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Dissertation on
MERGERS IN GREECE:
**“EVALUATION OF THE MERGER RELATED
 PERFORMANCE OF GREEK COMPANIES”**
 Accounting Based Methodology

ROULA ZOITSOU

Supervisor: Assistant Professor N. Tsagarakis

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ABSTRACT

In this paper we evaluate the financial results of 23 Greek merger transactions that were completed between 1993 and 1998 using the accounting based methodology. A set of 20 performance ratios is examined for a period of 5 years to get an indication of the mean weighted industry-adjusted performance difference between the pre- to post-merger period. Additionally, a cross-sectional analysis is performed to conclude on whether special characteristics of the merger participants are associated with improved post-merger performance. Profitability appears largely unaffected by merger activity. On a stand-alone basis, merged firms experience a bad profit record in the post-merger period. Merger participants' characteristics seem to be highly correlated with performance improvements. Large performance differences between acquirer and target are highly associated with improved post-merger performance of the new consolidated company. Fast-growing, efficient, profitable acquirers and low performance targets are related to increased post-merger weighted industry-adjusted performance. Absolute and relative size of the merger participants does not seem to be associated with merger outcomes.

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INTRODUCTION

Mergers and Acquisitions have been an effective restructuring tool for many corporations in view of the increased worldwide competition. In fact, mergers and acquisitions (M&As) constituting bigger and bigger deals seem, if anything, to be on the increase in all sectors of the converging market. The possible benefits of M&As, together with other "business combinations, are widely recognized. These transactions have the potential to be great vehicles for promoting a company's growth or investment strategy. Failed M&A transactions, however, can result in enormous business and financial risk and can be disruptive, costly and emotionally wrenching experiences.

Greece is currently within a merger wave, which has flooded most European countries. Mergers, as a process of corporate restructuring, are very familiar to the Greek entrepreneurs. In the past decade we have witnessed many changes in the corporate environment. And this is only the beginning for Greece, as worldwide evidence suggests. The question in this paper is whether a merger is an effective restructuring tool for the Greek companies.

The scope of this study is to answer this question and shed some light on the special characteristics of the merger participants that explain cross-sectional variability. Analytically, this study focuses on 23 Greek merger cases where the target company is relatively large compared to both participants' asset size. A careful review of the papers written on this subject worldwide, has shown that we should use a timeframe of at least five years in order to be able to draw reliable conclusions on this subject.

Most academic studies follow one of the two distinct approaches to evaluating merger-related gains. Financial researchers have typically used either stock returns or accounting returns independently to assess the performance gains

resulting from a merger. We choose to follow the accounting based methodology, since:

- Stock price studies present certain drawbacks: researchers have had little success in relating the equity value gains to improvements in subsequent corporate performance. These studies are unable to distinguish between the real economic gains and the market inefficiency explanations. In addition, they are also unable to provide evidence on the sources of any merger-related gains
- We were not able to find a complete published study on Greek mergers using the accounting-based methodology
- Companies usually follow this methodology, when it comes to Evaluation Phase of the merger. Nevertheless, no consistent process for the evaluation is being followed. We could therefore contribute through our study in this matter too.

A set of 20 performance ratios is examined for a period of 2 years before and 2 years after the merger to get an indication of the mean weighted industry-adjusted performance difference between the pre- to post-merger period. Mergers result in overall benefits when the consolidated entity is more valuable than the aggregate of the two separate pre-merger companies. Additionally, a cross-sectional analysis is performed to conclude on whether special characteristics of the merger participants are associated with improved post-merger performance.

We should point out that during this paper we are dealing only with merger cases where there is absorption of another entity (or more) or constitution of a new entity by the former companies. After the merger only the new entity exists. The «target» or «absorbed» company might have been subsidiary of the «acquirer» or «absorbing» entity the year before the merger.

In the next pages we are dealing with the following subjects:

On *chapter 1*, there is a review of the worldwide and Greek merger experience. Comments and results from the worldwide merger activity signify the magnitude of the difference between the two M&A markets.

On *chapter 2*, we proceed to a review of the existing literature and examine their results. An analysis is been carried out on the two approaches that the researchers usually follow in evaluating merger results.

On *chapter 3*, there is a reference on merger definitions, types and motives apparent in all merger cases. In addition, there is a description of the Legal Framework that is governing mergers in Greece.

Following, on *chapter 4*, there is an analysis of the data and the performance ratios used in this paper to evaluate the merger results of the Greek companies.

On *chapter 5*, we review the framework that is used throughout this paper. Two analyses will be performed: a mean difference performance analysis and a cross-sectional analysis, whose results are statistically examined to conclude on reliable results.

On *chapter 6*, we are examining the results as drawn by the mean difference performance and cross-sectional analysis and make statistical valid generalizations on the merger results in Greece. A careful analysis leads to very interesting conclusions.

Certain findings, such as special characteristics of the merger participants involved in successful mergers are analyzed on *chapter 7*.

Finally, on *chapter 8*, we are summarizing the results of the merger-related performance of the Greek companies.

1. HISTORY OF MERGERS & ACQUISITIONS

1.1 WORLDWIDE EXPERIENCE

Over the past ten years, world economy has experienced an unprecedented level of consolidation as mergers and acquisitions among companies have taken place at record levels. In the past decade, about 80% of these transactions represented acquisitions of U.S. companies by domestic companies; however, transactions outside United States and especially in Europe have reached a new record in recent years. In 1999, more than 28,000 deals worth of over 3.2 trillion, were struck – an increase in value of one-third over the previous year's deals and nearly six times the value of deals completed in 1994.

The sheer number suggests a variety of purposes behind the agreements. Many of today's most successful companies, like Cisco Systems, use mergers very effectively to improve their skills. Others, such as Swiss Bank Corporation with Union Bank of Switzerland, reenergize themselves by merging and making follow-on acquisitions. Deals between chemical and pharmaceutical companies are fundamentally altering the shape of those industries, while mergers such as America Online and Time Warner and Citicorp and Travelers Group create whole new industries.

Large mergers can be overwhelming for even best acquirers¹:

- ◆ Out of 500 recently merged companies, 50% failed to meet specified objectives, 50% reported an overall drop in productivity in the first 4-8 months and 61% failed to return their cost of capital

¹ Economist, Fortune, McKinsey&Co, and AT Kearney published studies

- ◆ Two out of every three deals have not worked out; the only winners are the shareholders of the acquired firm, who sell their company for more than it is really worth
- ◆ Out of 115 European mergers between 1993 and 1996, 58% failed to add value and 75% failed to achieve their strategic goals two to three years after the deal.
- ◆ Out of 125 companies in the post-merger period, 66% were found to be financially unsuccessful
- ◆ One-third of all acquired firms is sold off within 5 years and 90% never live up to their expectations.

On the other hand, evidence resulting from research supports the belief that mergers and acquisitions improve corporate performance. If consolidation does in fact lead to performance gains, then shareholder wealth is increased. Nevertheless, consolidating two (or more) large, formerly independent companies into one is a costly and difficult process. Recent studies² results show that anticipated merger benefits have not been realized. The romance of the deal does not always lead to success. Prior merger experience of companies is not necessarily relevant for much larger integration.

In the new economy –characterized by consolidation, convergence, the war for talent and the rise in importance of such intangible assets as knowledge, skills and customer relationships- mergers and acquisitions are, more than ever, a fundamental tool in corporate development. Much of the answer to successful transactions lies in taking an integrated approach to planning, executing, integrating and evaluating a merger or acquisition³.

² Economist, Fortune, McKinsey&Co, and AT Kearney published studies.

³ See Arthur Andersen, Comment in Bulletins.

1.2 THE GREEK EXPERIENCE

In Greece, the situation is a little different. The legal framework and the economic environment have not favored the constitution of a competitive Mergers & Acquisition market in the previous decade. The small number of listed companies in the ASE in conjunction to the shareholding composition of the companies (family businesses and government-owned corporations), were obstacles to the evolution of the Greek corporations⁴.

Greece is currently in the process of integrating the «spirit» and the processes that are «imposed» from the participation in the European Union. The Greek companies are facing competition from the European companies, which are relatively larger and more efficient. The introduction of Euro will eliminate any possibilities for the Greek companies to acquire profits from price differences. On the other hand, changes in the Balkan and the countries of Eastern Europe create major challenges and opportunities for the Greek companies.

The economic environment justifies the evolution of an active Greek M&A market. Industry, Commerce and Services are now in the process of growth, a process that requires extensive reorganization, restructuring, new corporate strategy and the introduction of new technology in the Greek companies. The merger wave has flooded in Greece, as evidenced by the current evolution in the banking industry.

Nowadays, the largest groups of companies are participating in this Greek M&A market, facing consolidation as a necessary step to improve performance. Companies from the sector of Telecommunication (Panafon S.A. – Unifon S.A.), the Banking, Financial Services and Insurance Industry (Telesis Securities –

⁴ For an analysis of the Greek prospects see Travlos N., "M&As: Worldwide Experience and Greek Prospects". Trends. The Greek Economy 2000.

Piraeus Prime Bank), IT (Intracom S.A. – Intrasoft S.A.), Healthcare and Textiles Industry (Naoussa Textiles) are currently under the process of consolidation.

The favorable environment must be enforced with the necessary legal framework. The constitution of a new framework for the corporate government and a set of rules that will defend the rights of the shareholders of the acquired companies comprise the basic requirements for the introduction of an active and competitive Greek M&A market.

It is therefore necessary, to examine the first results of this merger activity that has taken place in Greece during the last years. *Whether or not mergers in Greece actually achieve gains is the critical question in this paper.* It is obvious, that some research is evolving on this subject on the surface. We seem to be exposed to many articles through the press, where results are drawn after a relevant examination of the latest mergers. Nevertheless, we could not find any concrete published study in Greece on this subject in contrast to solid research conducted worldwide.

2. LITERATURE REVIEW

2.1 WORLDWIDE RESEARCH

Most academic studies follow one of the two distinct approaches to evaluating merger-related gains. Financial researchers have typically used either **stock returns** or **accounting returns** independently to assess the performance gains resulting from a merger⁵.

The **first approach** to analyzing merger benefits *evaluates the stock market reaction to merger announcements*. Examples of earlier «event» studies following this approach are the papers of Mandelker [1974], Langetieg [1978], Dodd [1980], Asquith and Kim [1982], Malatesta [1983], Dennis and McConnell [1986], Franks and Harris [1989] and Limmack [1991]⁶.

Most studies of the stock returns of acquiring companies have focused either on short-term (anywhere from two days to six months surrounding the announcement) or on long-term (one to five years) price movements. While many studies examine the abnormal returns of acquirers and targets separately, there are also many papers, which analyze the total change in shareholder wealth by looking at the value-weighted sum of acquirer and target abnormal returns. This measure quantifies the value creation that the market believes the merger will provide.

There is near-unanimous agreement that target company's stockholders benefit from mergers, as evidenced by the premium they receive for selling their shares. The stock price studies of takeovers also indicate that bidders generally breakeven, and that the combined equity value of the bidding and target firm

⁵ Some researchers have used both approaches in their study in order to eliminate any inefficiency that might result from any of the methods. See for e.g. S.Pilloff [1996] and Healy, Palepu and Ruback [1992].

⁶ For a summary of all earlier event and accounting studies see R.Chatterjee and G.Meeks [1996].

increases as a result of M&As. This increase in equity value is typically attributed to some unmeasured source of real economic gain, such as synergy.

Researchers have had little success in relating the equity value gains to improvements in subsequent corporate performance. The stock-market studies are based solely on market expectations and do not address the issue of actual gains resulting from consolidation. While the method of these studies is useful for determining shareholder wealth effects, it does not provide a benchmark of stand-alone operating performance that can be used for pre-merger planning or post-merger performance valuation.

There is an extensive literature that uses accounting returns to measure post-merger performance. This **second approach** *compares the performance of companies based on accounting data, before and after a merger, to determine whether consolidation results in gains.* Comparing pre-merger to post-merger data we can directly estimate performance changes attributable to a deal. Such studies typically take some conventional measures – such as return on sales, return on assets, or return on equity – and then compare post-merger to pre-merger performance on that basis.

Most of the earlier empirical accounting-based studies that investigate the effectiveness of mergers in the 1980s and 1990s use primarily financial ratios of profitability and operating cost (Srinivasan 1992, Spindt and Tarhan 1992, M.Cornett and H.Tehrani 1992, Healy, Palepu and Ruback 1992, Pilloff 1996 and Rhoades 1998). A summary of earlier accounting studies is presented in the *Appendix – Table 11*. Other studies analyze mergers by looking at managerial efficiency (X-efficiency) and profit efficiency (Rhoades 1994). The following three studies' methodology is close to the methodology engaged in our paper:

*P.Healy, K.Palepu and R.Ruback [1992]*⁷ conducted a remarkable study in order to evaluate the merger results in USA. They examined the post-merger performance of acquiring and target firms (not financial or regulated companies), and explored the sources of merger-induced changes in cash flow performance. In this paper, they use a single ratio to measure the merger-related performance of the firms employed in mergers. They define this ratio in a way that eliminates the inefficiencies caused by the method of accounting and the method of financing used in the mergers in USA. Their return metric, which is comparable across firms and across time, excludes the effect of depreciation, goodwill, interest expense and income, and finally taxes. These factors, as the above researchers believe, make it difficult to compare traditional accounting returns of the merged firms over time and cross-sectional.

In their study, they examine post-acquisition performance for the 50 largest U.S. mergers between 1979 and mid-1984. Merged firms show significant improvements in asset productivity relative to their industries, leading to higher operating cash flow returns. This performance improvement is particularly strong for firms with highly overlapping businesses. Mergers do not lead to cuts in long-term capital (capital expenditure) and R&D investments, and therefore they found no evidence that the improvement in post-merger cash flows was achieved at the expense of the merged firms' long-term viability. There is a strong positive relation between post-merger increases in operating cash flows and abnormal stock returns at merger announcements, indicating that expectations of economic improvements underlie the equity reevaluations of the merging firms.

*S.Pilloff [1996]*⁸ examines the performance changes and shareholder wealth creation associated with mergers of publicly traded banking institutions. Both the average and cross-sectional properties of merger-related performance and

⁷ For an analytical review see Healy P., K. Palepu, and R. Ruback [1992].

⁸ For more details see S. Pilloff, [1996].

abnormal returns of 48 mergers that occurred between 1982 and 1991 are examined. This paper combines both approaches found in the literature by examining whether accounting and market data yield consistent implications regarding the gains achieved in the above sample.

In addition to analyzing average performance changes and abnormal returns, this paper extends the analysis by examining the ability of certain pre-merger variables related to size, location, and operating performance of merging institutions to explain variation in both accounting outcomes and abnormal returns. The market's ability to accurately forecast performance improvements is also studied by directly measuring the relationship between accounting data and abnormal returns.

In another paper, *S.Rhoades [1998]*⁹ summarizes the efficiency effects of 9 bank mergers. Using the case study methodology, he proceeds to an examination of the merger results using a common set of financial ratios (16), three econometric measures, and the effect of the merger announcement on the stock price of the acquiring and acquired firms. Based on these case studies, it does not appear possible to specify with any generality which factor(s) is (are) most likely to cause mergers to result in efficiency gains. A strong commitment to cutting costs and a relatively efficient acquirer may increase the likelihood that a merger will enhance efficiency, but they are clearly not a guarantee.

Due to the non-random selection of the merger cases as well as the use of case study methodology, generalizations cannot be made from the findings. As also mentioned by the writer, it is important to recognize that he summarizes only the direction of efficiency and profit results. Firms with the same direction of results

⁹ S.Rhoades, [1998] distinguishes from the previous researchers since he uses the case-study approach, which will not be followed in this paper.

may vary substantially in terms of the magnitude of their performance changes relative to peers.

A large number of studies (using the stock market, the accounting-based or both approaches) attempt to compare the performance of companies worldwide by examining the long-term profitability, cost efficiency, and market performance of merger survivors. The findings of most studies are remarkably consistent in that virtually all seem to show negative average returns to acquirers. Target companies capture the lion's share of the increase in value, while acquiring companies either capture small benefits or even experience small losses. Moreover, studies of long-term shareholder returns found declining returns to acquirers over time.

The division of the synergistic gains among bidders and targets depends on the competition of the local M&A market. This division has changed dramatically in favor of the shareholders of the target companies. By and large, the merger literature concludes that consolidation, on average, does not lead to significant performance gains or overall shareholder wealth creation.

Richard Ruback states: "Reluctantly, I think we have to accept this result – significant negative returns over the two years following a merger- as a fact".¹⁰

¹⁰ See Ruback, "Comment" in ed. Alan Auerbach, "Corporate Takeovers: Causes and Consequences". Chicago: University of Chicago Press, 1988, p.262.

