. Operating profit as a percentage of sales

When examining merger success with operating profit as a percentage of sales it seems that both UPM-Kymmene and Stora Enso have improved their operating profit per sales figure after the merger. The average pre-merger operating profit per sales of UPM-Kymmene is 10,1% and the post-merger average is 17,6%. Stora Enso's average pre-merger operating profit per sales is 11,6% and the average post-merger ratio is 14,1%. Their development according to this figure has been better as M-real's, whose average ratio for the years 1991 to 2001 is 9,6%.

6.2.3 Return on equity

Here the return on equity (*ROE*) is defined as follows:

$$ROE = \frac{\textit{Profit before tax and minority interest - taxes}}{\textit{Equity + minority interests}} \qquad (29)$$



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
UPM-Kymmene	-2,6 %	-3,4 %	3,0 %	4,6 %	12,8 %	7,0 %	15,5 %	19,3 %	17,9 %	22,1 %	14,0 %
Stora Enso					21,5 %	7,1 %	7,6 %	3,4 %	12,8 %	19,5 %	10,4 %
M-real	-31,2	-13,1	5,3 %	10,5 %	21,1 %	2,5 %	7,8 %	11,6 %	10,5 %	15,5 %	4,7 %

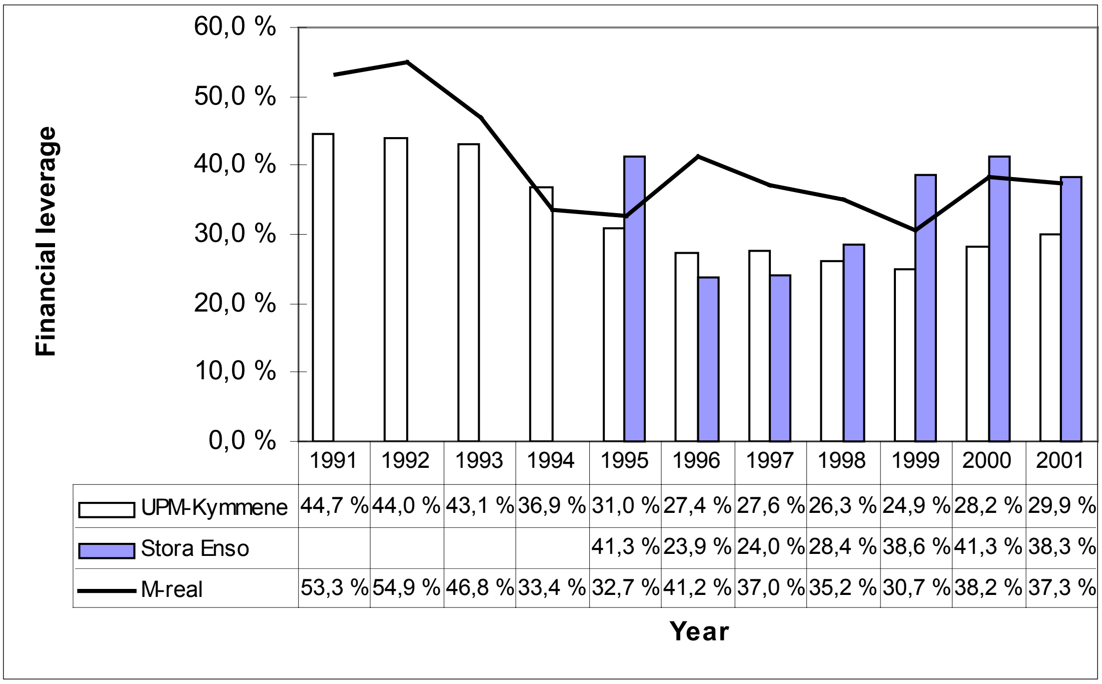
Year

Figure 9. Return on equity

The return on equity -figure gives the same kind of results as operating profit per sales. Both UPM-Kymmene and Stora Enso have improved their ROE figure after the merger. UPM-Kymmene's average pre-merger ROE is 2,9% and the post-merger average is 17,8%. Respectively Stora Enso's average pre-merger ROE is 12,1% and the average post-merger ROE is 14,2%. M-real's average ROE for the years 1991 to 2001 is 4,1%, which is lower than Stora Enso' and UPM-Kymmene's averages. All these firms seem to follow a similar trend, which may be due to external factors. Especially years 1995 and 2000 seem to have been good years for all the companies.

6.2.4 Financial leverage

Here the financial leverage is defined as long-term debt as a percentage of total assets. If the financial leverage ratio increases, it means that mergers are means of increasing financial leverage. It can also be considered that if the financial leverage decreases after the merger, the company has been able to reduce its long-term debt while its assets have grown.



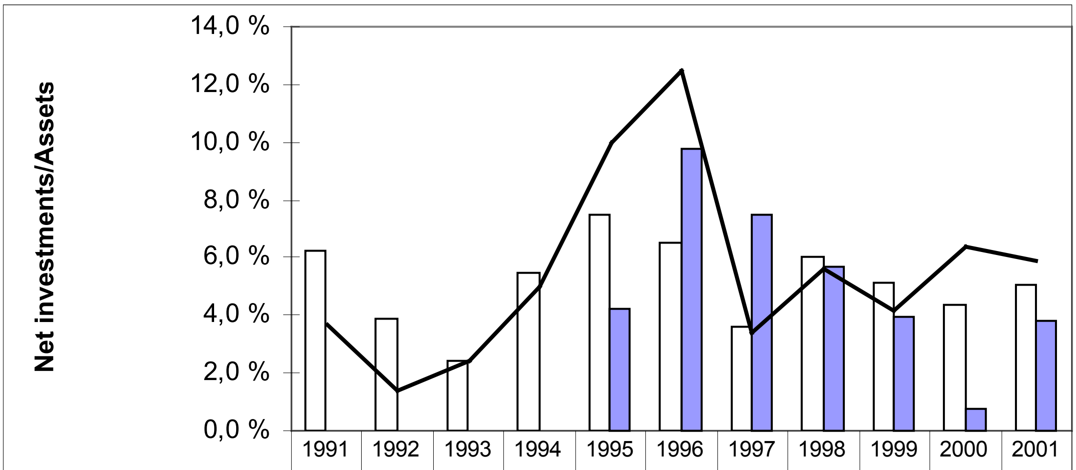
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
UPM-Kymmene	44,7 %	44,0 %	43,1 %	36,9 %	31,0 %	27,4 %	27,6 %	26,3 %	24,9 %	28,2 %	29,9 %
Stora Enso					41,3 %	23,9 %	24,0 %	28,4 %	38,6 %	41,3 %	38,3 %
M-real	53,3 %	54,9 %	46,8 %	33,4 %	32,7 %	41,2 %	37,0 %	35,2 %	30,7 %	38,2 %	37,3 %

Figure 10. Financial leverages for the years 1991-2001

UPM-Kymmene has decreased its financial leverage ratio after the merger from the pre-merger average 39,9% to the post-merger average 27,4%, which is a significant change. Stora Enso's situation is quite the opposite. Its average ratio has ascended from the pre-merger average 29,7% to the post-merger average 39,4%. The average ratio for M-real is 40,06%, which is higher than the combined firms' ratios, but M-real's ratio has declined smoothly from 1991 to 2001.

6.2.5 Investment characteristics

The net investment rate measures the relation between net investments and assets. Here net investments are defined as fixed asset investments devalued with the sales profit of fixed assets, and net investments do not include acquisitions. The net investment rate is defined as net investments as a percentage of total assets. There are some problems in measuring this ratio. For example large contemporaneous divestments may obfuscate the ratio.