2.2 RESEARCH IN GREECE

The Greek M&A market is relatively young and small, and therefore less research has been conducted on the Greek mergers and their respective results. Are the «marriages» a success in Greece and what are the results from the evaluation of these transactions? This is the main question, which we will try to answer throughout this paper.

The first –stock market- approach, as explained earlier, has been used in the study of P. Protopapas¹¹ for M&As in Greece for the period 1991 to 1997. Protopapas found that mergers and acquisitions in Greece have created added value for the companies, which is divided among the acquirer and the target shareholders.

It is acknowledged that the acquiring companies engaged in merger transactions in Greece, have statistically significant positive abnormal returns around the merger announcement (-5, 0). Their abnormal returns do not relate to their asset size or the relative size of the merger.

The target companies also achieve positive statistically significant abnormal returns. The Greek M&A market is relatively young and therefore, less competitive than most developed M&A markets. The Greek target companies are not experiencing the large positive results that targets usually achieve through merger transactions (as proved in worldwide studies). Acquirers have the advantage of absorbing or acquiring other companies, by paying relatively small percentage of the profit to the target companies.

¹¹ See unpublished study by Protopapas P.: "Mergers & Acquisitions in Greece. An Analysis of the abnormal returns of the shares after the press announcement", University of Piraeus, January 2000.

This paper extends the analysis of the above study, *using the accounting-based approach to evaluate the merger gains in Greece*. The methodology used in the studies of Healy, Palepu and Ruback [1992] and S.Pilloff [1996] will be followed in order to evaluate the performance of the companies involved in mergers in Greece. The major issue in this paper is whether Greek companies should proceed in restructuring through mergers in order to operate more effectively and with increased profitability.

2.3 CROSS-SECTION VERSUS CASE STUDY APPROACHES

Most earlier research papers on the efficiency effects of mergers used a cross-section analysis. That type of analysis typically includes a relatively larger number of mergers and the use of a statistical model. The great appeal of the cross-section approach is that it permits statistical tests that control for various other influences on merger performance and, as a result, statistically valid generalizations may be made. Despite the virtues of the cross-section methodology, criticisms of this methodology for not adequately capturing industry-specific or firm-specific idiosyncrasies have resulted in the re-emergence of the analysis of particular industries or firms in industrial organization.

Case study approach, on the other hand, does not permit statistically valid generalizations because of the limited number of observations. The case study methodology may provide insights into firm (industry) behavior and performance that cannot be captured in a cross-section study because a wide range of data and institutional detail may be used from sources that may be unique to a firm, or industry. Such information may allow explanations for observed behavior and performance and help to identify situations to which the cross-section generalizations do not apply. In this way, the case studies may help resolve the continuing debate over the merger efficiency issue.

The use of either one approach presents certain advantages and disadvantages. Due to the size of the Greek merger market and the requirement of this paper for statistically valid generalizations we have chosen to proceed with the cross-section approach, applying it in 23 merger cases, in order to draw reliable conclusions.

We should note that, as Healy [1992] believes, given the complexity and heterogeneity of reasons for mergers, large-sample studies provide limited new insights into factors that influence the outcomes of mergers. A promising approach is to examine a smaller number of mergers in greater detail. These clinical studies can provide valuable evidence on the mechanisms through which mergers increase cash flows, and are likely to be fruitful avenues for future research¹². A clinical cross-section approach is followed throughout this paper.

¹² Examples of clinical studies on corporate control issues include Baker and Wruck [1989], Kaplan [1989] and Donaldson [1990].

3. TECHNICAL TERMS AND LEGAL FRAMEWORK

3.1 DEFINITIONS, TYPES AND MOTIVES

3.1.1 DEFINITIONS

Mergers occur when an acquiring firm and a target firm(s) agree to combine under legal procedures established in the states in which the merger participants are incorporated. The legal term «*company mergers*» refers to any combination of companies that creates a new entity from two or more existing companies. The traditional ways with which a company can proceed to a merger are the following¹³:

- (a) **Merger by absorption:** A company absorbs another company by taking all its assets and liabilities. The absorbed company ceases to exist as a legal entity. The shareholders of the acquired company are either paid on cash or with stocks of the new entity (for their stake on the absorbed company). It is necessary for both groups of shareholders to agree on the proposed merger. The management of each firm has the ability to refuse to this proposal before the merger proposal is submitted to the shareholders' meeting for final discussion.
- (b) **Merger by constitution of a new entity:** It is the consolidation of two separate companies in order to constitute a new entity. In this case, the two former companies cease to exist as legal entities, while the shareholders' approval (majority) of both companies is necessary for this transaction to be completed. Each company's management has the ability to refuse to this proposal and stop the merger.
- (c) **Acquisition of assets:** A company may acquire just a part of another company's assets. In this case, the acquiring firm acquires only part of the

¹³ Definitions are from the article of N.Travlos, «Mergers and Acquisitions», Bulletin of Commercial Bank, April – June 1991.

company's assets and not its liabilities. The second firm still exists as a legal entity.

- (d) **Acquisition of shares:** A company invests in another company by buying a stake of its shares, usually through the Stock Exchange.
- (e) **Tender Offer:** The acquiring company addresses a public offer to purchase a proportion of the outstanding shares of the target firm (usually more than 51%) at specified terms on or before a specified date. The shareholders that are offering their shares are paid on cash or with stocks of the acquiring company. Those shareholders that are not tendering their shares retain an ownership interest in the firm. This was the case with Eurobank – Ergobank, which was the first Tender Offer case ever completed in Greece.

3.1.2 TYPES OF MERGER

According to the degree of similarity between the markets or/and the products of the merger participants, a merger is categorized into horizontal, vertical, or conglomerate.

A *horizontal* merger is one that takes place between two firms in the same line of business; the firms are producing same products and are selling them in the same markets. Nevertheless, usually the products of the two companies are not competitive to one another. Most of the mergers around the turn of the century were of this type.

A *vertical* merger involves companies at different stages of production. The buyer expands backwards toward the source of raw materials or forward in the direction of the ultimate consumer. During the 1920s in USA, vertical mergers were predominant.

A *conglomerate* merger involves companies in unrelated lines of business. This merger is known as the pure case of homogeneous merger. Conglomerate mergers became common in the 1960s and 1970s.

Economists, especially those specializing in industrial organization, have theories to explain the motivations for horizontal acquisitions and to a lesser extent, vertical acquisitions. However, conglomerate acquisitions seem to create skepticism to some economists and governmental organizations on their reasons¹⁴.

3.1.3 SOURCES OF GAIN FROM MERGERS

With these distinctions in mind, we are about to consider motives for mergers, that is, reasons why two firms may be worth more together than apart. Many mergers that seem to make economic sense fail because managers cannot handle the complex task of integrating two firms with different production processes, accounting methods, information systems and corporate cultures.

The value of most businesses depends on human capital –managers, skilled workers, and engineers. If these people are not happy in their new roles in the acquiring firm, there will be conflicts in the new business and some of them (usually the best) may even choose to leave. This was one of the problems that occurred in the merger case of two Greek banks Eurobank and Ergobank, when things turned out bad for the employees of Ergobank (they were against the policy of the new group).

There are also occasions where companies manage achieving gains through mergers but the buyer nevertheless loses because it pays too much. For example, the buyer may overestimate the value of the stale inventory, or even underestimate the costs of renovating old plant and equipment.

¹⁴ As per Paul Halpern [1983], the term «acquisition» is used in a generic sense to refer to any takeover. More details are available in his article.

Corporate decision-makers have to seek opportunities for profitable mergers and acquisitions, wherever they may be. The fervor of consolidation is based on a belief that gains can accrue through these transactions. Companies have one of the five motives when they undertake mergers:

- *Operating synergies*
- *Financial synergies*
- *Replacement of inefficient management*
- *Manifestation of agency cost*
- *Market power.*

Analytically:

I. Operating synergies

The synergies are generated from economies of scale and scope, cost savings, differential managerial efficiencies, and complementary resources.

(a) Economies of Scale

Just as most of us believe that we would be happier if only we were a little richer, so every manager seems to believe that his or her firm would be more competitive if only it were just a little bigger. Achieving economies of scale is the natural goal of horizontal mergers. But such economies have been claimed in conglomerate mergers, too. Economies of scale are enjoyed when the average unit cost of production goes down as production increases. One way to achieve economies of scale is to spread fixed costs over a larger volume of production.

The architects of these mergers have pointed that merger gains come from sharing –consolidating– central services such as office management and accounting, financial control, executive development, and top-level management, operating in more efficient levels (horizontal mergers), closing redundant branches, and marketing products to broader customer bases.

(b) Cost Saving

It is assumed that the consolidation of companies that are operating in different stages of production causes cost saving (vertical mergers). Vertical mergers seek economies in vertical integration. Vertical integration facilitates coordination and administration, reduces the cost of communication and abolishes many negotiations that where necessary before the merger. It also makes easier for the companies to use firmwide a technology that has been developed in a particular stage of production.

One should not assume that more vertical integration is better than less. Nowadays the tide of vertical integration seems to be flowing out. Companies are finding it more efficient to outsource the provision of many services and various types of production.

(c) Complementary Resources

Many small firms are acquired by large ones that can provide the missing ingredients necessary for the small firms' success. A small firm may have a unique product but lack the engineering and sales organization required producing and marketing it on a larger scale. The firm could develop engineering and sales talent from scratch, but it may be quicker and cheaper to merge with a firm that already has ample talent.

The two firms have complementary resources –each has what the other needs- and so it may make sense for them to merge. The two firms worth more together than apart because each acquires something it does not have and gets it cheaper that it would by acting on its own. Also, the merger may open up opportunities that neither firm would pursue otherwise. Of course, two large firms may also merge because they have complementary resources.

(d) Different Managerial Efficiency

Synergies from a merger might exist even in the case where the management of a company is more efficient than the management of the acquired company. The

acquiring company usually has a top and capable management team, whose productivity surpasses the current management skills in the market. This merger results in gains because the productivity of the management of the absorbed company reaches the levels of productivity of the acquiring company's management.

II. Financial synergies

Financial Synergies result from higher debt capacity and unutilized tax credits. Additional tax advantages could be created from higher interest due to the debt capability. The tax advantages result from:

(a) Increased debt capacity

The merger of two or more companies whose cash flows are not perfectly correlated reduces the risk – risk diversification -, that is the risk that the new consolidated company faces is smaller and therefore the possibility of bankruptcy is reduced. Therefore, the new entity is able to increase its borrowing, creating greater interests and respectively lower tax payments.

(b) The exploitation of unutilized tax credits from transfer of unutilized tax exemptions from the target company.

(c) Depreciation of assets re-adjustment and

(d) Reduction of the tax obligations due to risk diversification

III. Replacement of inefficient management

Cash is not the only asset that can be wasted by poor management. There are always firms with unexplored opportunities to cut costs and increase sales and earnings. Such firms are natural candidates for acquisition by other firms with

better management. In some instances "better management" may simply mean the determination to force painful cuts or realign the company's operations. Note that the motive for such acquisitions has nothing to do with benefits from combining two firms. Acquisition is simply the mechanism by which a new management team replaces the old one.

A merger is not the only way to improve management, but sometimes it is the only simple and practical way. Managers are naturally reluctant to fire or demote themselves, and stockholders of large firms do not usually have much direct influence on how the firm is run or who runs it. If this motive for merger is important, one would expect to observe that acquisitions often precede a change in the management of the target firm. Of course, it is easy to criticize another firm's management but not so easy to improve it. Some of the self-appointed scourges of poor management turn out to be less competent than those they replace.

IV. Manifestation of agency cost

The separation between the management and the owners in the modern firms creates conflict of interest among the managers and the shareholders and the shareholders and the debtholders. Some of these conflicts are breaking out through merger transactions. They can take many forms, like increase of sales, risk diversification, different decision horizons and waste of surplus cash flows.

Firms with a surplus of cash and a shortage of good investment opportunities often turn to mergers financed by cash as a way of redeploying their capital. Some firms have excess cash and do not pay it to the stockholders or redeploy it by wise acquisitions. Such firms often find themselves targeted for takeover by other firms that propose to redeploy the cash for them.

V. Market power

The combination of different entities through mergers – especially horizontal mergers- reduces competition and increases the possibility of successful co-operation between the merged companies. Consequently, mergers increase product prices and create additional earnings for all the companies of the particular sector.

3.2 THE GREEK LEGAL FRAMEWORK

The Greek Law that must be followed by the Companies that undertake mergers, is noted below:

Law 2190/1920: articles 68 and the later. This Law describes the legal and not the tax advantages in case of merger. It addresses to all companies that are in the process of a merger, except Banks.

ARTICLE 68

1. The mergers of Companies (S.A.) can have the following two forms:

- Merger by Acquisition
- Merger by constitution of a new company

2. *Merger by absorption* is the action with which one or more companies (acquired), that cease to exist without liquidation, transfer their assets and liabilities against receipt of shares issued by the acquiring company and, a small amount of money that covers all other claims. This amount cannot surpass the 10% of the nominal value of the shares that are distributed to the shareholders of the acquired company and in total the value of the own capital of the acquired company.

3. *Merger by constitution* of a new company is the action with which two or more companies, which cease to exist without liquidation, transfer in the newly constituted company their assets and liabilities against new issued shares and, an amount of money. This amount cannot surpass the 10% of the nominal value of the shares that are distributed to the shareholders of the acquired company and in total the value of the own capital of the acquired company.

ADDITIONAL TAX LAWS THAT OFFER TAX INCENTIVES

Law 2166/1993: articles 1-5. Tax Law, which is used in 92% of the merger cases in Greece. It is addressed to all companies except Banks, Construction and Mortgage companies.

Law 1297/1972: It is addressed to all companies except Banks, Construction and Mortgage companies. It is valid till 31/12/2001

Law 2515/1977: article 16. Tax Law, which is only addressed to Banks.

TAX INCENTIVES

As noted earlier, companies that proceed to a merger transaction must follow the Greek law 2190/1920, which does not grant any additional advantages to the merged firms. Nevertheless, there are certain tax incentives and accommodations, which are offered to the Greek companies that proceed to a merger when following additionally the tax laws 2166/1993 or 1297/1972 (for banks through the law 2515/1977)¹⁵. When a merger takes place, the companies can choose between these two laws for additional advantages (other than any performance improvements and synergies).

¹⁵ For a review of the accounting treatment in the event of a merger – goodwill- as well as some tax considerations see Alifantis G., "Accounting actions on fiscal year-end", 3rd Edition, Pamisos Publishing, Athens 1998, pp.107-111 & 144-150.

Analytically:

The following major tax and other incentives are granted to the companies, which proceed to a merger according to the tax law 2166/1993:

- I. The new entity does not pay tax for the transfer of any tangible and intangible assets from the absorbed firms' to the new firm's assets
- II. Any expenses concerning the merger, like the publication of the merger transaction, are tax deductible and net of any other fees and commissions
- III. Any tax benefits from certain laws that the pre-merger companies were subject to are transferred to the new entity
- IV. Any withholding tax-deductible reserves from non-distributed profits of the pre-merger companies are not subject to tax at the merger year
- V. Any past losses (negative tax results) that the companies show in their liabilities is transferred in a special account of the new entity. This amount can no longer be offset (since 1996) with the net profits of the new entity that are achieved after the merger
- VI. The new entity is entitled to create non-taxable reserves up to 10% of the profits from the first five fiscal years. This incentive is valid only for certain types of companies.

The following major tax and other incentives are granted to the companies, which proceed to a merger according to the tax law 1297/1972:

- I. The goodwill resulting from the merger of the companies is tax-deductible for the merger year and until the company proceeds to its liquidation
- II. The new entity does not pay tax for the transfer of the tangible assets from the absorbed firms' to the new firm's assets
- III. Any expenses concerning the merger, like the publication of the merger transaction, are tax deductible and net of any other fees and commissions.
- IV. Any withholding tax-deductible reserves of the pre-merger companies are not subject to tax at the merger year.

Additionally, the Board of Directors of the Athens Stock Exchange, on its session on January 15, 1999, in order to ensure Market Transparency and to protect the investment public, approved the following procedures (REGULATION 19) according to the cases in question:

OBLIGATIONS OF LISTED COMPANIES IN CASES OF MERGERS

A company already listed on the ASE proceeds to a share capital increase, in order to merge by absorbing another company not listed on the ASE: The company's prospectus must comply with the following requirements prior to the company's listing on the Market:

1. The prospectus issued for the listing of shares resulting from the share capital increase, according to Presidential Decree 348/1985, must include the consolidated financial statements of the merged companies, for at least the last fiscal year preceding the merger, and such financial statements must be audited by a Certified Auditor. The prospectus must also include in brief the valuation methods of the merged companies, their financial results, as well as the way based on which the exchange of shares was determined.
2. The dispersion of the shares of the acquiring company must be sufficient compared to the total number of the shares of the same category after the merger.
3. The acquired company must have been tax audited by the Tax Authorities for the unaudited fiscal years. A Tax Audit of the acquired company must be performed, even in cases where a share capital increase is not necessary for the completion of the merger, provided that the net value of the acquired company exceeds 5% of the net value of the acquiring company. The

conclusions of such auditing reports must be included in the company's prospectus. The acquired company must have published financial statements for the three fiscal years at least prior to the merger. Derogation from such obligation is allowed only after approval of the ASE Board of Directors.