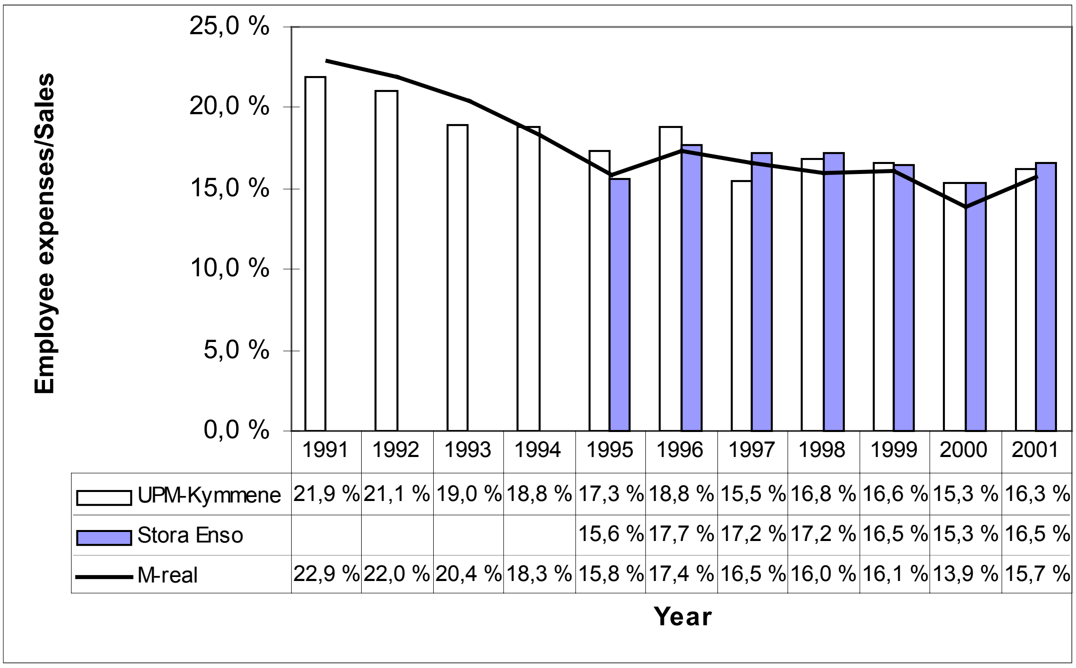
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
UPM-Kymmene	6,3 %	3,9 %	2,4 %	5,4 %	7,5 %	6,5 %	3,6 %	6,0 %	5,1 %	4,4 %	5,0 %
Stora Enso					4,2 %	9,8 %	7,5 %	5,7 %	3,9 %	0,8 %	3,8 %
M-real	3,7 %	1,4 %	2,4 %	5,0 %	10,0 %	12,5 %	3,4 %	5,6 %	4,2 %	6,4 %	5,9 %

Figure 11. Net investment rates for the years 1991-2001

When examining the development of this ratio it seems that investments may vary a lot each year. UPM-Kymmene’s net investment rate pre-merger average is 5,1% and the post-merger average is 4,8%, and Stora Enso’s investments have also decreased, but more significantly than UPM-Kymmene’s. Stora Enso’s average has decreased from the pre-merger average 7,2% to the post-merger average 2,8%. M-real’s investment development has also varied a lot. M-real’s average net investment rate has been 5,5%, which is at the same level as the merged companies’ ratios. But as mentioned above the results of this ratio may vary due to contemporaneous investments. One reason for the decrease of this ratio after the mergers is that after mergers the companies have more sales profits of fixed assets because they are cutting down overlapping operations.

6.2.6 Employee characteristics

The employee expense rate indicates the relation between personnel expenses and sales. Merger gains may come through personnel expenses, because it is said that mergers give the firm an opportunity to renegotiate explicit and implicit contracts between stockholders and other stakeholders. (Juurmaa 1991, p.65)



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
UPM-Kymmene	21,9 %	21,1 %	19,0 %	18,8 %	17,3 %	18,8 %	15,5 %	16,8 %	16,6 %	15,3 %	16,3 %
Stora Enso					15,6 %	17,7 %	17,2 %	17,2 %	16,5 %	15,3 %	16,5 %
M-real	22,9 %	22,0 %	20,4 %	18,3 %	15,8 %	17,4 %	16,5 %	16,0 %	16,1 %	13,9 %	15,7 %

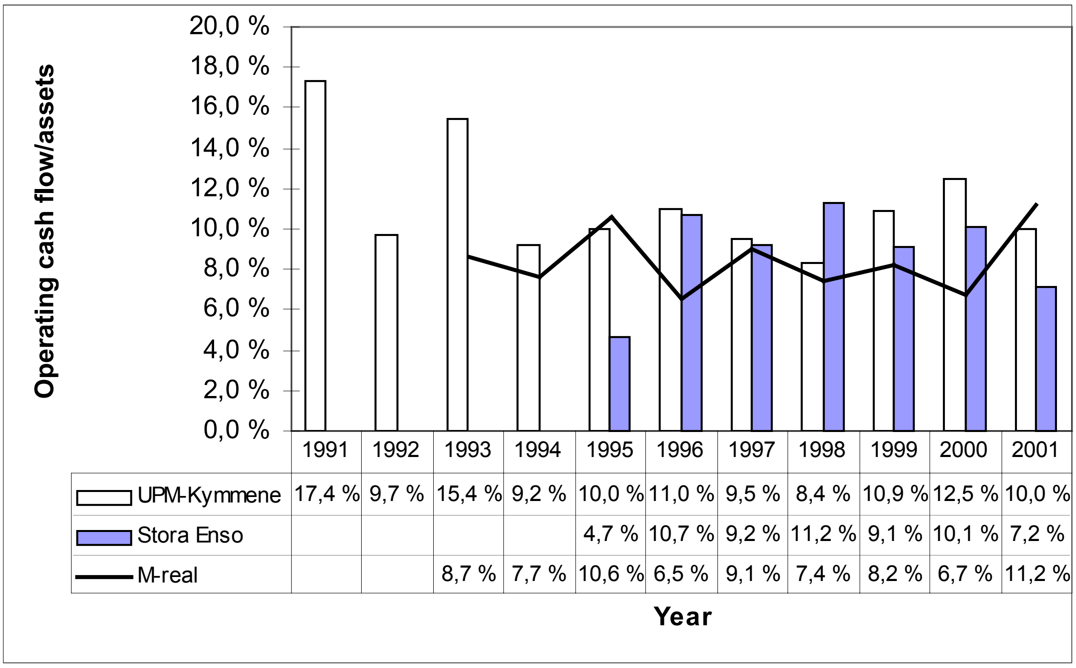
Figure 12. Employee expense rates for the years 1991-2001

The employee expense rates presented in figure 12 imply that no significant changes have happened during this time period, although the rates have declined a bit. UPM-Kymmene's rate has declined from the pre-merger average 19,6% to the post-merger average 16,1% and Stora Enso's rate has declined from the pre-merger average 16,9% to the post-merger average 16,1%. There are no significant changes, and M-real's rate has been at the same level (average 17,7%). All the rates seem to follow the same decreasing trend, so this implies that no significant merger gains have been obtained in employee expenses. The decrease of this ratio may come through rationalization and automation.

6.3 *Cash flow measures*

6.3.1 Operating cash flow return on assets

As mentioned in chapter 4.2.4, the operating cash flow return on assets describes the company's capital utilization, and the higher the ratio the better company uses its capital resources.



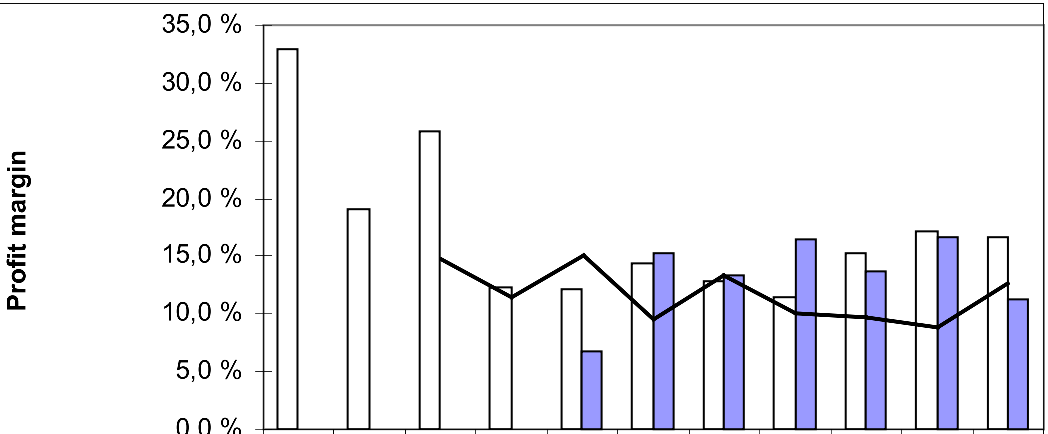
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
UPM-Kymmene	17,4 %	9,7 %	15,4 %	9,2 %	10,0 %	11,0 %	9,5 %	8,4 %	10,9 %	12,5 %	10,0 %
Stora Enso					4,7 %	10,7 %	9,2 %	11,2 %	9,1 %	10,1 %	7,2 %
M-real			8,7 %	7,7 %	10,6 %	6,5 %	9,1 %	7,4 %	8,2 %	6,7 %	11,2 %

Figure 13. Operating cash flow return on assets for the years 1991-2001

UPM-Kymmene's ratio has declined a bit after the merger. The pre-merger average of UPM-Kymmene is 12,3% and the post-merger average is 10,3%. This cannot be seen as a significant change, however, because the decline is so small and one or two years have a significant influence on averages. Stora Enso's development has been quite smooth. Its pre-merger average is 8,2% and the post-merger average is 8,8%. M-real's development has been rather smooth from 1993 and its average ratio for the years 1993 to 2001 is 8,4%. The years 1991 and 1992 have been left out when examining the development of M-real because of the differences in cash flow statements. Overall it can be said that according to this ratio there have not been any significant changes because of the mergers.

6.3.2 Operating characteristics

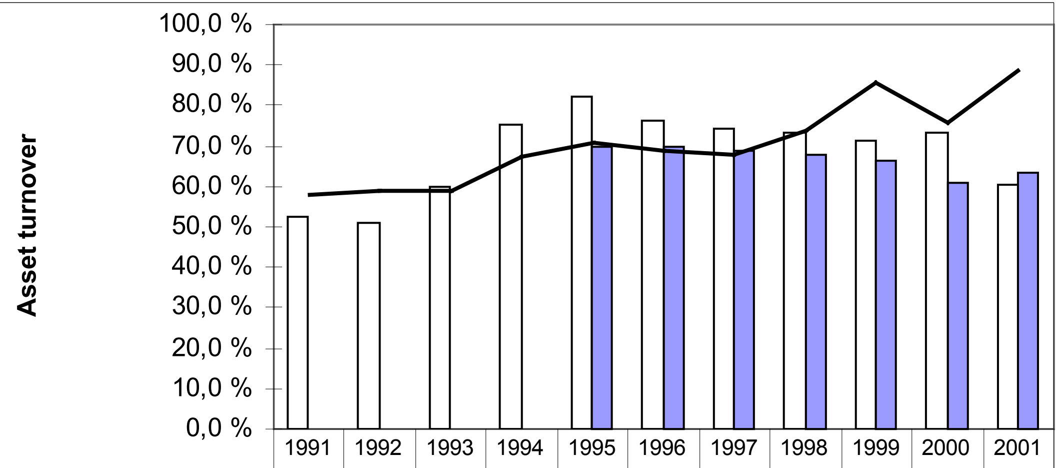
The operating cash flow return on assets can be divided to profit margin and asset turnover. Profit margin measures the profitability of cash sales and asset turnover measures the sales generated from each euro of investments in assets. Profit margin is here defined as operating cash flow as a percentage of sales (Juurmaa 1991, p.94). Operating cash flow includes depreciation, financing profits and costs, extraordinary items, taxes and changes of working capital.



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
UPM-Kymmene	32,9 %	19,1 %	25,8 %	12,2 %	12,2 %	14,3 %	12,8 %	11,4 %	15,3 %	17,1 %	16,6 %
Stora Enso					6,7 %	15,3 %	13,3 %	16,5 %	13,7 %	16,6 %	11,3 %
M-real			14,7 %	11,4 %	15,0 %	9,5 %	13,4 %	10,0 %	9,6 %	8,9 %	12,6 %

Figure 14. Profit margins for the years 1991-2001

Profit margins give the same kind of results as operating cash flow return on assets. UPM-Kymmene's profit margins have declined after the merger, and Stora Enso has improved its situation compared to the pre-merger situation. UPM-Kymmene's pre-merger average is 20,4% and the post-merger average is 14,6%, while Stora Enso's pre-merger average is 11,8% and the post-merger average is 13,9%. One reason for UPM-Kymmene's high pre-merger average is Kymmene's high ratios. This is partly due to differences in cash flow statements but if the profit margin is calculated for United Paper Mills only, the pre-merger average is 16,0%, which is also higher than UPM-Kymmene's post-merger average. M-real has a lower average, 11,7%, in the years 1993 to 2001.



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
UPM-Kymmene	52,7 %	51,0 %	59,8 %	75,0 %	82,2 %	76,4 %	74,3 %	73,1 %	71,3 %	73,1 %	60,4 %
Stora Enso					69,9 %	69,6 %	69,0 %	68,1 %	66,3 %	61,0 %	63,4 %
M-real	57,9 %	58,8 %	58,8 %	67,3 %	70,7 %	68,8 %	67,7 %	74,0 %	85,6 %	75,6 %	88,5 %