4. If the share capital increase of the acquiring company exceeds by 100% its outstanding share capital, the ASE Board of Directors takes also into consideration, before granting its approval for the company's prospectus and the trading of the new shares on the ASE, the financial structure of the acquiring company as this is formed after the merger, in accordance with the regulations for the listing of shares on the Main and Parallel Market of the ASE.

Πανεπιστήμιο Πειραιώς

4. DATA AND PERFORMANCE RATIOS

4.1 SAMPLE AND DATA

Sample: The sample used in this paper is similar to the second sample used in the study of Protopapas¹⁶. It includes 23 merger cases that occurred during the period December 1993 to December 1998. The sample consists of 21 acquirers and 24 targets. Only two acquirers appear in the merger market a second time two years later (Selonda Acquaculture and EFG Eurobank 1996 and 1998). One target (Britannia Textiles 1993) becomes acquirer of two companies (Micromedia and Mikor) five years later. This is the only case of multiple mergers. Finally, we should note that in one case, the acquirer (National Mortgage Bank with National Housing Bank - 1996), becomes target 2 years later (absorbed by NBG in 1998).

The merger participants are from the following two broad sectors:

1. Industry:

- Food & Pisciculture
- Textiles
- Printing & Publishing and
- Pharmaceutical & Cosmetics.

2. Services:

- Banks
- Insurance and
- Constructions.

¹⁶ Protopapas used two samples in his research of all M&As which were publicly announced in Naftemporiki during the period 1988 – 1997: The **first sample** consists of M&As where acquiring companies are absorbing or buying a percentage of less than 50% of the share capital of the target companies – it also includes cases of establishment of new subsidiaries with joint ventures. The **second sample** consists of M&As in which the acquiring companies are absorbing or buying a percentage of more than 50% of the share capital of the target companies. Cases of establishment of new subsidiaries with joint ventures are not included in this sample.

In cases where labeling one institution the acquirer and the other the target is unclear, the distinction is based on which merger partner took the leading role in the consolidation. There are five cases in which the target absorbed the acquirer (in legal terms), though the acquirer took the leading role in the consolidation: Ethnos Publishing-Pegasus Printing & Publishing, Ilios Insurance-Aspis Pronia Life Insurance, Iliofin Textiles-A&D Hatzioannou, Bank of Athens-Eurobank and Bank of Central Greece-Egnatia Bank. In all these cases, for various reasons such as for the first companies to be used as vehicles for the listing of the latter in the ASE¹⁷, the second companies were absorbed. In these cases, we considered the absorbed companies as the acquirers and the absorbing companies as the targets.

A detailed review of the sample is provided in the *Appendix – Annex and Table 14*. The information provided includes target and acquiring companies' names as well as some general data regarding the completion of the merger (legal framework followed, amount of the share capital increase and possible change of name). There is also a description of the industry that the companies were formerly participated, the type of merger, and the relationship between the two companies and the Date of the Transformation Balance Sheet.

In this point we should note that throughout this paper we consider as merger year the year of the Transformation Balance Sheet. According to the Greek legal framework, as mentioned earlier, this date is the last day until which the two entities are considered as two different entities and it may be different from the year that the merger was completed¹⁸. From that date onwards, the actions of the target (to be absorbed) companies constitute actions of the new entity.

¹⁷ As mentioned by Arsenis V. in his interview to E.Lazaridou in the Sunday newspaper "Kathimerini" with title: After the "marriages" now come the "divorces", October 22nd 2000.

¹⁸ There are only few cases in our study in which the year of the transformation balance sheet is different from the year that the merger was completed and the first new financial statements were announced.

Time frame: The sample period 1993 – 1998 is selected to focus on recent mergers and also to have sufficient pre- and post-merger performance data for two years before and after the merger. As concluded in previous papers (see *Appendix - Table 11*), one half of savings from mergers usually occur in the first year after the merger, and almost all savings are achieved within two years. Pre-merger results are calculated from the *average values* of the years “-2” and “-1” and likewise, post-merger results are calculated from the years “+1” and “+2”. Pre-merger figures may be restricted to year “-1” and post-merger numbers may be limited to year “+1” due to additional merger activity by the participants or lack of data.

Criteria: All merger cases occurred between 1993 and 1998 and were chosen so as to satisfy certain criteria. These criteria are mentioned below:

- I. *They are only “pure mergers”*. The sample consists of cases where there is merger by absorption of the target company by the acquiring company and/or constitution of a new company by the former two (or more) companies. In many cases the acquiring company is the parent-company of the target a subsidiary¹⁹. After the merger, only the new company exists
- II. The merger was the primary transaction in which both the acquirer and target were involved during the period from one year before to one year after the merger
- III. *Sufficient accounting data* for two years before and two years after the merger are available (though one year before and one year after the merger may be used in some cases where collection of data was not possible). Necessary reports are the balance sheet and income statement of the companies before and after the merger

¹⁹ This kind of mergers is very common in Greece, as mentioned in the article of Papadopoulos & Zaharos, “The big Bet on Mergers”, *Oikonomikos Tahidromos*, April 2000.

- IV. Mergers that were announced and are included in the sample have been *successfully completed* (in Greece a merger should be completed, according to the Greek corporate Law, within 6 months after the date of the Transformation Balance Sheet)
- V. Both companies are Greek.

We should note that, except from setting the above criteria, we tried to choose cases where at least one the parties involved in the merger was publicly traded company at the merger-year (either the acquirer or both parties are publicly traded companies in the ASE at the time of the merger). In only two cases (Tasty Foods – Best Foods and Iniohos Insurance – Aspis Pronia Damages Insurance), both companies were unlisted at the merger year and they continue to be. There are also some cases where the new entity was first introduced in the ASE some years (or days) after the completion of the merger transaction.

In the *Appendix – Table 15*, there is a summary of the mergers included in our sample per year as well as the acquirers' and the targets' average, minimum and maximum value of assets. In addition, we make a reference on the relative size of the target companies in respect to the total assets of the participants as reported in their last published financial statement (the year before the merger). With an average of more than 30% of the combined assets belonging to the target, the mergers constitute economically significant events for the acquirer. More and more, large Greek Groups of companies enter the Greek M&A market, following the worldwide trend for consolidation.

Data are gathered through Finance database (of Effect company) for all publicly traded companies (balance sheet and income statement). For all other unlisted companies, data are gathered directly from the companies' issued prospectus, the National Printing Office (FEK) and ICAP database. Industry average ratios, which were used to get the industry adjusted performance of the merged entities,

have been calculated directly from Finance database, and it includes data for all listed companies in each sector that the merging companies are operating.

We should note here that, previous studies omit the firms of the merger sample when calculating the industry average ratios. In these studies all merger participants were formerly listed companies and they were part of a sector that involved a large number of companies. Concerning this subject we wish to make the following remarks regarding the Greek market:

- The Greek corporate environment is not as competitive as in other developed markets
- There is an extraordinary smaller amount of companies listed in the ASE (in contrast to NYSE and other developed markets' stock exchanges where similar research was conducted) and the extraction of industry-averages omitting the merger participants would mean manipulation of results
- Many of the merger participants are leaders of the market and they consequently influence the industry average
- We could not find enough merger cases where both companies were listed in the ASE at the time span of 5 years surrounding the merger
- There is no database in Greece to get an industry-average (and collect all data) for all Greek companies –listed and unlisted-.

Therefore, the industry-average, as calculated in this study, was the best that the author could do for this methodology to be followed. Additionally, in order to avoid any distortions from this calculation of the industry average, results are examined without taking into account the industry-average. That is, we calculate results for companies acting on a stand-alone basis. Further details and results are mentioned in the following sections.

4.2 DEFINITION OF PERFORMANCE MEASURES

The companies' financial statements contain a huge amount of data. To condense these data into a manageable form, financial analysts calculate a small number of key financial ratios. The ratios, which other researchers examined in their research in order to evaluate merger results, are provided in the *Appendix - Table 13*.

In this paper we proceed to an analysis of a common set of financial ratios, using the same pattern as adopted in previous studies. Four types of financial ratios will be analyzed so as to determine the results from the mergers that occurred in Greece during the period 1993-1998.

More specifically, certain growth, profitability, efficiency and balance sheet measures are submitted for research. *Growth ratios* give us a general idea of the results from consolidation (assets, earnings and sales growth). *Efficiency and profitability ratios* are used to analyze efficiency and profitability during the pre- and post-merger periods (ROA, ROE, Costs/Assets, etc.). *The balance sheet ratios* provide information on other changes that may occur, aside from or as a result of the merger, that might affect efficiency or profitability (e.g. Capital/Assets). In the following sections, there is a more detailed review of the ratios used in this paper, while in the *Appendix - Table 12* we provide the reader with an explanation on the calculation of the ratios.

4.2.1 GROWTH (OR OPERATIONAL) RATIOS

Three ratios will be submitted for research. These are the following:

1. **Sales Growth:** This ratio, which is calculated as the current year's sales minus last year's sales as a percentage of last year's sales, is indicative of the growth in sales of the new entity that may be attributed to the merger transaction
2. **Earnings Growth:** Calculated accordingly, it give us an estimation of the earnings of the new entity, taking into account industry growth and comparison with pre-merger earnings
3. **Assets Growth:** Calculated accordingly, we examine whether the new merged firm proceeds to any further growth in assets after the merger transaction.

These three ratios will provide us with a general idea of the growth policy followed by the new entity after the merger.

4.2.2 PROFITABILITY RATIOS

These ratios measure real profitability and are an effective measure of wealth creation. All researchers use at least one profitability ratio to evaluate the merger results. That is why *we consider these ratios as the single most important ratios for the performance measurement in the event of a merger.*

Profitability ratios show the return that the firm earns on its investments. Profits are measured in several ways. Net income before the effect of taxes is examined, because it is very common and reflects bottom line performance. However, since events and factors unrelated to the company's core business may influence net income, net operating income is also examined. Net operating income is measured as net income before the effect of interest, taxes, extraordinary items, gains from sale of securities and provisions.

The denominator in these ratios is average assets and average equity respectively from the year under review and the previous one. The rationale for using a simple average from the current and the previous year's assets is that, sales and expenses represent a flow generated throughout the whole year. Therefore, the average of the stock of assets at two points is more closely related to these flow measures. Thus, using the value of the stock of assets existing at year-end, which may be considerably larger than assets at the beginning of the year (last year's assets), would not be as accurate a denominator as the average of the assets held in two years. In addition, a share capital increase during a year influences considerably the respective ratios. Same method for calculating average equity values will be followed²⁰.

The ratios that will be analyzed are the following:

1. **Gross Profit Margin on Sales:** It measures the pretax operating cash flows generated per drachma of sales. Gross profit is the result from the main operation of the company
2. **Net Profit Margin on Sales:** It measures the profit per drachma of sales. Net income before taxes is scaled by sales
3. **Operating Return on Average Assets (ROAA I):** This ratio measures the raw earning power of the firm's assets, before the influence of taxes and leverage and it is useful for comparing firms operating under different environment. It is calculated by dividing the gross operating income to average total assets (from the last two fiscal years' reports).
4. **Return on Average Assets (ROAA II):** The ratio of net pretax income to average total assets measures the return on total assets after the effect of other operating expenses and interests. This ratio is affected by the basic earning

²⁰ Using Average Assets and Average Equity is a common practice, even in Greece. See for e.g. Hardouvelis, "Mergers & Acquisitions and the Greek Banks", Trends, The Greek Economy 2000, p. 152.

power ratio, plus the use of debt by the company. As per a previous study²¹,

this measure ($ROI = \frac{NetIncome_t}{TotalAssets_{t-1}}$) is useful and perhaps the best available

indicator of business performance

5. **Operating Return on Average Common Equity (ROAE I):** The ratio of net operating income to average common equity measures the rate of return on stockholder's investment
6. **Return on Average Common Equity (ROAE II):** It is calculated as net pretax income to average common equity. Both ROE ratios result from the company's use of debt. For companies that do not have preferred stock, these ratios are just called the return on equity.

4.2.3 EFFICIENCY RATIOS

Efficiency ratios measure how productively the company is using its assets. *Increased efficiency is one of the primary potential benefits of mergers.* Presumably, reduced expenses should translate into higher income, but reported income figures may not accurately reflect earnings. Therefore, analysis of cost behavior may provide a clearer picture of the operating impact of mergers.

Even though measures of total costs are the true figures of interest regarding overall efficiency gains from consolidation, benefits may be more easily seen in those individual expense items that should be affected more strongly by merger activity. "Other Operating expenses" are scaled by sales to capture those components of total costs, which may most clearly reflect increased efficiency from reduced personnel and facilities.

The following efficiency ratios will be analyzed:

²¹ See Robert Jacobson, "The Validity of ROI as a Measure of Business Performance", American Economic Review, 1987, 470-478.

1. *Total Operating Expenses on Sales:* This ratio is calculated as Cost of Goods Sold (COGS) and other Operating Expenses to Sales. All operating expenses are included (COGS, administrative, selling, R&D and other expenses) and are compared with sales
2. *Other Operating Expenses on Sales.* This ratio accounts for all other operating expenses, such as selling, personnel, back-office operations and branches, and R&D expenses, that should be directly affected by the cost savings that are frequently cited as resulting from mergers, especially horizontal ones. Consequently, this ratio is of special interest.

In addition, separately "Other Operating Expenses are examined:

3. *Administrative Expenses to Sales*
4. *Selling Expenses to Sales*
5. *R&D Expenses to Sales.*

We choose to use sales rather than assets as denominator in the above ratios. Using sales (revenues) as the denominator provides an alternative view of the expense ratio, reflecting the ability of the firm to generate revenue from its expenditures. One advantage of a revenue-based ratio is that revenues reflect interest rate changes (assets do not) just as total expenses do when used in the numerator. In contrast, the advantage of using assets as the denominator in the efficiency ratios is that assets reflect the earnings base of most companies and they are typically not highly variable from one year to the next, whereas revenues tend to be more variable²².

²² This is consistent with the efficiency ratios examined in the paper of Rhoades [1998].

4.2.4 BALANCE SHEET RATIOS

Last but not least, some balance sheet ratios will be examined to capture the companies' financial condition, investment strategy, and funding methods. The balance sheet ratios are used to determine whether major balance sheet items change from before to after the merger and might be responsible for expenses or other performance changes unrelated to efficiency changes. For example, changes in the debt ratios may be indicative of basic changes in risk-taking behavior that may affect performance.

To assess whether the merged firms focus on short-term performance improvements at the expense of long-term investments²³, we examine their capital outlays with the following ratios:

1. **Debt to Equity ratio:** It is calculated as total Debt (Short and Long-term Debt) to total Equity
2. **Debt ratio:** Total Debt to total Assets
3. **Equity / Assets:** Total Equity to total Assets
4. **Total Bank Loans / Equity:** Total Banks loans include Long-term debt plus Short-term bank loan accounts plus Liabilities payable during the next fiscal year. They are scaled down by total Equity.

Liquidity Ratios

Finally, we examine the liquidity position of the companies. A liquid asset is one that can be easily converted to cash at a "fair market value", and a firm's liquidity position deals with this question: Will the firm be able to meet its current obligations? Two additional commonly used balance sheet ratios will be analyzed:

²³ Healy [1992] has also examined this.

5. **Current Ratio:** The current ratio is calculated by dividing current assets by current liabilities. Current assets include cash, marketable securities, accounts receivable, and inventories. Current liabilities consist of accounts payable, short term notes payable, current maturities of Long-term debt, accrued income taxes, and other accrued expenses (principally wages and taxes).

If a company starts getting into financial difficulty, it will begin paying its bills (accounts payable) more slowly, borrowing from its bank, and so on. Current liabilities then rise faster than current assets, the current asset begins to fall and this smells trouble. Because the current ratio provides an indicator of the extent to which assets that will soon be converted to cash cover the claims of short-term creditors, it is a commonly used measure of liquidity.

6. **Quick, or Acid Test, Ratio:** This ratio is calculated by deducting inventories from current assets and then dividing the remainder by current liabilities. Inventories are typically the least liquid of a firm's current assets, so they are the assets on which losses are most likely to occur in the event of liquidation. Therefore, a measure of the firm's ability to pay off short term obligations without having to liquidate inventories is important.