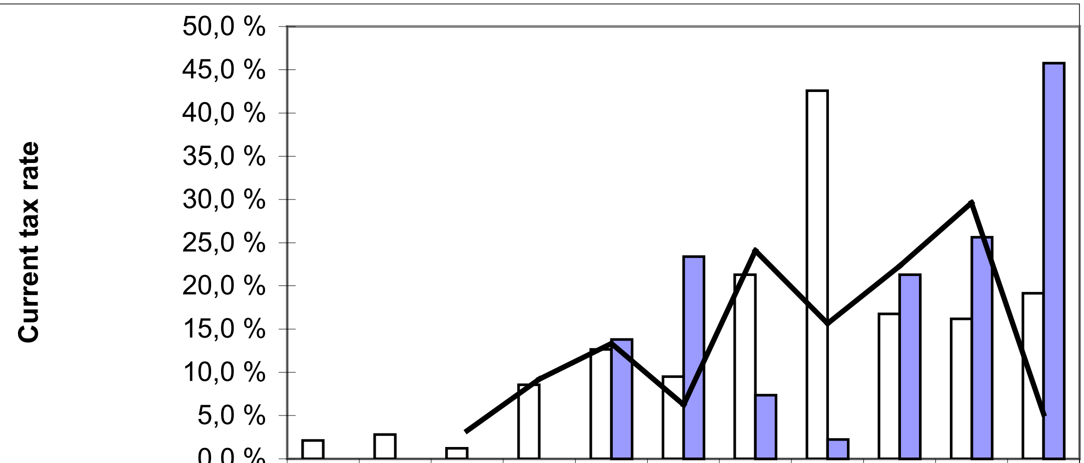
Year

Figure 15. Asset turnovers for the years 1991-2001

As mentioned above asset turnover describes the relation between sales and assets. Here it is defined as sales as a percentage of assets. An increase in asset turnover means that improved asset use is a source of merger gains. UPM-Kymmene's average asset turnover has increased from the pre-merger average 64,1% to the post-merger average 70,4%. Respectively Stora Enso's average asset turnover has declined from the pre-merger average 69,5% to the post-merger average 63,6%. UPM-Kymmene's ratio has declined for three years after the merger, and the reason for the decline might be inefficient use of assets for a certain time period after the merger. The situation might change for Stora Enso, too, when all the necessary operations are made to rationalize the business. M-real's average asset turnover for the years 1991 to 2001 is 70,3%, and it has been at the same level as UPM-Kymmene's post-merger average. M-real has been able to improve its asset use almost equally each year from 57,9% to 88,5% from 1991 to 2001.

6.3.3 Financial characteristics

The financial measures used here are current tax rate and dividend payout. If the current tax rate decreases, it means that there are tax gains after the merger. If the dividend payout ratio increases, it means that mergers are means of increasing dividends. Here current tax rate is defined as current taxes as a percentage of operating cash flow and dividend payout is defined as dividends as a percentage of operating cash flow.



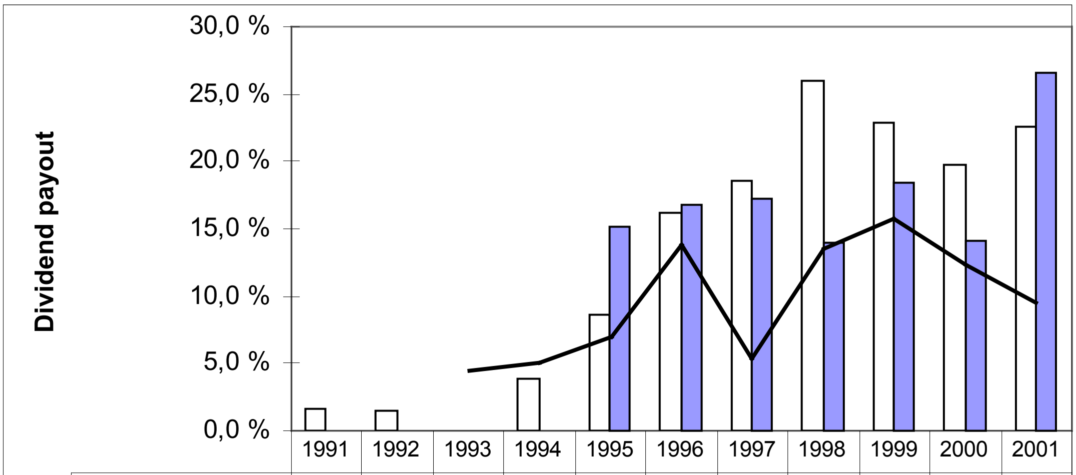
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
UPM-Kymmene	2,1 %	2,8 %	1,2 %	8,6 %	12,7 %	9,5 %	21,3 %	42,6 %	16,8 %	16,2 %	19,1 %
Stora Enso					13,8 %	23,4 %	7,4 %	2,3 %	21,3 %	25,6 %	45,8 %
M-real			3,3 %	9,2 %	13,4 %	6,3 %	24,1 %	15,6 %	22,3 %	29,6 %	5,2 %

Year

Figure 16. Current tax rates for the years 1991-2001

Although the current tax rates have varied a lot in each year, it is obvious that tax rates have ascended and no tax gains are received from mergers. This ratio is also very sensitive to changes in earnings. UPM-Kymmene's average ratio has increased from 5,5% to 23,2%, and Stora Enso's average ratio has increased from 14,9% to

30,9%. M-real's average ratio is 14,3%, which has also increased almost every year from 1993 to 2001.



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
UPM-Kymmene	1,6 %	1,4 %	0,0 %	3,8 %	8,6 %	16,2 %	18,6 %	26,0 %	22,9 %	19,8 %	22,6 %
Stora Enso					15,1 %	16,8 %	17,3 %	14,0 %	18,4 %	14,1 %	26,7 %
M-real			4,5 %	5,1 %	6,9 %	13,8 %	5,4 %	13,5 %	15,7 %	12,3 %	9,6 %

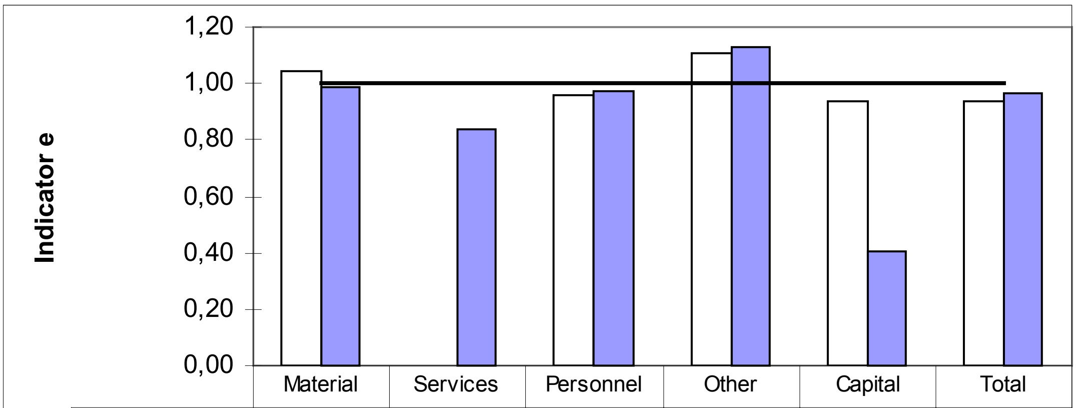
Figure 17. Dividend payouts for the years 1991-2001

When examining the development of the dividend payout ratio, the situation is similar for all the companies. UPM-Kymmene's average has ascended from the pre-merger average 3,1% to the post-merger average 22,0%, and respectively Stora Enso's pre-merger average has ascended from 16,4% to the post-merger average 19,7%. When calculating M-real's average, years 1991 and 1992 are deducted because of the differences in cash flow statements. The average dividend payout of M-real for the years 1992-2001 is 9,6%, which is considerably lower than UPM-Kymmene's and Stora Enso's averages. According to this ratio the shareholders have got benefits from the mergers because the merged companies have increased their dividends.