5. ANALYTICAL FRAMEWORK

5.1 MEAN PERFORMANCE CHANGES

The same basic analytical framework is employed in all merger cases: a common set of financial ratios is examined. To measure the financial impact of mergers on performance, consolidated pre-merger figures are compared to post-merger growth, profitability, efficiency and balance sheet ratios. A general conformity in the approach was adopted to ensure that any differences in findings among the merger cases reflect different merger results rather than differences in analytical approach.

In every case, a set of 20 financial ratios, including three growth, five efficiency, six profitability and six balance sheet ratios, is calculated and examined. Certain simplifications have been performed in order to extract comparable ratios from the different sectors that the companies are operating. The growth ratios provide us with a general clue of the growth rates of the new entity. The efficiency and profitability ratios analyze the efficiency and profitability during the pre- and post- merger periods. The balance sheet ratios provide information on other changes that may have occurred, aside from or as a result of the merger, that might have affected efficiency or profitability.

Most ratios were analyzed for two years preceding and two years following the merger. In some cases, we used only one year before or/and one year after the merger since certain facts in the life of the company had influenced relatively large their results in that years. In that cases the use of the year ± 2 , would distort the data.

5.1.1 EXTRACTION OF EQUATIONS

The merger related change in performance variable X , $\Delta X(j)$, is calculated as the difference between pre-merger weighted industry-adjusted performance for the consolidated set of companies involved in merger j , $X_{cons}^{pre}(j)$, and post-merger weighted industry-adjusted performance for that same set of companies, $X_{cons}^{post}(j)$, which are now a new consolidated entity.

$$\Delta X(j) = X_{cons}^{post}(j) - X_{cons}^{pre}(j) \quad \text{Equation 1}$$

For the *pre-merger period*, ratios for both the acquirer and the target are calculated separately to get an average performance of the merger participants. Then, the simple average ratios from the data for the acquirer and the target are calculated to help us create a hypothetical combined firm. Finally, for the pre-merger period, ratios for a control, or peer group of other firms (in the same sector and the same year) is calculated to create an industry average performance.

To compute $X_{cons}^{pre}(j)$, pre-merger results are calculated from the average values of the merger participants from the years -2 and -1. Year 0 is omitted since this year contains data, which are not comparable.

For the *post-merger period*, the focus of the analysis is on the combined firm. Post-merger data are compared with the pre-merger data to determine what changes have occurred in efficiency, performance, and some balance sheet ratios from the pre-merger to post-merger period. The industry average ratios are particularly valuable at this stage because they permit an assessment of whether any observed changes in the combined firm simply reflect changes in the economic environment or instead were unique to the combined firm.

To compute $X_{cons(j)}^{post}$, post-merger results are calculated from the average values of the consolidated entity from the years +1 and +2.

Constructing a *benchmark* that accurately measures the performance of peer institutions is crucial to generating industry-adjusted performance figures. The benchmark used in this analysis measures the performance of listed companies, operating in the same sector as the new entity (peer group). It is generally constructed as a simple average over all listed firms in each sector respectively from the average values of the two years before and after the merger (since, pre-merger and post-merger data are calculated accordingly). When one year is used, the industry average is calculated from that same year. We should also note that, the average of the peer group is calculated for each sector in which the merger participants were operating.

Finally, the industry-adjusted difference in performance is *weighted*. The weights used are two kinds:

1. The first weight is the relative size of the target. It is calculated as the asset size of the target the year before the merger over the size of both merger participants. The reason for calculating this weight is that we consider that when targets are relatively large the mergers constitute economically significant events for the acquirer²⁴.
2. The second weight is been calculated by the writer and controls for the following facts: (i) availability of data for two years before and after the merger, (ii) announcements or/and other strategic agreements of the participants effecting the data and (iii) tradeability of the shares of the new entity in the ASE at the post-merger years. We consider the above weight as fair enough taking into account the small size and the imperfect competition governing the Greek corporate market.

An analysis of the weights can be viewed in the *Appendix – Table 14*.

²⁴ Healy [1992] and Pilloff [1996] have also supported this belief.

5.1.2 TESTS

The results for the weighted industry-adjusted difference between $X^{post}_{cons(j)}$ and $X^{pre}_{cons(j)}$ will be tested using the **Student-t Distribution**, to examine if they are significantly different from zero. Nevertheless, when analyzing the results we should take into consideration the small sample.

The test statistic used is:

$$t = \frac{(\bar{x} - \mu)}{(s - \sqrt{n})} \quad \text{Equation 2}$$

whose number of degrees of freedom is (n-1).

The complete two-tailed t-test that will be used is:

$$H_0 : \mu = 0$$

$$H_A : \mu \neq 0$$

$$\text{Test statistic: } t = \frac{(\bar{x} - \mu)}{(s - \sqrt{n})}$$

$$\text{Rejection region: } |t| > t_{\alpha/2, n-1}$$

We will test the above hypotheses for the **90%** ($1-\alpha = 0.90$), **95%** ($1-\alpha = 0.95$) and **99%** ($1-\alpha = 0.99$) confidence interval. Thus,

$$\alpha = 0.10 \text{ and } \alpha/2 = 0.05$$

$$\alpha = 0.05 \text{ and } \alpha/2 = 0.025 \text{ and}$$

$$\alpha = 0.01 \text{ and } \alpha/2 = 0.005.$$

The **Lower Confidence Interval** estimates of μ for $n=23$, are:

$$LCL_{0.05} = -1.717 \text{ (is denoted by *)}$$

$$LCL_{0.025} = -2.074 \text{ (is denoted by **)}$$

$$LCL_{0.005} = -2.819 \text{ (is denoted by ***)}$$

The **Upper Confidence Interval** estimates of μ for $n=23$, are:

$$UCL_{0.05} = 1.717$$

$$UCL_{0.025} = 2.074$$

$$UCL_{0.005} = 2.819, \text{ all denoted accordingly.}$$

5.2. CROSS-SECTIONAL ANALYSIS AND PERFORMANCE CHANGES

Additionally, in this paper we examine the ability of certain pre-merger operating performance variables of the merging companies and the relative and absolute size of the merger participants to explain variation in accounting outcomes.

While the impact of mergers on performance is small on average, there is great deal of cross-sectional variability in changes following mergers, as per earlier studies²⁵. This variation may be associated with pre-merger characteristics relating to the **performance** and **size** of the participants.

The magnitude of the potential improvement depends on the:

5.2.1 PERFORMANCE DIFFERENCE BETWEEN THE TWO PARTIES.

The weighted difference between acquirer and target values of various performance ratios may measure the potential for improvement. If the acquirer has a higher value of some performance measure than the target, then the merger may provide the opportunity for the acquirer to improve the performance of the target up to a point comparable with the pre-merger acquirer's performance. The magnitude of the potential improvement resulting from the performance difference between the two parties will be examined.

The weighted relative difference in variable X, $X^R(j)$, is calculated by:

$$X^R(j) = \frac{T(j)}{[A(j) + T(j)]} * [X_{acq}^{pre}(j) - X_{tgt}^{pre}(j)] \quad \text{Equation 3}$$

where,

²⁵ See Pilloff [1996].

$A(j)$: Total Assets of the acquirer the year before the merger

$T(j)$: Total Assets of the target the year before the merger

$X^{pre}_{acq}(j)$: Pre-merger industry adjusted values of variable X for the acquirer

$X^{pre}_{targ}(j)$: Pre-merger industry adjusted values of variable X for the target

The latter two variables are computed in a similar manner as explained in the previous section, except that in this case the acquirer and target values are handled separately instead of as a pro-forma consolidated entity.

5.2.2 SPECIAL CHARACTERISTICS OF JUST ONE OF THE PARTIES INVOLVED IN THE ACQUISITION

Merger-related improvements may not be associated only with the difference between acquirer and target performance, but may instead be influenced by characteristics of just one of the parties involved in the acquisition.

For example, high performing acquirers may be those institutions that are most successfully able to integrate the operations of the target company and generate gains -acquirer key participant-. Similarly, pre-merger characteristics of the target may be important: regardless of acquirer, certain types of targets may be conducive to successful mergers -target key participant-.

To examine the possibility that the acquirer is the key participant, $X^{RA}(j)$ is constructed with the restriction that $X^{pre}_{targ}(j)$, in equation 3 is equal to zero. The following equation will be calculated:

$$X^{RA} = \frac{T(j)}{[A(j) + T(j)]} * X^{pre}_{acq}(j)$$

Equation 4

which is similarly to Equation 3 defined.

Accordingly, pre-merger characteristics of the target may be conducive to successful mergers. To examine this possibility, $X^{RT}(j)$ is constructed with the restriction that $X^{pre}_{acq}(j)$, in equation 3 is equal to zero. The following equation will be calculated:

$$X^{RT} = \frac{T(j)}{[A(j) + T(j)]} * X^{pre}_{tgt}(j) \quad \text{Equation 5}$$

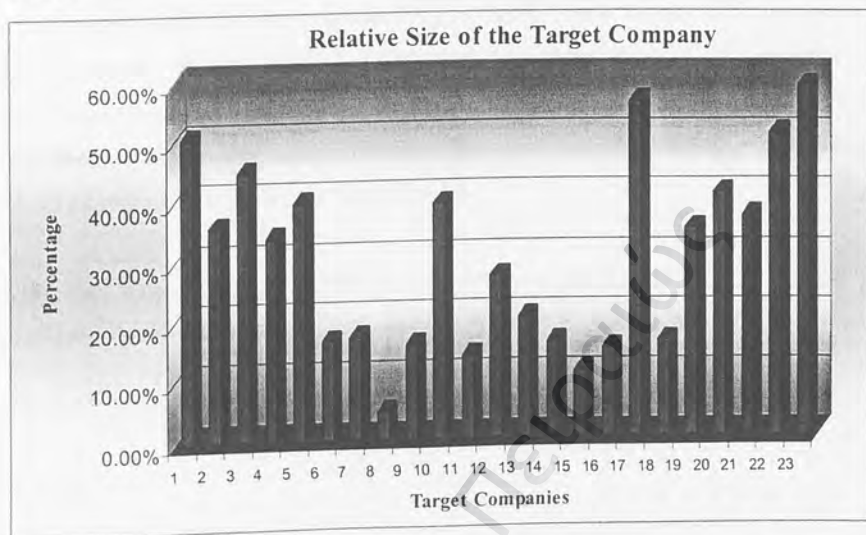
which is similarly to equation 3 defined.

5.2.3 RELATIVE AND ABSOLUTE SIZE OF THE TARGET AND ACQUIRER

Both the absolute and relative size of the merger participants may play an important role in the ease in which consolidation can occur, changes in market power, or gains from scale economies. If a target is small relative to the acquirer, then even if the target's operations are substantially improved, the net effect on the new entity is minor. However, if a target is large, then only a small change in performance is needed to influence the post-merger company.

In the following figure, we notice the relative size of the target company in our sample. We have chosen to use large target companies (average relative size 31%), so as to be able to draw reliable conclusions. Additionally, merger results are weighted by the relative size of the target.

Figure 1 -Relative size of the Target to the combined assets in the 23 merger cases



Size is measured separately for acquirers (LNAAST) and targets (LNTAST), as the natural log of total assets at the year before the merger. Natural log has been also calculated in the study of S.Pilloff [1996] and Healy [1992].

Relative size (RELSIZE) is calculated as following:

$$RELSIZE = \frac{TAST_{t-1}}{(AAST_{t-1} + TAST_{t-1})} \quad \text{Equation 6}$$

where,

$TAST_{t-1}$ = Target's assets at the year before the merger

$AAST_{t-1}$ = Acquirer's assets at the year before the merger

t = the merger year.

5.2.3 TESTS

The impact of all the above explanatory variables – pre-merger difference on performance, pre-merger characteristics, absolute size of the merger participants and relative size of the target- on merger outcomes is analyzed on Section 6.2, by examining the correlations of the explanatory variables with changes in performance variables ΔX .

The sample coefficient of correlation is denoted as r and will be used throughout our cross-sectional analysis:

$$r = \frac{\text{cov}(X, Y)}{s_x s_y} \quad \text{Equation 7}$$

where,

s_x = standard deviation of X

s_y = standard deviation of Y and

$$\text{cov}(X, Y) = \text{the sample covariance } \text{cov}(X, Y) = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{(n-1)}.$$

The coefficient of correlation can be useful to test the relationship between the two sets of variables. The coefficient of correlation (r) will always lie between -1 and $+1$. A correlation close to $+1$ indicates that two variables are very strongly positively associated. The closer the correlation is to $+1$, the closer the relationship is to being described by a straight line sloping upwards from left to right. A correlation close to -1 shows that there is a strong negative relationship – as one variable increases the other decreases. A perfect straight line sloping downwards would produce a correlation of -1 . A correlation close to zero indicates that no straight-line relationship exists. It may mean the absence of a particular pattern, or a relationship that is not a straight line. All other values of the coefficient of correlation are interpreted in relation to $+1$, 0 , and -1 values.

To determine whether we can infer that ρ is zero, we will test the following hypotheses:

$$H_0 : \rho = 0$$

$$H_A : \rho \neq 0$$

The test statistic is defined as follows:

$$t = r \sqrt{\frac{(n-2)}{(n-r^2)}} \quad \text{Equation 8}$$

which is the Student-t distribution with (n-2) degrees of freedom, provided that the variables are normally distributed.

Rejection region: $|t| > t_{\alpha/2, n-1}$

We will test the above hypotheses for the **90%** ($1-\alpha = 0.90$), **95%** ($1-\alpha = 0.95$) and **99%** ($1-\alpha = 0.99$) confidence interval. Thus,

$$\alpha = 0.10 \text{ and } \alpha/2 = 0.05$$

$$\alpha = 0.05 \text{ and } \alpha/2 = 0.025 \text{ and}$$

$$\alpha = 0.01 \text{ and } \alpha/2 = 0.005.$$

The **Lower Confidence Interval** estimates of μ for $n=23$, are:

$$LCL_{0.05} = -1.721 \text{ (which is denoted by *)}$$

$$LCL_{0.025} = -2.080 \text{ (which is denoted by **)}$$

$$LCL_{0.005} = -2.831 \text{ (which is denoted by ***)}.$$

The **Upper Confidence Interval** estimates of μ for $n=23$, are:

$$UCL_{0.05} = 1.721$$

$$UCL_{0.025} = 2.080$$

$$UCL_{0.005} = 2.831, \text{ all denoted accordingly.}$$

6. RESULTS

6.1 RESULTS OF THE MEAN PERFORMANCE CHANGES

Table 16 - Appendix, presents the results of our tests on the mean difference in the participants' performance between the two periods (pre to post-merger), the corresponding t-tests as well as the standard deviation. All figures are computed as the difference between performance of the merging companies and a group of comparable listed companies (*industry-adjustment*). Figures also control for the relative size of the target and availability of data (*average of two sets of weights*). ΔX is the weighted industry-adjusted difference between pre-merger ($X^{\text{pre}}_{\text{cons}}$) and post-merger performance ($X^{\text{post}}_{\text{cons}}$).

From a first glance of the above table we can conclude that performance seems to be relatively unaffected by merger activity. All ratios' mean difference is insignificant at all levels. There are some changes in the performance measures, but these seem to be relatively small. Analysis of the results follows in sections 6.1.1 to 6.1.5. An analysis of the profitability results per merger case is also included.

In section 6.1.6, we proceed to an additional analysis of the mean difference in the performance after the merger using only one weight, the relative size of the target to both participants' assets size. The results are shown in *Table 17 - Appendix*. Nevertheless, again there seems to be *insignificant negative performance results following the mergers*.

Last but not least, in section 6.1.7 we proceed to an analysis of the mean difference in the participants' performance avoiding the industry-adjustment. We want to check whether the companies perform relatively better at a stand-alone basis after the merger. Comparison with their peers is skipped in this part. The

results and their corresponding t-tests (Table 18 – Appendix) show that profitability declines after the merger.

6.1.1 GROWTH RATIOS

Table 1 - Mean difference changes in Growth ratios

Category	MEAN DIFFERENCE	T-TEST	STANDARD DEVIATION
GROWTH RATIOS			
SALES GROWTH	-0.031	-0.339	0.441
EARNINGS GROWTH	5.614	0.964	27.938
ASSETS GROWTH	-0.118	-1.005	0.565

Note: Significance at 10%, 5% and 1% level respectively: (±) 1.721, (±) 2.080, (±) 2.831.