6.4 Economies of scale

6.4.1 Economies of scale of Stora Enso

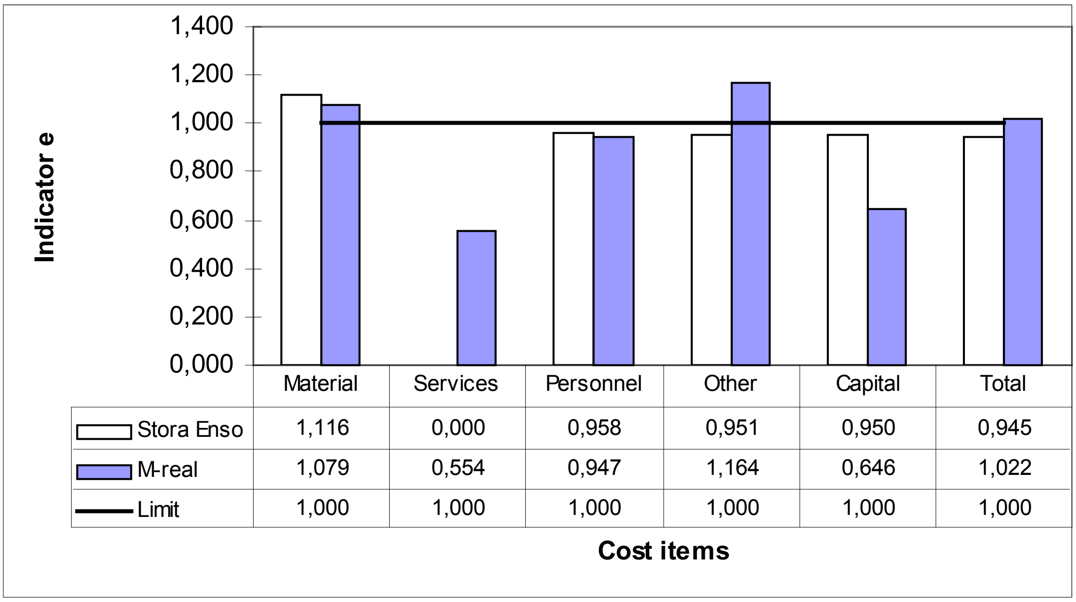
The economies of scale occurred in the merger between Stora and Enso have been measured with indicator e, which is presented in chapter 4.2.2, equation 20. The values of indicator b (equation 19) are not shown here because the results are so much alike. The basic year is the year 1997, which is a year before the merger. The comparison years are 1999, which is the first complete year after the merger, and 2001 is calculated because some of the merger benefits may occur a few years after the merger. The comparison years are chosen so that the operational rates of the entire industry are close to each other. Stora Enso's values are compared to M-real's values, which are calculated for the same years. M-real offers a good comparison object because its growth has happened with acquisitions or internal growth and no big merger has occurred. Economies of scale are measured at material costs, external services, personnel expenses, other expenses, capital costs and total costs. A little defect in the comparison between Stora Enso and M-real is that Stora has not classified external costs in its financial statement, so that amount is contained in other cost items.



	Material	Services	Personnel	Other	Capital	Total
Stora Enso	1,045	0,000	0,955	1,110	0,936	0,937
M-real	0,985	0,840	0,976	1,130	0,407	0,965
Limit	1,000	1,000	1,000	1,000	1,000	1,000

Figure 18. Economies of scale measure of Stora Enso for the years 1997 and 1999

If the value is under the limit 1, there are economies of scale. Figure 18 shows that Stora Enso has reached economies of scale in total costs compared to the limit value and also compared to M-real's value. There are scale effects in capital costs and in personnel costs. In material costs and other costs there are diseconomies of scale. It is noticeable that M-real has got better value in capital costs, and for M-real there seems to be economies of scale in material costs. Also personnel costs seem to decrease for M-real, which gives the same kind of results as the employee expense rate. The indicator value for total costs implies that both companies have been able to make their operations more efficient at this time period, but straight effects from the Stora and Enso merger cannot be seen here, although Stora Enso has reached more economies of scale than M-real in total costs.



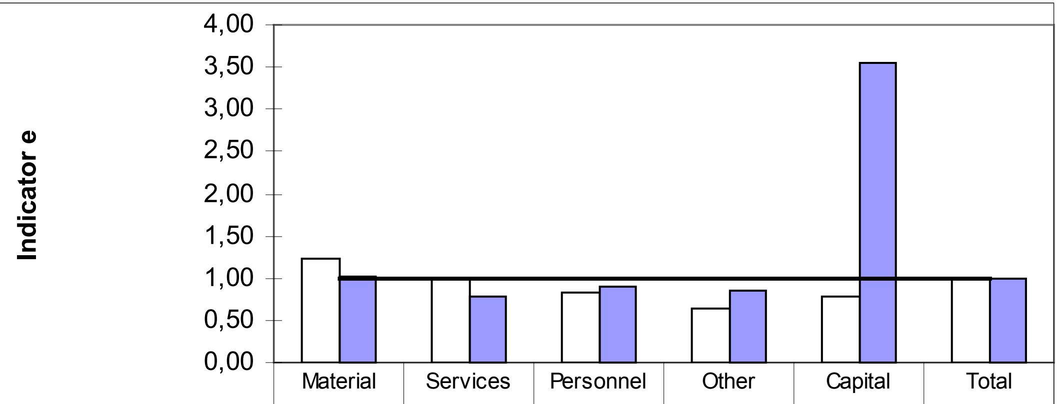
	Material	Services	Personnel	Other	Capital	Total
Stora Enso	1,116	0,000	0,958	0,951	0,950	0,945
M-real	1,079	0,554	0,947	1,164	0,646	1,022
Limit	1,000	1,000	1,000	1,000	1,000	1,000

Figure 19. Economies of scale measure of Stora Enso for the years 1997 and 2001

When comparing the results for the years 1999 and 2001 it is noticeable that with a longer time period the economies of scale seem to decrease according to this indicator. The economies of scale are increased only in personnel costs, which follows the same trend as the employee expense rate. Still, there are economies of scale for Stora Enso compared to the limit value and to M-real's values, but they are not so obvious as before. In material costs there are no economies of scale at any point.

6.4.2 Economies of scale of UPM-Kymmene

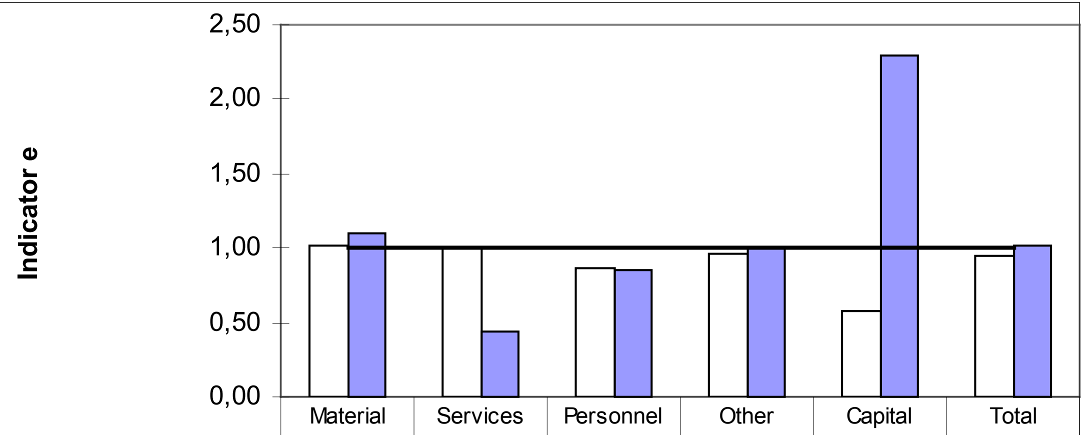
As in chapter 6.3.1 the economies of scale occurred in the merger between Stora and Enso, also the economies of scale occurred in the merger between Kymmene and Repola are measured with indicator e. The basic year is year 1994, which is two years before the merger. The comparison years are 1997, which is the first complete year after the merger, and 2001 is calculated because some of the merger benefits may occur a few years after the merger. UPM-Kymmene's values are also compared to M-real's values, which are calculated for the same years.