The growth ratios are analyzed as following:

- *The industry-adjusted growth in sales of the new entity is insignificant.* Since the standard deviation is low, we can conclude that on average for the two years following the merger, there is no growth in sales by the new entity, which might be relatively higher than the mean-industry growth.
- *The earnings of the new entity rise insignificantly.* The new entity seems to produce better earnings as a consolidated entity, possibly due to synergetic gains. Nevertheless, the results are not similar to all merger cases, as implied by the large standard deviation and are insignificant.
- *After the merger the new entity does not proceed to any further significant asset growth,* as it is apparent from the negative value of ΔX (assets growth). On the contrary, most companies usually follow a consolidation policy in order to act more efficiently. Since the above measure is industry-adjusted, we may even conclude that comparable companies (peer groups) present greater assets growth in order to be able to compete with the new larger-scale constituted companies.

6.1.2 PROFITABILITY RATIOS

Table 2 - Mean difference changes in Profitability ratios

PROFITABILITY RATIOS			
GROSS PROFIT MARGIN ON SALES	-0.008	-0.255	0.154
NET PROFIT MARGIN ON SALES	-0.381	-0.993	1.838
ROAA I	0.025	0.628	0.193
ROAA II	0.012	0.765	0.073
ROAE I	0.109	0.750	0.697
ROAE II	-0.125	-0.814	0.735

Note: Significance at 10%, 5% and 1% level respectively: (\pm) 1.721, (\pm) 2.080, (\pm) 2.831.

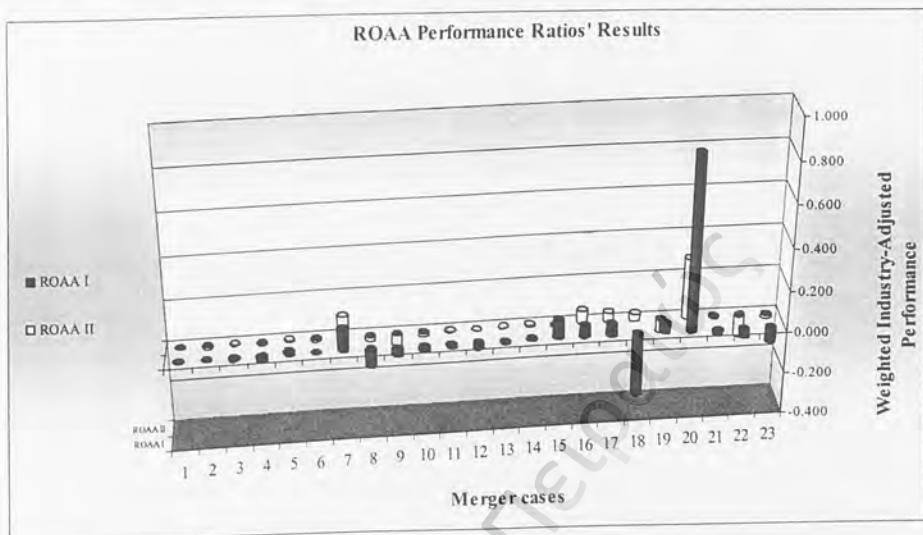
From the table above, we can conclude the following:

- Profitability appears largely unaffected by merger activity, as all six profitability measures show no significant change (ΔX). The results seem to conflict each other since the mean difference for half of the profitability measures is positive while in the other half it appears negative.
- The ratios of Net Operating Income (ROAA I) and Net pretax Income to Average Assets (ROAA II) seem to rise insignificantly. Since, there is no asset growth, this insignificant increase is possible due to relatively improved economic results from the new company.

6.1.3 ANALYSIS OF THE PROFITABILITY DIFFERENCES OF THE MERGER CASES

As mentioned earlier, we consider the profitability ratios as the single most important ratios to evaluate the performance of the companies in the event of a merger. We will therefore proceed to a merger-by-merger case evaluation, as most researchers do in their studies.

Figure 2 – ROAA I & ROAA II results

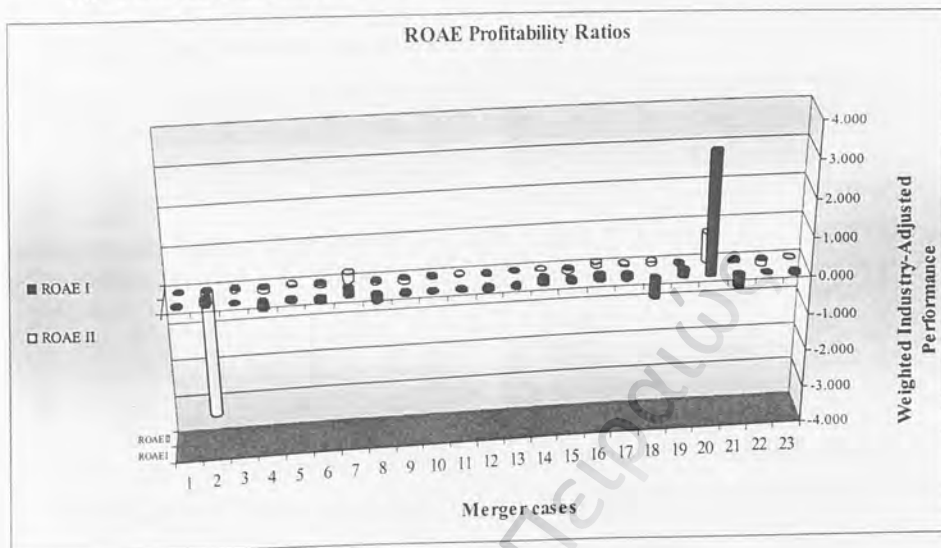


As evidenced from the above figure, in most cases the ROAA profitability ratios are close to zero. In only two cases, we notice a slight difference, a positive and a negative one, in the merger results. These are the cases of Nirefs Pisciculture-Thalassa Pisciculture (case no.18), where the ROAA I is negative and the case of Pegasus Publishing-Ethnos Publishing (case no.20), where the profitability ratios seem to increase substantially.

Additionally, positive profitability ratios are also presented in the cases of Iniohos Insurance-Aspis Pronia Damages Insurance (case no.7), Tasty Foods-Best Foods (case no.15), Barba Stathis-Froza (case no.16) and Selonda Acquaculture-Argolida Aquaculture (case no.17). We notice a tendency for positive profitability results from mergers in the Foods industry, as four out of five merger cases are profitable.

Negative profitability ratios are also met in the following cases: Etane-Efklidis (case no.8), Intertyp-Epifania (case no.22) and Sarantis-Trylet (case no.23).

Figure 3 – ROAE I & ROAE II results



As evidenced from the above figure, in most cases the ROAE profitability ratios are close to zero. Again, there are only two cases where we notice a slight difference in the merger results, a negative and a positive one. These are the cases of NBG-National Mortgage Bank (case no.2), where the ROAE II is considerably negative and the case of Pegasus Publishing-Ethnos Publishing (case no.20), where the profitability ratios seem to increase substantially. This last merger case seems to present positive both ROAA and ROAE profitability ratios.

As concluded by the test statistic, profitability is unaffected by the merger activity. This is consistent with previous studies' results, whose authors found statistically insignificant differences in the mergers occurred in their countries. In West Germany [Cable, Hughes & Singh], Belgium [Kumps & Wtterwulghe], France [Jenny & Webber] and US [Mueller and Pilloff] researchers reported statistically insignificant post-merger (positive and negative) profitability results.

6.1.4 EFFICIENCY RATIOS

Table 3 - Mean difference changes in Efficiency ratios

RATIO	Mean Difference (t-TEST)	Standard Deviation	Standard Error
EFFICIENCY RATIOS			
TOTAL OPERATING EXPENSES ON SALES	0.024	0.661	0.174
OPERATING EXPENSES ON SALES	0.010	0.715	0.066
ADMINISTRATIVE EXPENSES ON SALES	0.000	0.012	0.035
SELLING EXPENSES ON SALES	0.008	0.938	0.039
R&D EXPENSES ON SALES	-0.001	-0.660	0.004

Note: Significance at 10%, 5% and 1% level respectively: (\pm) 1.721, (\pm) 2.080, (\pm) 2.831.

The mean industry-adjusted difference in efficiency ratios is insignificant and therefore there is no sign of *efficiency improvements* appearing after the merger.

6.1.5 BALANCE SHEET RATIOS

Table 4 - Mean difference changes in Balance Sheet ratios

RATIO	Mean Difference (t-TEST)	Standard Deviation	Standard Error
BALANCE SHEET RATIOS			
D/E RATIO	-0.488	-1.496	1.564
DEBT RATIO	-0.003	-0.074	0.188
E/A	-0.001	-0.062	0.066
BANK DEBT/E	0.123	0.863	0.681
LIQUIDITY RATIOS			
CURRENT RATIO	0.257	1.480	0.831
QUICK RATIO	0.182	1.075	0.814

Note: Significance at 10%, 5% and 1% level respectively: (\pm) 1.721, (\pm) 2.080, (\pm) 2.831.

Finally, the trend in the Balance sheet and Liquidity ratios seems to be clear, though insignificant:

- There is a decrease in the use of debt over equity from the merged firms. The new companies have increased their own capital and thus can reduce the use of debt (and therefore costs) after the merger.
- Nevertheless, a small insignificant increase in the use of bank debt is apparent. The consolidated company seems to increase its obligations towards banks (greater financial leverage). The advantage of risk diversification is used in favor of greater bank debt, creating greater interest payments and lower taxes accordingly.
- Finally, as far as the liquidity of the new entity is concerned, both ratios are insignificantly positive. The new firm *can cover the claims of short-term creditors by its assets*. Therefore, the new consolidated entities' liquidity position seems to be relatively strong.

6.1.6 ANALYSIS OF THE INDUSTRY-ADJUSTED PERFORMANCE DIFFERENCE USING ONE WEIGHT

In this section, we will evaluate the mean industry-adjusted difference results using only one weight; the relative size of the target to both participants' asset size. Since using two weights is the author's concept, we wish to know if there would be any different results using only one weight as per previous studies. The results are apparent in the *Appendix – Table 17*.

From this table we can conclude that *performance seems to be relatively unaffected by merger activity even when using as weight only the relative size of the target*. All ratios' mean difference continues to be insignificant at all levels of significance.

6.1.7 ANALYSIS OF THE PERFORMANCE DIFFERENCE USING ONE WEIGHT AND WITHOUT INDUSTRY-ADJUSTMENT

Finally, we evaluate the mean difference results using as weight the relative size of the target and skipping the industry-adjustment. The performance difference is evaluated for each company acting solely on a stand-alone basis. That is, no comparison (industry-adjustment) is performed in order to see whether the new consolidated company performs better in the two years following the merger compared to a pre-merger proforma consolidated entity.

Form the results of our test -Table 18 – Appendix- we can conclude the following:

- Profitability declines after the merger are evidenced from the negative values of all six profitability ratios. *There are statistically significant declines in weighted post-merger profitability (at 5% level) for merged companies acting on a stand-alone basis for two measures of profitability.* ROAA I and ROAE I present significant negative returns at 5% level of significance. That is, gross operating income seems to decline significantly after the merger.
- The balance sheet ratios' trend is again the same with the previous performance analyses (sections 6.1.1 to 6.1.6), presenting a decrease in the used of debt over equity by the new company. This time though, the decline is significant at 5% level. Liquidity of the new company is significantly increased (at 10% level).

The above results are consistent with our hint (from the previous insignificant differences in performance) that merged firms experience a bad profit record following the merger in comparison to the pre-merger period.

6.2 CROSS-SECTIONAL ANALYSIS' RESULTS

While the impact of mergers on performance is small on average, there is a great deal of cross-sectional variability in changes following mergers as illustrated by our results. We start with an analysis of the correlation between the mean industry adjusted difference in performance and special characteristics of the merger participants and their respective t-tests. We will then continue with a review of the correlation of special characteristics of the merger participants with merger outcomes.

6.2.1 ASSOCIATION OF PERFORMANCE DIFFERENCES WITH PRE-MERGER CHARACTERISTICS

A. Performance difference between Acquirer and Target

In this section we examine the association of difference in performance between acquirer and target with merger outcomes. ΔX is the weighted industry-adjusted difference between pre-merger and post-merger performance for the consolidated entity. X^R is the weighted industry-adjusted difference between acquirer and target pre-merger performance variables. Weight is the relative size of the targets' assets.

As indicated in the following table, the X^R variables influence the merger-related performance changes as $\text{Corr}(\Delta X, X^R)$ is significant for all the ratios.

Analytically:

Table 5 - Correlation of performance difference with weighted difference between acquirer and target pre-merger performance and their t-tests.

GROWTH RATIOS		
SALES GROWTH	0.89***	8.947
EARNINGS GROWTH	0.929***	11.529
ASSETS GROWTH	0.903***	9.657
PROFITABILITY RATIOS		
GROSS PROFIT MARGIN ON SALES	0.944***	13.054
NET PROFIT MARGIN ON SALES	0.869***	8.036
ROAA I	0.895***	9.215
ROAA II	0.894***	9.144
ROAE I	0.982***	24.117
ROAE II	0.951***	14.141
EFFICIENCY RATIOS		
TOTAL OPERATING EXPENSES ON SALES	0.912***	10.211
OPERATING EXPENSES ON SALES	0.973***	19.136
ADMINISTRATIVE EXPENSES ON SALES	0.949***	13.754
SELLING EXPENSES ON SALES	0.976***	20.678
R&D EXPENSES ON SALES	0.871***	8.137
BALANCE SHEET RATIOS		
D/E RATIO	0.869***	8.064
DEBT RATIO	0.912***	10.200
E/A	0.912***	10.200
BANK DEBT/E	0.789***	5.883
LIQUIDITY RATIOS		
CURRENT RATIO	0.936***	12.143
QUICK RATIO	0.934***	11.989

Note: Significance at 10%, 5% and 1% level respectively: (±) 1.721, (±) 2.080, (±) 2.831.

Contrary to previous studies' results in other countries²⁶, *there is a strong (significant at 1% level) positive association between acquirer-target differences and merger-related performance changes.*

Analytically:

²⁶ The X^R variables have little influence on merger-related performance changes in the studies of Pilloff [1996], DeYoung [1993] and Berger and Humphrey [1992], who examined the relationship between acquirer-target differences and merger outcomes.

Growth Ratios

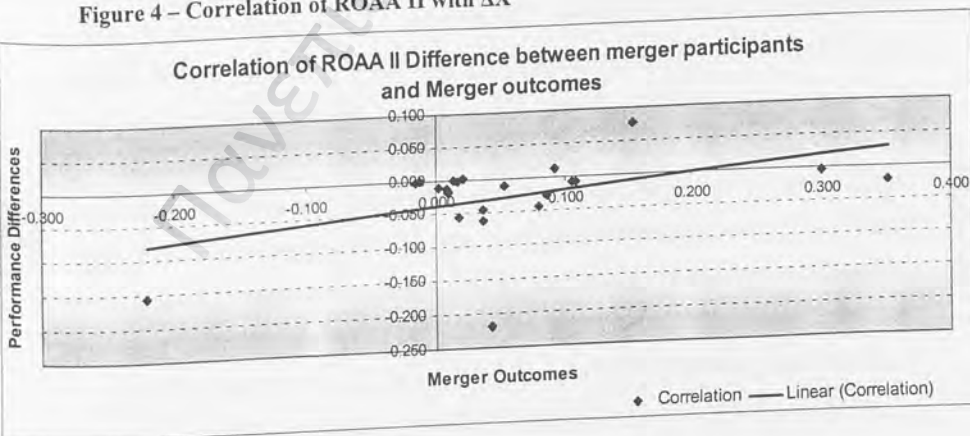
Different pre-merger growth in sales, earnings and assets between acquirer and target is associated with considerable growth after the merger. *That is, faster growing acquirers than targets (different growth rates) are related to increased post-merger growth of the new entity.* The results are significant and positive at 1% level of significance.

Profitability Ratios

All six correlations of the profitability ratios are significant at 1% level. We can therefore conclude that, on average there is *significant positive association between different levels of profitability among the merger participants and profitability improvement.*

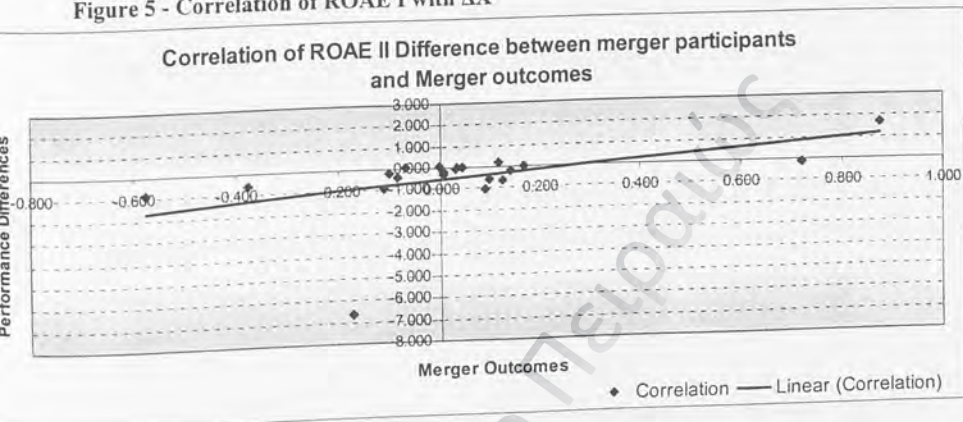
There is a significant positive change at 1% level in the ratio of ROAA I and ROAA II. This implies that *significant difference in return on assets between the acquirer and the target is associated with increased profitability after the merger.* That is, as indicated from the following figure, the two sets of variables are very strong positively related.