	Material	Services	Personnel	Other	Capital	Total
UPM-Kymmene	1,235	1,004	0,824	0,643	0,769	1,006
M-real	1,021	0,782	0,903	0,861	3,553	0,999
Limit	1,000	1,000	1,000	1,000	1,000	1,000

Figure 20. Economies of scale measure of UPM-Kymmene for the years 1994 and 1997

Figure 20 shows that UPM-Kymmene has not reached economies of scale at total costs compared to the limit value. Compared to M-real it seems that at this time period M-real has been able to increase its efficiency more than UPM-Kymmene. Like Stora Enso, also UPM-Kymmene has not been able to decrease its material costs. The most significant savings have come through capital costs, personnel costs and other costs. M-real's huge value in capital costs can be explained with growth in net debt.



	Material	Services	Personnel	Other	Capital	Total
UPM-Kymmene	1,015	0,997	0,866	0,955	0,574	0,947
M-real	1,102	0,433	0,856	1,007	2,296	1,020
Limit	1,000	1,000	1,000	1,000	1,000	1,000

Cost items

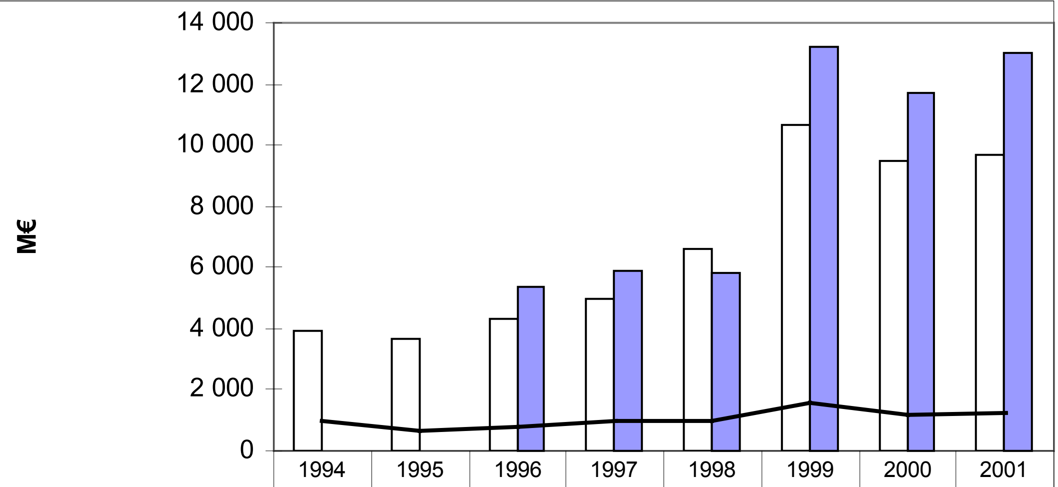
Figure 21. Economies of scale measure of UPM-Kymmene for the years 1994 and 2001

When the time period is lengthened it seems that UPM-Kymmene has reached more economies of scale than right after the merger. Five years after the merger there seem to be economies of scale at every cost area except at material costs. Still the most significant savings seem to come through capital costs. When looking at M-real's values it seems that M-real has the greatest savings at external services costs.

An important finding is that neither Stora Enso nor UPM-Kymmene have reached economies of scale at material costs at the studied time periods according to this indicator. One major motive for mergers according to the interviews were better availability of raw material and lower price, and also more efficient use of raw material. The reason why economies of scale do not exist in material costs may be the rising prices of raw materials.

6.5 Market value

In this chapter the merger success is measured on the basis of stock market. This provides the stockholders' point of view to the mergers. If the stockholders believe in mergers, the stock prices will increase. In figure 22 the market values of the studied companies are presented.



	1994	1995	1996	1997	1998	1999	2000	2001
UPM-Kymmene	3 948	3 690	4 340	4 957	6 630	10 663	9 502	9 681
Stora Enso			5 373	5 893	5 801	13 209	11 733	13 006
M-real	951	628	807	984	973	1 589	1 167	1 243

Figure 22. Market values in the years 1994-2001

As seen in figure 22 M-real's market value has not increased significantly. UPM-Kymmene's market value has increased smoothly after the merger but the most significant change in the market value happened from year 1998 to 1999. It is not obvious whether the change comes directly from the merger, but it is quite obvious that without the merger such an increase would not have happened. Year 1999 has been the best for all the studied companies, and all companies have reached the top of their market value in 1999. This may be due to external factors. Stora Enso has more than doubled its market value from 1998 to 1999, and not just external factors can explain the major increase in Stora Enso's market value. This shows that the merger between Stora and Enso has had the stakeholders' faith and it has brought value increase to them.

6.6 Comparable companies

The comparable companies and transactions approach is presented in chapter 3.7.2. This approach is made for evaluating the target for merger. It aims at defining the value of the company's equity, which is indicated with the average ratios calculated from comparable companies. Here it is used as an example to define the values of the studied companies before and after the merger. The values might not be as good as they would have to be in order to have some scientific value, but the values for the studied firms are presented as an example. Some inaccuracy may come from the different size of the studied companies. Stora Enso and UPM-Kymmene are comparable but M-real is considerably smaller, which may affect to the results. The pre-merger values are calculated in table 11. Kymmene+Repola and M-real values are calculated for the year 1994 and Stora+Enso values are calculated for the year 1997, which may also have an effect on the results. In all the following tables the real market values are also presented and they are compared to the indicated values, and the percentual difference between the values is calculated as well.

Table 11. Pre-merger indicated values of equity

Year	1994	1997	1994	
Ratio	Kymmene+Repola	Stora+Enso	M-real	Average
Market value/Sales	0,49	0,59	0,60	0,56
Market value/Book value	0,37	0,41	0,40	0,39
PER	9,15	13,80	9,30	10,75
Sales (M€)	8 067	10 025	1 594	
Book value of equity (M€)	10 750	14 531	2 368	
Net income (M€)	151	279	89	
Indicated value of equity (M€)	4 502	5 594	889	
	4 209	5 689	927	
	1 623	2 998	953	
Average (M€)	**3 445**	**4 761**	**923**	
Real market value (M€)	3 948	5 893	951	
Difference	12,7 %	19,2 %	3,0 %	

As seen in table 11, the pre-merger indicated values of equity do not differ very much from the real market values. All the indicated values are lower than the real market values. The most significant difference is at Stora Enso's values, where the real market value is almost 20% higher than the indicated value of equity.

In table 12 the post-merger values are calculated. The values of UPM-Kymmene and M-real are calculated for the year 1997, and the values of Stora Enso are for the year 1999.

Table 12. Post-merger indicated values of equity

Year	1997	1999	1997	
Ratio	UPM-Kymmene	Stora Enso	M-real	Average
Market value/Sales	0,58	1,24	0,31	0,71
Market value/Book value	0,43	0,82	0,21	0,49
PER	7,00	17,6	9,9	11,50
Sales (M€)	8 478	10 636	3 226	
Book value of equity (M€)	11 404	16 038	4 766	
Net income (M€)	703	746	217	
Indicated value of equity (M€)	5 986	7 510	2 278	
	5 162	7 259	2 157	
	8 839	9 380	2 726	
Average (M€)	**6 662**	**8 050**	**2 387**	
Real market value (M€)	4 957	13 209	1 646	
Difference	-34,4 %	39,1 %	-45,0 %	

When comparing the differences between the pre-merger situation and the post-merger situation, it seems that the values differ a lot more now. Here it is noticeable that Stora Enso's key ratios are considerably higher than UPM-Kymmene's and M-real's, which affects the results directly. UPM-Kymmene's and M-real's indicated values are considerably higher than their real market values, and Stora Enso's market value is much higher than its indicated value of equity.

In table 13 the values are calculated for the year 2001. This way the same year's values are presented for all three companies, and external factors do not affect the results so much.