Figure 4 – Correlation of ROAA II with ΔX



The same is also valid for the ROAE ratios. The significant positive correlation implies strong association between *difference in return on equity between the acquirer and target and profitability increases after the merger*. The two variables are strongly associated, as also indicated in the following figure:

Figure 5 - Correlation of ROAE I with ΔX



Efficiency Ratios

As concluded by the correlation on the efficiency ratios, *significant efficiency differences between acquirer and target on the pre-merger period are associated with increased expenses*. We may therefore conclude that, on average when acquirers' expenses are considerably higher than the targets' expenses, the post-merger expenses continue to be high.

It is difficult for the new companies constituted after the merger to integrate the former two different policies as well as the assets and act efficiently within a two years' span. In these two years following the merger, the new entity has not managed to lower the operating cost (COGS) as well as the other operating expenses (administrative, selling and R&D expenses). Therefore, the *new entity has not managed to improve its efficiency by reducing its post-merger expenses*.

Increased R&D expenses continue after the merger transaction. Any increase in performance is not achieved at the expense of the merged firms' long-term viability, since the new entities maintain the R&D rate in relation to their industries. This is consistent with the findings reported by Healy [1992]. Nevertheless, we should point out that the R&D pre-merger and post-merger rates of the Greek companies are considerable lower than the ones met in other developed countries' corporations –for some companies even close to zero-.

Balance Sheet and Liquidity Ratios

All correlations on *balance sheet ratios* are positively significant at 1% level, implying that *relatively large weighted difference between acquirer and target on the use of Debt to Equity is associated with increased use of Debt after the merger.*

P.Healy [1992] examined in his paper the investment policy changes after the merger through the capital outlays and R&D expenses of the new entity. He wanted to assess whether the merged firms focus on short-term performance improvements at the expense of long-term investments. On our paper, we found out that the merged firms do not focus on short-term performance since both capital outlays and R&D expenses after the merger are increased.

Both correlations on *liquidity ratios* are significant at 1% level and positive, implying that *pre-merger difference on liquidity between acquirer and target is associated with greater liquidity after merger.* This also arises from the increased assets after merger as evidenced by the significant correlation of assets' growth.

B. Acquirer Characteristics

Table 6 - Correlation of performance difference with acquirer weighted pre-merger performance and their t-tests.

	Corr	t-test
GROWTH RATIOS		
SALES GROWTH	0.613***	3.552
EARNINGS GROWTH	0.235	1.106
ASSETS GROWTH	0.661***	4.041
PROFITABILITY RATIOS		
GROSS PROFIT MARGIN ON SALES	0.12	0.554
NET PROFIT MARGIN ON SALES	0.635***	3.771
ROAA I	0.324	1.568
ROAA II	0.265	1.258
ROAE I	0.159	0.740
ROAE II	0.578***	3.248
EFFICIENCY RATIOS		
TOTAL OPERATING EXPENSES ON SALES	0.432**	2.194
OPERATING EXPENSES ON SALES	0.253	1.199
ADMINISTRATIVE EXPENSES ON SALES	0.229	1.077
SELLING EXPENSES ON SALES	0.148	0.687
R&D EXPENSES ON SALES	0.777***	5.656
BALANCE SHEET RATIOS		
D/E RATIO	0.487**	2.557
DEBT RATIO	0.182	0.846
E/A	0.182	0.846
BANK DEBT/E	0.038	0.172
LIQUIDITY RATIOS		
CURRENT RATIO	0.003	0.013
QUICK RATIO	-0.004	-0.017

Note: Significance at 10%, 5% and 1% level respectively: (\pm) 1.721, (\pm) 2.080, (\pm) 2.831.

ΔX is the difference between pre-merger and post-merger performance. X^{RA} is a weighted measure of acquirer pre-merger performance. As indicated in the above table [$\text{Corr}(\Delta X, X^{RA})$], merger-related improvements (ΔX) are associated with specific industry-adjusted pre-merger characteristics of the acquirer (X^{RA}).

Analytically:

B. Acquirer Characteristics

Table 6 - Correlation of performance difference with acquirer weighted pre-merger performance and their t-tests.

	PERFORM	CONST
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SALES GROWTH	0.613***	3.552
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QUICK RATIO	-0.004	-0.017

Note: Significance at 10%, 5% and 1% level respectively: (\pm) 1.721, (\pm) 2.080, (\pm) 2.831.

ΔX is the difference between pre-merger and post-merger performance. X^{RA} is a weighted measure of acquirer pre-merger performance. As indicated in the above table [$\text{Corr}(\Delta X, X^{RA})$], merger-related improvements (ΔX) are associated with specific industry-adjusted pre-merger characteristics of the acquirer (X^{RA}).

Analytically:

Growth Ratios

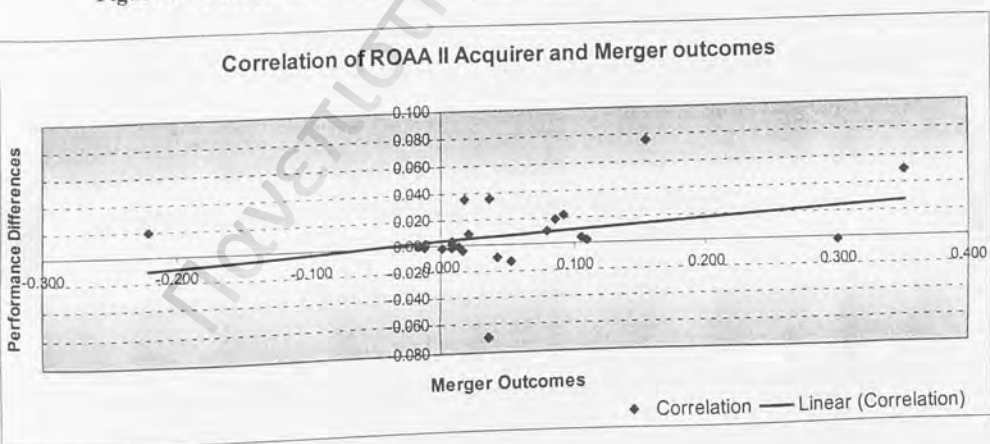
High sales and assets growing acquirers are related to increased post-merger sales and assets growth of the new consolidated entity. More specifically,

- There is a significant at 1% level correlation between pre-merger high growth sales acquirer and merger outcomes. That is, the new company tends to have higher sales growth rate when the acquirer was high-growth in the pre-merger period.
- The same applies for assets growth. Acquirers whose assets growth rates are high in the pre-merger period are associated with large assets growth in the post-merger period.

Profitability Ratios

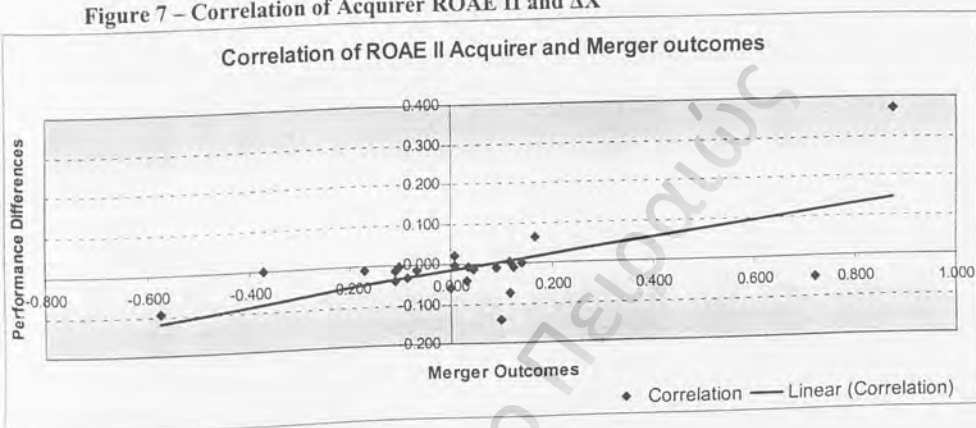
There is a strong relationship between high profitable acquirers and post-merger profitability of the new company. The positive values of the correlations, with two of them significant at 1% level, imply that *high profitable acquirers are associated with subsequent profitability improvements*.

Figure 6 – Correlation of Acquirer ROAA II and ΔX



As indicated in the above figure, the relationship between pre-merger industry-adjusted pretax ROAA II and merger outcomes is not very strong. This is also concluded from the correlation value of $r = 0.2665$. In contrary, the association of ROAE II with ΔX is strong as evidenced from the following figure ($r = 0.777$):

Figure 7 – Correlation of Acquirer ROAE II and ΔX



Efficiency Ratios

The positive and significant values (one at 5% level and one at 1% level) of two out of six correlations of efficiency ratios imply that *high-cost acquirers are associated with increased expenses in the new entity*. The merger process itself may reveal the existence or source of operating problems. This is of course consistent with the previous result of significant association between efficiency differences between acquirer and target and increased expenses.

Balance Sheet and Liquidity Ratios

Finally, the Balance sheet and Liquidity ratios of the acquirer have little association with the performance improvements attributed to the merger, as five out of the six ratios' values are insignificant.

C. Target Characteristics

Table 7 - Correlation of performance difference with target weighted pre-merger performance and their t-tests.

GROWTH RATIOS		
SALES GROWTH	-0.661***	-4.039
EARNINGS GR O WT H	-0.907***	-9.899
ASSETS GROWTH	-0.568***	-3.165
PROFITABILITY RATIOS		
GROSS PROFIT MARGIN ON SALES	-0.776***	-5.641
NET PROFIT MARGIN ON SALES	-0.019	-0.087
ROAA I	-0.42**	-2.121
ROAA II	-0.637***	-3.784
ROAE I	-0.91***	-10.029
ROAE II	-0.569***	-3.174
EFFICIENCY RATIOS		
TOTAL OPERATING EXPENSES ON SALES	-0.747***	-5.146
OPERATING EXPENSES ON SALES	-0.857***	-7.605
ADMINISTRATIVE EXPENSES ON SALES	-0.512**	-2.729
SELLING EXPENSES ON SALES	-0.89***	-8.922
R&D EXPENSES ON SALES	-0.418**	-2.110
BALANCE SHEET RATIOS		
D/E RATIO	-0.552***	-3.033
DEBT RATIO	-0.799***	-6.079
E/A	-0.799***	-6.079
BANK DEBT/E	-0.719***	-4.740
LIQUIDITY RATIOS		
CURRENT RATIO	-0.358*	-1.757
QUICK RATIO	-0.35	-1.715

Note: Significance at 10%, 5% and 1% level respectively: (±) 1.721, (±) 2.080, (±) 2.831.

ΔX is the difference between pre-merger and post-merger performance. X^{RT} is a weighted measure of target pre-merger performance. As indicated above, merger-related improvements are significantly associated (negative association) with the target industry-adjusted pre-merger performance. The X^{RT} variables are significantly associated with the change in performance related to merger, as $\text{Corr}(\Delta X, X^{RT})$ is significant for almost all of the above ratios. Analytically:

Growth Ratios

There seems to exist significant negative correlation (all at 1% level) between pre-merger assets, earnings and sales growth of the target company and the performance difference of the new entity. This implies the following:

1. *Targets with low assets growth are associated with increased asset growth by the new entity.*
2. *Targets with low earnings growth are associated with increased earnings growth by the consolidated company in the two years following the merger.*
3. *Targets with low sales growth are associated with better sales performance by the new merged company.*

Profitability Ratios

All correlations on profitability ratios are negative with four of them significant at 1% level and one at 5% level. This implies that *mergers are significantly associated with profitability gains when target profitability is low and therefore conducive to such gains.* This relationship appears to be expense-driven, as a negative relationship exists between target expense ratios and merger outcomes. This finding is consistent with preconceived beliefs that low target profitability is associated with improved profitability results [Pilloff, 1996]. The strong negative relationship between targets' ROAA II and ROAE II with merger outcomes is also evidenced in the following figures:

Figure 8 - Correlation of Target ROAA II and ΔX

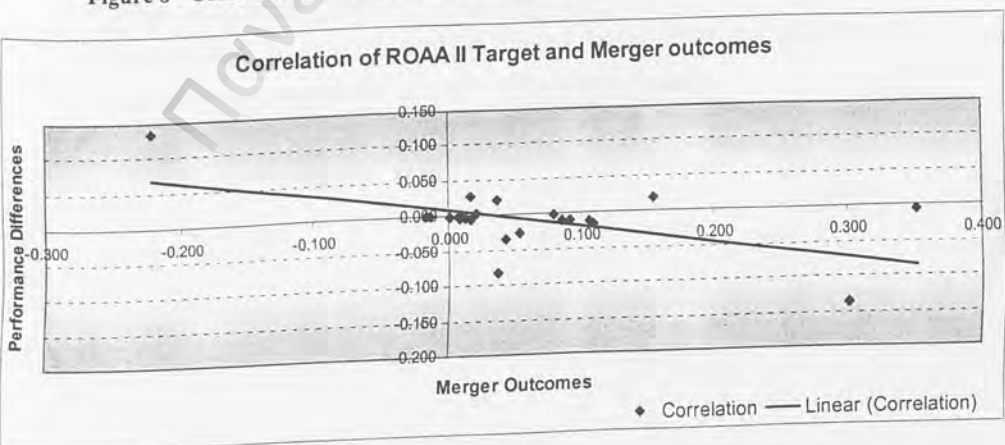
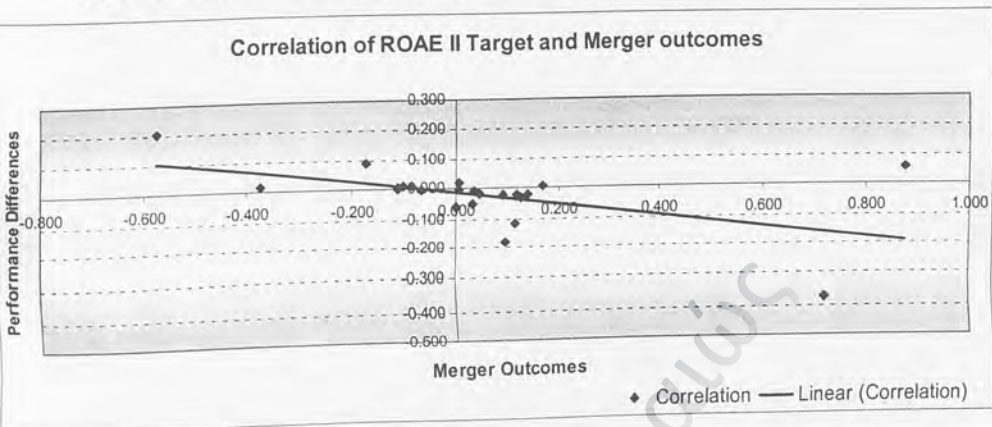


Figure 9 - Correlation of Target ROAE II and ΔX



Efficiency Ratios

Correlations on **Efficiency Ratios** are all significant at 1% level. A strong negative association exists implying that *high cost targets are associated with reduced expenses by the new entity and therefore improved profitability.*

Balance Sheet and Liquidity Ratios

Finally, a negative relationship also exists between all targets' balance sheet ratios and the corresponding ratios of the consolidated company, implying that *low use of debt by targets* is associated with increased debt capacity in the post-merger period.

Finally, from the examination of the liquidity ratios we can conclude that *higher current liquidity by targets* is related to reduced available cash after the merger by the new entity and therefore less waste of productive resources.

6.2.2 ASSOCIATION OF PERFORMANCE DIFFERENCE WITH SIZE

In this final part of the cross-sectional analysis of performance changes we will examine whether the absolute and relative size of merger participants can play an important role in the ease in which consolidation can occur, changes in market power, or gains from scale economies.