Table 13. Indicated values of equity for the year 2001

Ratio	UPM-Kymmene	Stora Enso	M-real	Average
Market value/Sales	0,98	0,96	0,18	0,71
Market value/Book value	0,59	0,61	0,16	0,45
PER	9,70	15,3	12,7	12,57
Sales (M€)	9 918	13 509	6 923	
Book value of equity (M€)	16 431	21 323	7 827	
Net income (M€)	955	926	212	
Indicated value of equity (M€)	7 003	9 539	4 889	
	7 437	9 651	3 543	
	12 001	11 641	2 667	
Average (M€)	**8 814**	**10 277**	**3 699**	
Real market value (M€)	9 681	13 006	1 243	
Difference	9,0 %	21,0 %	-197,7 %	

It can be seen in table 13 that now UPM-Kymmene's and Stora Enso's key ratios are quite close to each other, and M-real's key ratios are again considerably lower. Now UPM-Kymmene and Stora Enso show lower values than their market values, and M-real shows a higher value, which means that M-real benefits from the average ratios.

When considering the usability of this method it can be said that the method may give good results if the companies are well comparable. In table 13 the market value per sales ratio varies from 0,98 to 0,18. This is such a significant variance that it affects the usability of the values. But as seen in table 11, if the values are quite close to each other the indicated values are not so far away from the real market values that it would cause doubts.

6.7 Discussion

In this chapter the results of this study are compared to other available information. According to the calculations made in this study, the Stora Enso and UPM-Kymmene mergers have been successful. This conclusion is congruent with the information released by these companies.

When comparing the economies of scale calculations to Kärri's (1999) article, the results are quite alike. Kärri has calculated economies of scale for the Enso-Gutzeit and Veitsiluoto merger and the Repola and Kymmene merger for the years 1994 to 1997. In this thesis the merger between Kymmene and Repola was also discussed, but the calculations were made also for the years 1994 to 2001. The most significant finding is that in a longer time period there still are no economies of scale at material costs. There are economies of scale in total costs for this time period as well, but material costs in relation to turnover are increased.

Juurmaa (1991) has studied value creation in acquisitions in Finland and Sweden in 1983-1988. In his study the efficiency gains were examined with two different measures: operating cash flow return on assets and stock price changes. The results of his study show that on average efficiency improved in the studied acquisitions. In this thesis only two mergers were studied with the same indicators, but the results back up the hypothesis that mergers and acquisitions create value.

Vaara (1992) has studied mergers and acquisitions between Finland and Sweden in 1981-1991. One of his major conclusions is that success is time related. In the four cases he studied all had successful periods, but the success could change dramatically. Also in this thesis it was noticeable that for example economies of scale could vary in a longer time period.

When comparing the results of this study to other studies it seems that the results are quite similar. There are differencies, but also the data and objectives have varied in every study. In this thesis it was not the intention to make adequate hypothesizes but to review the evaluation methods.

7 Conclusions

The objective of this study was to examine the methods for evaluating the success of mergers and acquisitions. Other research questions were what methods are used in Finnish forest industry and how systematically they are used. Finally the merger success of Finnish forest companies was evaluated.

In the literature -based part of the thesis, issues affecting merger success were examined, which were the type of the merger, advantages and disadvantages, motives and change forces, standpoint of the merger success and sources of value increase in mergers. In the following section the methods for evaluating the target company were introduced and then the post-merger success evaluation methods were discussed. Then on the basis of the literature review, the interviews were made in the studied firms, Stora Enso, UPM-Kymmene and M-real, and also other experts were interviewed.

According to the interviewees the main factor affecting the increased pace of merger activity is the consolidation of the entire forest industry and it was considered as the main motive for the mergers and acquisitions of the Finnish forest industry. Whether consolidation is the cause or the consequence remains unclear. Consolidation was considered important because it is necessary to grow with others and also because it aims at making the whole industry more profitable. So it seems that consolidation has an enormous effect on mergers and acquisitions. When the interviewees were asked about the most significant sources of value in mergers and acquisitions, consolidation was also mentioned because it decreases the cyclical nature of the forest industry. Other significant sources of value were synergies, ensured client contacts, availability and price of raw material and shared best practices. One of the key factors to successful mergers and acquisitions was considered to be the target's compatibility to the acquirer's strategy. To ensure compatibility, well done exploratory study and detailed plans were considered extremely important. The most important factor which was said to influence the selection of the target company was again the compatibility to strategy. When evaluating the target for merger also here the emphasis was on the strategic side, but also calculations were considered to be essential. The methods most commonly used in evaluating the target were synergy analysis and discounted cash flow valuation. Also other methods were used, namely scenario analysis, earnings and asset -based valuation and market value at a certain period. The measurement of the post-merger success was considered to be difficult but beneficial. The methods most commonly used here were comparing the cost structure before and after the merger, measuring the objectives to be realized and examining the development of the stock prices.

The evaluation of the merger success of Finnish forest companies was done by using traditional accounting -based indicators, the economies of scale indicator, cash flow measures and market value. The comparable companies approach was applied as an example, and changes at PPI's Top 150 list were briefly analyzed.

The results show that the mergers between Stora and Enso and between Kymmene and Repola could be considered as successful. Both operating profit per sales and return on equity have developed into a favorable direction for both companies after the merger. According to the financial leverage ratio UPM-Kymmene has less long-term debt in relation to its assets after the merger than before, and Stora Enso has more long-term debt in relation to its assets. The net investment rate has declined for both merged companies, which implies that mergers have reduced the need for fixed asset investments. The employee expense rate shows that all the companies have been able to cut down their employee expenses in relation to turnover. When looking at the cash flow measures it seems that Stora Enso's operating cash flow return on assets and profit margin have moved into a favorable direction, which implies that Stora Enso has been able to make its operations more profitable. For UPM-Kymmene both ratios have declined. The asset turnover of Stora Enso has declined, which implies that its sales have not grown at same speed as its assets. For UPM-Kymmene the development is quite the opposite. The dividend payout rate has increased for both companies, which implies that dividends in relation to cash flow have been paid more after the merger than before. This can be seen as an increase to shareholders. No tax gains have been obtained as a result of the mergers because the current tax rate has increased for all the companies.

The economies of scale indicator showed that both Stora Enso and UPM-Kymmene have reached economies of scale, although according to these calculations UPM-Kymmene's scale benefits of total costs have occurred only after a longer time after the merger. There seemed to be diseconomies of scale in material costs for both companies, which may be due to external factors, such as rising prices of raw materials. The market value had ascended for both Stora Enso and UPM-Kymmene after the merger more than for M-real. Stora Enso's market value had ascended enormously right after the merger, which might have something to do with external factors, because both UPM-Kymmene and M-real have reached the top values at the same time. The comparable companies approach showed that in order to use this method the companies must be well comparable. Because the method is based on averages it favors companies with lower values. This method is not very good at this purpose but it might be useful in target valuation, to which it is originally meant for. The changes at PPI's Top 150 list confirm the impression that Finnish forest industry mergers have been valuable. It seems that both Stora Enso and UPM-Kymmene have improved their positions more than would have been possible without mergers.

References

Blomquist, Lars, Blummé, Nils and Simola, Anna-Maija. 1997. Due diligence ja arvonmääritys yrityskaupoissa. KHT-Yhdistyksen palvelu Oy. Helsinki. 128p. (in Finnish)

Campbell, Andrew and Goold, Michael. 2000. Synergy: Why links between business units often fail and how to make them work. Capstone Publishing Limited. Oxford. 224p.

Germani, Federico H. Hall, Douglas A. Shelton, Michael J. 2002. Post merger management – Don't forget the long-term growth.

Goldberg, Walter H. 1983. Mergers: motives, modes, methods. Nichols Publishing Company. New York. 324p.

Gordon, Noel and Mellander, Joakim. 21.6.2001. Capturing value through mergers and acquisitions. Accenture. Research Ideas. [WWW-document]. Read 22.03.2002. <http://www.accenture.com/xd/xd.asp?it=enWeb&xd=industries/financial/ma_research.xml>

Hubbard, Nancy and Purcell, John. 2001. Managing employee expectations during acquisitions. Human Resource Management Journal. Vol.11. Issue 2. p.17-33.

Immonen, Raimo. 1998. Yritysmuodot ja liiketoiminta. RT-Print Oy. Pieksämäki. 816p. (in Finnish)

Ingham, Hilary, Kran, Ingvild and Lovestam, Andre. 1992. Mergers and profitability: A managerial success story? Journal of Management Studies 29:2. March. p.195-208.

Juurmaa, Risto. 1991. Value creation in acquisitions in Finland and Sweden 1983-1988. Helsinki School of Economics. Helsinki. 175p.

Katz, Jeffrey and Simanek, Astrid. 1997. Corporate mergers and acquisitions: One more wave to consider. Business Horizons. Vol. 40. Issue 1. January/February p.32-41

Koivistoinen, Kari. 1989. Yritysoston onnistuminen. Helsinki School of Economics. Helsinki. 151p. (in Finnish)

Kudla, Ronald J. and McInish Thomas H. 1999. Figuring the odds on weather a deal will succeed. Mergers and Acquisitions. Vol.34. Issue 2. September/October p.27-31.

Kärri, Timo. 1999. Economies of scale in two Finnish forest industry mergers. Liiketaloudellinen aikakauskirja. Vammalan kirjapaino Oy. Vammala. 1/99. p.9-26

Lee, Steven James and Colman, Robert Douglas. 1981. Handbook of Mergers, Acquisitions and Buyouts. Prentice-Hall. New Jersey. 747p.

Lucander, Gustav. 2002. Be careful with consolidation. PPI. March.

Mannermaa, Mika. 1999. Tulevaisuuden hallinta – skenaariot strategiatyöskentelyssä. WSOY. Porvoo. 227p. (in Finnish)

Meristö, Tarja. 1991. Skenaariotyöskentely yrityksen johtamisessa. Vapk-kustannus. Helsinki. 188p. (in Finnish)

Metsäliitto. 2001. Annual Report.

M-real. 2001. Annual Report.

Myers, Bruce T. 1998. Merger integration. Chain Store Age. Vol. 74. Issue 7. July. p.7-9.

Nelson, Philip B. 1997. Economies of scope: A crucial concept in merger analysis. Economists Ink. Fall. [WWW-document]. Read 26.4.2002.
< http://www.ei.com/publications/1997/fall1.htm>

Perktold, Josef. 2002. Chapter 4: Consumption, saving, and investment. Intermediate macroeconomics eco 209: Presentations. University of Rochester. Spring. [WWW-document]. Read 17.6.2002.
< http://www.courses.rochester.edu/perktold/eco209/Presentation-ch4s.pdf>

Post, Alexandra. 1994. Anatomy of a Merger: The causes and effects of mergers and acquisitions. Prentice Hall. New Jersey. 254p.

Rao, Vithala R., Mahajan, Vijay and Varaiya, Nikhil P. 1991. A balance model for evaluating firms for acquisition. Management Science, vol. 37, no 3.USA. March. p.331-349

Rappaport, Alfred. 1998. Calculating the value-creation potential of a deal. Mergers & Acquisitions: The Dealermaker's Journal. Vol.33. Issue 1. July/August. p.33-45

Rogel, Steve. 2002. Acquisitions: Combining things properly. Pulp & Paper. Vol. 76. Issue 1. January. p.72

Rowland, Jim. 1999. Capacity consolidation continues to cut costs, improve performance. Pulp & Paper. Vol.73. Issue 3. March. p.89-93

Scherer, F.M. 1988. Corporate takeovers: The efficiency arguments. Journal of Economic Perspectives. Vol.2. Number 1. Winter. p.69-82

Stanton, Patricia. 1987. Accounting rates of return as measures of post-merger performance. Australian Journal of Management. Vol 12. Issue 2. December. p.293-304.

Stanyard, Jeremy. 2000. Why mergers succeed or fail. Management. Vol. 47. Issue 9. October. p.14

Stora Enso. 2001. Annual Report.

Stora Enso. 2002. Home page. <www.storaenso.com>

Su, Tessie. 2001. Synergies in innovation and mergers. Economists Ink. Fall. [WWW-document]. Read 8.5.2002. p.2.
< http://www.ei.com/publications/2001/fall2001.pdf>

Sudarsanam P.S. 1995. The Essence of Mergers and Acquisitions. Prentice Hall Europe. England. 295p.

Tetenbaum, Toby J. 1999. Seven key practices that improve the chance for expected integration and synergies. Organizational Dynamics. Vol. 28. Issue 2. Autumn. p.22-36.

UPM-Kymmene. 2001. Annual Report.

UPM-Kymmene. 2002. Home page. <www.upm-kymmene.com>

Vaara, Eero. 1992. Mergers and acquisitions between Finland and Sweden 1981-1991: An analysis of success in four cases. Helsinki School of Economics. Helsinki. 133p.

Walker, M. Mark. 2000. Corporate takeovers, Strategic objectives, and acquiring-firm shareholder wealth. Financial Management. Vol. 29. Issue 1. Spring. p.53-67

Weston, J. Fred, Siu, Juan A. and Johnson, Brian A. 2001. Takeovers, Restructuring, & Corporate Governance. Prentice-Hall. New Jersey. 678p.

APPENDIX 1.

INTERVIEWS

Kimmo Kalela, Senior Advisor to CEO, Stora Enso. Helsinki 31.5.2002.

Pertti Laine, President of Industry and Environment Department, Metsäteollisuus Ry. Helsinki 31.5.2002.

Jaakko Palsanen, Senior Vice President, Strategic Development and M&A, UPM-Kymmene. Helsinki 31.5.2002.

Jaakko Rislakki, President of Packaking Materials, UPM-Kymmene, (-2000). Valkeakoski 24.5.2002.

Pentti Talonen, Professor, D. Tech., Lappeenranta University of Technology, Vice President of the Board of United Paper Mills (-1988), Board member of Kajaani (-1987). Espoo 24.5.2002.

Werner von Troil, Associate Principal, Jaakko Pöyry Consulting Oy. Vantaa 4.6.2002.

Timo Uronen, Vice President of Business Development (Strategy), M-real. Espoo 3.6.2002.

APPENDIX 2.

FRAMEWORK FOR INTERVIEWS

1. The most important motives for acquisitions and mergers in forest industry?
    a. How do the motives of the forest industry differ from other industries?
2. Which forces have affected the activity with mergers and acquisitions?
    a. How extensive are the change forces in forest industry compared to other industries?
3. The factors influencing the selection of the target company?
4. How was the profitability of the merger/acquisition evaluated in advance?
    a. How well do the methods fit to forest industry?
    b. What role do the investment banks have?
5. How is the success of the merger/acquisition measured afterwards?
    a. Problems?
6. Which are the most significant sources of value in forest industry mergers/acquisitions?
7. Employees' reaction and role in mergers/acquisitions?
8. Key factors to a successful merger/acquisition?
9. Which factors may cause the failure of a merger/acquisition?
10. Future development?