A. Acquirers' Absolute Size

We will examine whether correlation exists between acquirers' size and performance difference (post-merger minus pre-merger performance). The results are recorded in the following table:

Table 8 – Correlation of performance changes with Acquirers' absolute size

GROWTH RATIOS		
SALES GROWTH	0.071	0.326
EARNINGS GROWTH	0.253	1.197
ASSETS GROWTH	0.09	0.414
PROFITABILITY RATIOS		
GROSS PROFIT MARGIN ON SALES	0.029	0.132
NET PROFIT MARGIN ON SALES	-0.358*	-1.755
ROAA I	0.236	1.115
ROAA II	-0.198	-0.927
ROAE I	0.05	0.230
ROAE II	-0.254	-1.206
EFFICIENCY RATIOS		
TOTAL OPERATING EXPENSES ON SALES	0.171	0.797
OPERATING EXPENSES ON SALES	0.103	0.476
ADMINISTRATIVE EXPENSES ON SALES	-0.185	-0.862
SELLING EXPENSES ON SALES	0.129	0.595
R&D EXPENSES ON SALES	-0.078	-0.357
BALANCE SHEET RATIOS		
D/E RATIO	0.067	0.309
DEBT RATIO	0.138	0.636
E/A	-0.138	-0.636
BANK DEBT/E	0.195	0.912
LIQUIDITY RATIOS		
CURRENT RATIO	0.046	0.212
QUICK RATIO	0.045	0.205

Note: Significance at 10%, 5% and 1% level respectively: (±) 1.721, (±) 2.080, (±) 2.831.

From the above table we can conclude that *the absolute size of the acquirer is not significantly associated with performance improvements by the new entity.*

An examination of the profitability ratios shows that there is a positive but insignificant association between acquirer size and post-merger operating profitability. On the other hand, there is a slight negative relationship between acquirer's absolute size and profitability ratios on pretax Net Income. One profitability ratio is significantly negative associated (at 1% level) with the Net pretax Income. This is possibly due to increased expenses by the larger acquirers.

Acquirers' size is insignificantly related to all other performance difference measures.

B. Target's Absolute size

We will examine whether correlation exists between targets' asset size and performance difference. The results are recorded in the following table:

From the following table we can conclude that, *the absolute size of the target is also not significantly correlated with the performance ratios in the new post-merger entity.* There is a slight negative relation between target's absolute size and profitability ratios on pretax Net Income but this is significant for only one ratio and therefore we cannot make valid generalizations.

Target size is insignificantly associated with all other performance measures.

Table 9 - Correlation of performance changes with Target size

GROWTH RATIOS		
SALES GROWTH	0.096	0.444
EARNINGS GROWTH	0.306	1.475
ASSETS GROWTH	0.036	0.167
PROFITABILITY RATIOS		
GROSS PROFIT MARGIN ON SALES	-0.063	-0.290
NET PROFIT MARGIN ON SALES	-0.377*	-1.865
ROAA I	0.184	0.857
ROAA II	-0.264	-1.254
ROAE I	-0.051	-0.233
ROAE II	-0.236	-1.115
EFFICIENCY RATIOS		
TOTAL OPERATING EXPENSES ON SALES	0.113	0.520
OPERATING EXPENSES ON SALES	-0.033	-0.153
ADMINISTRATIVE EXPENSES ON SALES	-0.228	-1.075
SELLING EXPENSES ON SALES	-0.041	-0.190
R&D EXPENSES ON SALES	-0.141	-0.652
BALANCE SHEET RATIOS		
D/E RATIO	-0.135	-0.624
DEBT RATIO	0.029	0.135
E/A	-0.029	-0.135
BANK DEBT/E	0.034	0.157
LIQUIDITY RATIOS		
CURRENT RATIO	0.017	0.076
QUICK RATIO	0.02	0.094

Note: Significance at 10%, 5% and 1% level respectively: (\pm) 1.721, (\pm) 2.080, (\pm) 2.831.

C. Relative Size of the Target to Total Assets of the Combined company

We also examine whether correlation exists between relative asset size of target and performance changes. The results are recorded in the following table:

Table 10 - Correlation of performance changes with relative Target size

GROWTH RATIOS		
SALES GROWTH	0.019	0.089
EARNINGS GROWTH	0.059	0.269
ASSETS GROWTH	-0.205	-0.959
PROFITABILITY RATIOS		
GROSS PROFIT MARGIN ON SALES	-0.302	-1.450
NET PROFIT MARGIN ON SALES	0.004	0.020
ROAA I	-0.251	-1.187
ROAA II	-0.151	-0.698
ROAE I	-0.323	-1.562
ROAE II	0.037	0.172
EFFICIENCY RATIOS		
TOTAL OPERATING EXPENSES ON SALES	-0.167	-0.777
OPERATING EXPENSES ON SALES	-0.412*	-2.070
ADMINISTRATIVE EXPENSES ON SALES	-0.088	-0.406
SELLING EXPENSES ON SALES	-0.498**	-2.634
R&D EXPENSES ON SALES	-0.107	-0.493
BALANCE SHEET RATIOS		
D/E RATIO	-0.462**	-2.385
DEBT RATIO	-0.326	-1.583
E/A	0.326	1.583
BANK DEBT/E	-0.373*	-1.844
LIQUIDITY RATIOS		
CURRENT RATIO	-0.116	-0.536
QUICK RATIO	-0.109	-0.503

Note: Significance at 10%, 5% and 1% level respectively: (±) 1.721, (±) 2.080, (±) 2.831.

Relative size of the target is associated with reduced expenses and lower use of debt.

- Relatively large targets are associated with lower post-merger expenses and thus increased efficiency, as all correlations on efficiency measures are negative (with two of them significant at 10% and 5% level).
- Relatively large targets are finally associated with reduced use of debt by the new company.

7. SOME INTERESTING FINDINGS

Up to this point we have examined both average and cross-sectional mean weighted industry-adjusted changes in performance for 23 Greek merger cases. Before summarizing the results from our research, we will try to gather the characteristics of the Greek merger participants, which may lead to increased post-merger performance. As mentioned by Travlos²⁷, this knowledge is very useful since we can then conclude on which of the earlier mentioned motives for merger are actually important. Additionally, through the cross-sectional analysis we can find out some features –special characteristics- of the merger participants that can lead to increased post-merger performance and therefore construct some kind of raw model that promises positive post-merger returns.

As per a previous study by *Wansley, Roenfeldt and Cooley [1983]* and *Travlos [1996]*, target companies in successful M&As have low profit/expense (P/E) ratios, use less debt, are smaller, grow more rapidly, have higher current liquidity, and have lower market value of equity over book value of assets ratios relative to randomly selected non-merged companies. This evidence supports the view that target companies are managed poorly and waste productive resources.

Travlos continues stating that although the characteristics of successful targets are known, predictive models of acquisition activities have only weak prediction power and portfolios of "potential" target companies selected from acquisition predicted models do not outperform the market.

Hasbrouk [1985] found out that acquired companies, which are not coming from the financial sector and are not subject to public regulations, have low "q" and high liquidity ratio relative to these randomly selected non-acquired companies of the same size and sector.

²⁷ See Travlos [1996].

Pilloff [1996] concluded that, low target profitability, high target and acquirer total expenses and high target absolute and relative size are correlated with subsequent performance improvements.

In sum, although the probability of success for the average buyer is only 50/50 at best, these odds can be improved by having a strong core business, buying companies in related businesses where the chance of achieving real economic synergies is highest, and buying smaller businesses that can easily be integrated during the post acquisition phase of the program.

Examining our sample of 23 Greek mergers, we might be able to on the subject of special characteristics of successful mergers by revealing some features of the Greek companies involved in merger cases and therefore conducive to merger gains.

To start with, *correlation between performance differences of the merger participants and performance improvements was positive, strong and statistically significant at 1% level:*

- *Different levels of sales, earnings and assets growth between acquirer and target are related to increased sales, earnings and assets growth after the merger for the new entity. That is faster growing acquirers (than targets) are related to increased post-merger growth*
- *Faster growing acquirers are also related to increased post-merger growth*
- *Different levels of profitability among the merger participants are associated with profitability improvements*
- *Relatively large weighted difference between acquirer and target on the use of Debt to Equity is associated with increased use of Debt after merger*

As far as *acquirer companies* are concerned, we can make the following generalizations on their characteristics:

- *High sales and assets growing acquirers are related to increased post-merger sales and assets growth in the new consolidated entity*
- *High profitable acquirers are associated with subsequent profitability improvements*
- *Low-cost acquirers are associated with increased efficiency.*

The questions that have been set on target characteristics are:

Targets in successful mergers

- grow more rapidly?
- have low profitability?
- have high total expenses?
- use less debt?
- have higher liquidity?

Target companies in successful Greek mergers have the following characteristics:

- *Low growth targets are associated with increased growth of assets, earnings and sales by the new consolidated entity*
- *Mergers are significantly associated with profitability gains when target profitability is low and therefore conducive to such gains*
- *High cost targets are associated with reduced expenses by the new entity and therefore improved efficiency*
- *Low use of debt by targets is associated with increased debt capacity in the post-merger period*
- *Higher current liquidity of targets is finally related to less waste of productive resources.*

Some issues have also arisen on the correlation between absolute and relative asset size of the merger participants and possible post-merger performance improvements. These are the following:

- I. Targets in successful mergers are smaller? Buying smaller businesses that can easily be integrated during the post acquisition phase of the program increases the possibility of better post-merger performance results?
- II. High target absolute and relative sizes are correlated with subsequent performance improvements?
- III. The performance results relate to the size of one of the parties involved?

Our research on the influence of the size of the merger participants on merger outcomes suggested the following:

- The absolute size of the acquirer is not significantly associated with performance improvements by the new entity
- *Small targets are relatively associated with increased profitability* of the new entity (though only one profitability ratio is significantly associated at 10% level and therefore results cannot be drawn)
- *Finally, relatively large targets* (to both participants' asset size) *are associated with lower post-merger expenses and thus increased efficiency*, as all correlations on efficiency measures are negative (with two of them significant at 10% and 5% level of significance).

8. CONCLUSION

In this paper, we examine both average and cross-sectional mean industry-adjusted changes in performance in 23 merger transactions that occurred between 1993 and 1998 to conclude on *whether mergers in Greece have created added value for the involved parties*. Additional analysis was performed on whether some specific characteristics of the merger participants are correlated with increased post-merger performance.

Profitability appears largely unaffected by Greek merger activity, as all six mean (ΔX) industry-adjusted profitability measures show no significant change. At the two years following the merger, the new entity seems to perform at the same levels with the industry.

Examining the performance of the companies acting on a stand-alone basis –no industry adjustment–, we noted that *Greek merged firms even experience a bad profit record following the merger in comparison to the pre-merger period*.

The above results are consistent with previous papers' worldwide results, which prove that there is usually a decline in profitability after a merger.

Certain characteristics of the merger participants are associated with improved performance following the merger. Large performance differences between the participants and high growth, profitable and low cost acquirers are associated with better performance results from the new entity. As far as target are concerned, evidence follows past research on characteristics of successful targets: Low growth and profitability rates, high cost ratios and high current liquidity are all associated with successful Greek mergers.

Absolute and relative size of the merger participants is not strongly associated with improved merger related performance.

APPENDIX

ANNEX: List of mergers completed between 1993 – 1998

1. ATHENIAN TEXTILES S.A. – BRITANNIA TEXTILES S.A.

Athenian Textiles S.A. was founded in 1972, in Kifissia. Britannia Textiles S.A. was founded earlier in 1931. Both companies were operating in the sector of Textiles. In 31/12/93 Athenian Textiles was merged by absorbing Britannia Textiles. The new company changed its name into Britannia Textiles S.A and proceeded to a share capital increase of GRD. 187,307,750. The merger was completed in 1993.

Acquirer Industry: Textiles.

Target Industry: Textiles.

Type of Merger: Horizontal.

Relation between firms: In 1986, Athenian Textiles acquired the majority of the shares and the management of the former Britannia Textiles. Under the new management Britannia started operating efficiently again, using its brand name and the new synergies with Athenian Textiles.

Date of Transformation Balance Sheet: 31/12/93.

2. MOUZAKIS S.A. – GREEK SPINNING MILLS S.A.

Mouzakis S.A. was merged by absorption with Greek Spinning Mills S.A. according to the Greek Laws 2190/1920 and 1297/1972. Greek Spinning Mills S.A. was founded in 1957. The merger was completed in December 1994.

Acquirer Industry: Textiles.

Target Industry: Textiles.

Type of Merger: Horizontal.

Relation between firms: Mouzakis S.A. was merged by acquisition with Greek Spinning Mills S.A. and the price paid was 5,000 ml drs.

Date of Transformation Balance Sheet: 31/12/93.

3. TASTY FOODS S.A. – BEST FOODS S.A.

Tasty Foods S.A. was merged by absorption with Best Foods S.A. according to the Greek Laws 2190/1920 and 2166/1993. The merger plan was completed within 1994.

Acquirer Industry: Food.

Target Industry: Food.

Type of Merger: Horizontal.

Relation between firms: Same Industry. Both companies' shares are not listed in the ASE.

Date of Transformation Balance Sheet: 01/01/94.

4. ETHNOS PUBLISHING S.A. - PEGASUS PUBLISHING AND PRINTING S.A.

Ethnos Publishing S.A. was merged by absorption with Pegasus Publishing and Printing S.A. according to the Greek Laws 2190/1920 and 2166/1993. The merger was completed within 1994.

Absorber (Target) Industry: Publishing.

Absorbed (Acquirer) Industry: Printing and Publishing.

Type of Merger: Horizontal.

Relation between firms: Same Industry.

Date of Transformation Balance Sheet: Within 1994.

5. BARBA STATHIS S.A. – FROZA S.A.

Barba Stathis S.A. was merged by absorption with Froza S.A. according to the Greek Laws 2190/1920 and 1297/72. The merger plan was completed within 1995. Since 01/07/95 the name of the Barba Stathis S.A. changed into General Foods S.A.

Acquirer Industry: Food.

Target Industry: Food.

Type of Merger: Horizontal.

Relation between firms: Same Industry.

Date of Transformation Balance Sheet: 01/03/95.

6. ILIOS INSURANCE S.A. – ASPIS PRONIA LIFE INSURANCE COMPANY S.A.

Ilios Insurance S.A. was merged by absorption with Aspis Pronia Life Insurance Company S.A. according to the Greek Laws 2190/1920 and 2166/1993. The merger was completed within 1995. After the merger the new company changed its name into Aspis Pronia General Insurance S.A.

Absorber (Target) Industry: Insurance.

Absorbed (Acquirer) Industry: Insurance

Type of Merger: Horizontal.

Relation between firms: Same Industry.

Date of Transformation Balance Sheet: Within 1995.

7. NAOUSA TEXTILES S.A. – KOLVLAN TEXTILES S.A.

Naousa Textiles S.A. was merged by absorption with Kolvlan Textiles S.A. according to the Greek Laws 2190/1920 and 2166/1993. The merger was completed within 1995.

Acquirer Industry: Textiles.

Target Industry: Textiles.

Type of Merger: Horizontal.

Relation between firms: Since 1993, Naousa Textiles held 100% of the share capital of Kolvlan Textiles S.A.

Date of Transformation Balance Sheet: Within 1995.

8. SELONDA AQUACULTURE S.A. – ARGOLIDA AQUACULTURE S.A.

Selonda S.A. was merged by absorption with Argolida Aquaculture S.A. according to the Greek Laws 2190/1920 and 2166/1993. The merger was completed within 1996.

Acquirer Industry: Aquaculture.

Target Industry: Aquaculture.

Relation between firms: Selonda S.A. already held 100% of the share capital of Argolida S.A.

Date of Transformation Balance Sheet: 31/03/96.

9. NATIONAL MORTGAGE BANK S.A. - NATIONAL HOUSING BANK S.A.

National Mortgage Bank S.A. was merged by absorption with National Housing Bank S.A. according to the Greek Laws 2190/1920 and 2515/1997. The merger was completed within 1997.

Acquirer Industry: Banks.

Target Industry: Banks.

Type of Merger: Horizontal.

Relation between firms: The two largest (public) housing banks in Greece.

Date of Transformation Balance Sheet: 31/12/96

10. VARVARESSOS TEXTILES OF NAOUSA S.A. - VARVARESSOS TEXTILES OSTIL S.A.

Varvaressos S.A. was merged by absorption with Varvaressos Textiles Ostil S.A. according to the Greek Laws 2190/1920 and 1297/1972. Varvaressos Textiles Ostil S.A. was founded in 1988. The merger was completed in February 1997.

Acquirer Industry: Textiles.

Target Industry: Textiles.

Type of Merger: Horizontal.

Relation between firms: Same Management.

Date of Transformation Balance Sheet: 31/12/96.

11. ETHNIKI GENERAL INSURANCE S.A. - ASTIR INSURANCE S.A.

Ethniki General Insurance S.A. was merged by absorption with Astir Insurance S.A. according to the Greek Laws 2190/1920 and 2166/1993. The merger was completed within 1997.

Acquirer Industry: Insurance.

Target Industry: Insurance

Type of Merger: Horizontal.

Relation between firms: Same Industry.

Date of Transformation Balance Sheet: Within 1997.

12. ILIOFIN S.A. - A&D HATZIOANNOU S.A.

Iliofin S.A. was merged by absorption with A&D Hatzioannou S.A. according to the Greek Laws 2190/1920 and 2166/1993. Iliofin S.A. proceeded to a share capital increase of GRD. 2,263,471,000. The merger was completed in 01/02/98. Since that date the shares of the new company are tradable in the parallel market of the ASE under the new company name Hatzioannou S.A.

Absorber (Target) Industry: Textiles.

Absorbed (Acquirer) Industry: Textiles - Clothing.

Type of Merger: Vertical.

Relation between firms: Same Industry.

Date of Transformation Balance Sheet: 30/04/97.

13. NIREFS PISCICULTURE S.A. – THALASSA PISCICULTURE S.A.

Nirefs S.A. was merged by absorption with Thalassa S.A. according to the Greek Laws 2190/1920 and 2166/1993. The merger was completed within 1997.

Acquirer Industry: Aquaculture.

Target Industry: Aquaculture.

Type of Merger: Horizontal.

Relation between firms: In August 1995, Nirefs acquired 78.8% of the share capital of Thalassa

Date of Transformation Balance Sheet: 30/06/97.

14. SARANTIS S.A. – TRYLET S.A.

Sarantis S.A. was merged by absorption with Trylet S.A. according to the Greek Laws 2190/1920 and 2166/1993. The merger plan was signed on 09/02/98 by the Board of Directors of the two companies and was completed within 1998.

Acquirer Industry: Cosmetics and Pharmaceutical.

Target Industry: Production for consumers.

Type of Merger: Horizontal (& Vertical).

Relation between firms: Production of retail products.

Date of Transformation Balance Sheet: 30/11/97.

15. INIOHOS INSURANCE S.A. – ASPIS PRONIA DAMAGES INSURANCE S.A.

Iniohos Insurance S.A. was merged by absorption with Aspis Pronia Damages Insurance S.A. according to the Greek Laws 2190/1920 and 2166/1993. The merger was completed within 1998. After the merger the new company changed its name into Aspis Pronia Damages Insurance Co.

Acquirer Industry: Insurance.

Target Industry: Insurance

Type of Merger: Horizontal.

Relation between firms: Same Industry.

Date of Transformation Balance Sheet: Within 1997.

16. EUROBANK S.A. – INTERBANK HELLAS S.A.

Eurobank Bank S.A. was merged by absorption with Interbank Hellas S.A. according to the Greek Laws 2190/1920 and 2515/1997. The merger was completed in 10.10.1997 and the name of the new bank was changed into EFG Eurobank S.A.

Acquirer Industry: Banks.

Target Industry: Banks.

Type of Merger: Horizontal.

Relation between firms: On 19/07/96, Consolidated Eurofinance Holdings S.A., parent company of Eurobank S.A., acquired 95% of the share capital of Interbank Hellas S.A. and on 31/01/97 the BoDs of the two banks decided to proceed on the merger.

Date of Transformation Balance Sheet: 31/01/97.

17. NATIONAL BANK OF GREECE S.A. – NATIONAL MORTGAGE BANK S.A.

National Bank of Greece S.A. was merged by absorption with National Mortgage Bank S.A. according to the Greek Laws 2190/1920 and 2515/1997. The merger was completed within 1998.

Acquirer Industry: Banks.

Target Industry: Banks.

Type of Merger: Horizontal.

Relation between firms: Same Industry.

Date of Transformation Balance Sheet: Within 1998.

18. INTERTYP S.A. – EPIFANIA S.A.

Intertyp S.A. was merged by absorption with Epifania S.A. according to the Greek Laws 2190/1920 and 2166/1993. The merger was completed within 1998.

Acquirer Industry: Printing and Publishing.

Target Industry: Production and Printing.

Type of Merger: Horizontal.

Relation between firms: Same Industry.

Date of Transformation Balance Sheet: 15/04/98.

19. ETANE S.A. – EFKLIDIS S.A.

Etane S.A. was merged by absorption with Efklidis S.A. according to the Greek Laws 2190/1920 and 2166/1993. The merger was completed within 1998.

Acquirer Industry: Constructions.

Target Industry: Constructions.

Type of Merger: Horizontal.

Relation between firms: Same Industry.

Date of Transformation Balance Sheet: 30/06/98.

20. SELONDA AQUACULTURE S.A. – RIOPESCA AQUACULTURE S.A.

Selonda S.A. was merged by absorption with Riopesca S.A. according to the Greek Laws 2190/1920 and 2166/1993. Selonda S.A. proceeded to a share capital increase of GRD. 495,230,400. The merger was completed in January 1999.

Acquirer Industry: Aquaculture.

Target Industry: Aquaculture.

Type of Merger: Horizontal.

Relation between firms: On 1994, Selonda S.A. acquired 70% of the share capital of Riopesca S.A.

Date of Transformation Balance Sheet: 31/07/98.

21. BANK OF ATHENS S.A. – EFG EUROBANK S.A.

Bank of Athens S.A. was merged by absorption with EFG Eurobank S.A. according to the Greek Laws 2190/1920 and 2515/1997. The merger was completed within 1999.

Absorber (Target) Industry: Banks.

Absorbed (Acquirer) Industry: Banks.

Type of Merger: Horizontal.

Relation between firms: Same Industry.

Date of Transformation Balance Sheet: 31/07/98.

22. BANK OF CENTRAL GREECE S.A. – EGNATIA BANK S.A.

Bank of Central Greece S.A. was merged by absorption with Egnatia Bank S.A. according to the Greek Laws 2190/1920 and 2515/1997. The merger was completed within 1999.

Absorber (Target) Industry: Banks.

Absorbed (Acquirer) Industry: Banks.

Type of Merger: Horizontal.

Relation between firms: Same Industry.

Date of Transformation Balance Sheet: 31/12/98.

23. BRITANNIA TEXTILES S.A. – MICROMEDIA S.A. & MIKOR S.A.

Britannia Textiles S.A. was merged by absorption with Micromedia S.A. and Mikor S.A. according to the Greek Laws 2190/1920 and 2166/1993. Britannia Textiles S.A. proceeded to a share capital increase of GRD. 689,575,000. The merger was completed within 1999. After the merger the new company's name is Micromedia Britannia S.A.

Acquirer Industry: Textiles.

Target Industry (Micromedia S.A.): Retail Industry.

Target Industry (Mikor S.A.): Retail Industry.

Type of Merger: Conglomerate.

Relation between firms: Britannia's shares are tradable in the ASE since 1990. Main shareholder of both acquired companies is Radio Korasidis S.A. (50%). Micromedia S.A. participates (50%) at the share capital of Mikor S.A. Mikor S.A. has closed only one fiscal year.

Date of Transformation Balance Sheet: 01/01/99.

TABLES

Table 11 – Summary of earlier "accounting" studies

YEAR	AUTHOR	SAMPLE PERIOD	NUMBER OF FIRMS	COUNTRY	MAIN FINDINGS
1971	Singh	1955-60	77	UK	66.2% of firms experienced worse adjusted profitability in year of takeover, 66% suffered declines in profitability one year after takeover, falling to 57.1% experiencing a worse record two years after takeover
1974	Utton	1954-65	39	UK	The percentage of firms with below median profitability was 58% both one and two years after merger
1977	Meeks	1964-72	233	UK	Amalgamations experience declines in adjusted post-merger profitability, from -5.3% in the year after merger to -7.3%
1980	Cable, Palfrey & Runge	1964-74	55	West Germany	Statistically insignificant positive post-merger profitability returns. In relation to industry adjusted performance, merging firms avoided the decline in industry profits experienced by firms as a whole.
1980	Cosh, Hughes & Singh	1967-69	290	UK	Statistically significant relative improvement in post-merger profitability found (at the 5% level) for all mergers for two measures of profitability. They conclude that their combined results on profitability provide some evidence that the relative profitability of merging firms improved slightly after merger
1980	Kumps & Wterwulgh e	1962-74	Apprx. 40	Belgium	Merging firms performed better in relation to industry performance over a five-year post merger period. However, the differences were statistically insignificant
1980	Jenny & Webber	1962-72	62 Horizontal	France	In the four years following the merger, the profit rates of the firms that merged were on the average lower than they would have been otherwise. However, the differences are not statistically significant at the 5% level
1980	Peer	1962-73	Apprx. 29	Netherlands	Post-merger declines of the return on equity in comparison to industry performance
1980	Ryden & Edberg	1962-76	40	Sweden	Merged firms experienced a bad profit record following merger in comparison to the pre-merger period, when matched with randomly selected non-merged firms, with industry trends, and with predicted values for the merged firm had they not merged
1980	Mueller	1962-72	287	US	Pre-tax profit rates of merging firms are lower (not significantly) after the merger compared to industry averages
1984	Kumar	1967-74	354	UK	Amalgamations experience declines in adjusted post-merger profitability, from -10% in the year after merger, to -7% seven years post-merger
1987	Ravenscraft & Scherer	1950-77	451	US	Acquirers did not fare very well. Profitability was barely above control group levels over the three years 1975-77, and even in the best year 1977, it was much lower than the average acquired unit's pre-merger level
1992	Healy, Palepu & Ruback	1979- mid 84	50	US	Merged firms show significant improvements in asset productivity relative to their industries, leading to higher operating cash flow returns after the merger. Median industry-adjusted operating results for the merged firms are 3% in the year after merger, 5.3% two years after, 3.2% three years after and 3% after four years, all significantly different from 0 at the 10% level of significance.
1996	Pilloff	1982- 1991	48	US	Although both performance measures and consolidated abnormal returns show little change on average, cross-sectional properties differ between the two.

Table 12 - Definition of ratios

RATIOS	DEFINITION
SALES GROWTH	
1 SALES GROWTH	$(\text{Current Year's Sales} - \text{Last Year's Sales}) / \text{Last Year's Sales}$
EARNINGS GROWTH	
2 EARNINGS GROWTH	$(\text{Current Year's Net Income before Taxes} - \text{Last Year's Net Income before Taxes}) / \text{Last Year's Net Income before Taxes}$
ASSETS GROWTH	
3 ASSETS GROWTH	$(\text{Current Year's Assets} - \text{Last Year's Assets}) / \text{Last Year's Assets}$
OPERATING EXPENSES	
4 TOTAL OPERATING EXPENSES ON SALES	$(\text{Cost of Goods Sold} + \text{Operational Expenses}) / \text{Sales}$
5 OPERATING EXPENSES ON SALES	$(\text{Administrative Expenses} + \text{Selling Expenses} + \text{R\&D Expenses} + \text{Other Operational Expenses}) / \text{Sales}$
6 ADMINISTRATIVE EXPENSES ON SALES	$\text{Administrative Expenses} / \text{Sales}$
7 SELLING EXPENSES ON SALES	$\text{Selling Expenses} / \text{Sales}$
8 R&D EXPENSES ON SALES	$\text{R\&D Expenses} / \text{Sales}$
PROFIT MARGINS	
9 GROSS PROFIT MARGIN	$\text{Gross Operating Profit} / \text{Sales}$
10 NET PROFIT MARGIN	$\text{Net Income before Taxes} / \text{Sales}$
11 ROAA I	$\text{Gross Operating Profit} / [(\text{Current Year's Total Assets} + \text{Last Year's Total Assets}) / 2]$
12 ROAA II	$\text{Net Income before Taxes} / \text{Average Total Assets}$
13 ROAE I	$\text{Gross Operating Profit} / [(\text{Current Year's Total Equity} + \text{Last Year's Total Equity}) / 2]$
14 ROAE II	$\text{Net Income before Taxes} / \text{Average Total Equity}$
DEBT-EQUITY RATIOS	
15 D/E RATIO	$\text{Total Debt} / \text{Total Equity}$
16 DEBT RATIO	$\text{Total Debt} / \text{Total Assets}$
17 E/A	$\text{Equity} / \text{Total Assets}$
18 BANK DEBT/E	$\text{Long Term Debt} + \text{Banks:Short Term Loan Account} + \text{Liab.payable during the next fiscal year} / \text{Equity}$
LIQUIDITY RATIOS	
19 CURRENT RATIO	$\text{Current Assets} / \text{Short Term Liabilities}$
20 QUICK RATIO	$(\text{Current Assets} - \text{Inventories}) / \text{Short Term Liabilities}$

Table 13 - Previous papers' performance ratios and comparison with this paper's ratios

S.PILLOFF (1996)	S.RHODES (1998)	P.HEALY (1992)	D.RAVENSCHRAFT & F.M. SCHERER (1989)	R.Mc TAGGART & K.K.DERR (2001)	IN THIS PAPER
				Market share	SALES GROWTH
				Revenue Growth	EARNINGS GROWTH
				Absolute Growth / Revenue	ASSETS GROWTH
EXPREV = Total Costs (interest and noninterest) / Revenues	Total Expenses / Total Revenue			Operational Costs vs Budget	TOTAL OPERATING EXPENSES ON SALES
	Total Expenses / Total Operating Revenue				OPERATING EXPENSES ON SALES
	Noninterest Expenses / Adjusted Operating Revenue (net interest income + noninterest income)				ADMINISTRATIVE EXPENSES ON SALES
EXPAST = Total Costs (interest and noninterest) / Average Assets	Total Expenses / Average Quarterly Assets for the year under review				SELLING EXPENSES ON SALES
SALAST = Personnel Costs / Average Assets	Total Expenses / Total Assets				R&D EXPENSES ON SALES
PREMAST = Premises and Fixed Assets Expenses / Average Assets	Noninterest Operating Expenses / Assets				
NNIXAST = Total Non-interest Expenses / Average Assets	Total Noninterest Expenses (personnel, occupancy and other) / Assets				
				Revenues	
				EBITDA	GROSS PROFIT MARGIN
			Cash Flow (operating income plus depreciation) / Sales	Cash Flow	NET PROFIT MARGIN
ROA 1 = Net Income / Average Assets	Net Income (after taxes) / Average Assets	Pretax Operating Cash Flows / Market Value of Assets = (Sales - COGS - Selling Expenses - Administrative Expenses + Depreciation + Goodwill Expenses) / (Market Value of Equity + Book Value of Net Debt)	Operating Income / End-of-Year Assets	Return on Asset	ROAA I
ROA 2 = Net Operating Income with Provisions / Average Assets			Operating Income / Sales	Operating income	ROAA II
ROA 3 = Net Operating Income without Provisions / Average Assets					
ROE 1 = Net Income / Average Equity	Net Income (after taxes) / Equity			Return on Equity	ROAE I
ROE 2 = Net Operating Income with Provisions / Average Equity					ROAE II
ROE 3 = Net Operating Income without Provisions / Average Equity					
EQAST = Capital / Assets	Total Capital / Total Assets				D/E RATIO
	Non-performing Assets / Total Assets				DEBT RATIO
CORAST = Core Deposits / Assets	Core Deposits / Total Deposits				E/A
LOANAST = Loans / Assets	Total Loans / Total Assets				BANK DEBT/E
	C + I Loans / Total Assets				CURRENT RATIO
	Off-balance sheet items / Total Assets				QUICK RATIO

Table 13 - Sample merger cases between 1993-1998 per year
(No. of merger, as indicated in the following tables)

	Year	Industry	Acquirer	Target	Value	Direction	Year	Industry	Acquirer	Target	Value	Direction	Year	Industry	Acquirer	Target	Value	Direction	Year	Industry	Acquirer	Target	Value	Direction
1	1993	31-Dec-1993	INDUSTRY	TEXTILES	1,718,856,000	ATHENIAN TEXTILES S.A.	BRITANNIA TEXTILES S.A.	1,750,720,000	HORIZONTAL	1	50.46%	100.00%	75.33%											
2	1994	31-Dec-1993	INDUSTRY	TEXTILES	9,933,146,000	MOUZAKIS TEXTILES S.A.	GREEK TEXTILES S.A.	5,093,804,000	HORIZONTAL	4	33.06%	100.00%	66.95%											
3	1994	01-Jan-1994	INDUSTRY	FOOD	5,068,684,000	TASTY FOODS S.A.	BEST FOODS S.A.	2,822,567,000	HORIZONTAL	2	35.77%	75.00%	55.38%											
4	1994	30-Jun-1994	INDUSTRY	PUBLISHING AND PRINTING	4,137,277,000	PEGASUS PRINTING AND PUBLISHING S.A.	ETHINGS PUBLISHING S.A.	3,356,962,000	HORIZONTAL & VERTICAL	3	44.79%	100.00%	72.40%											
5	1995	Within 1995	SERVICES	INSURANCE	16,134,543,000	ASPIS PROMIA LIFE INSURANCE COMPANY S.A.	ILIOS INSURANCE S.A.	3,204,129,000	HORIZONTAL	6	16.57%	100.00%	58.28%											
6	1995	Within 1995	INDUSTRY	TEXTILES	21,327,438,000	NAOUSA TEXTILES S.A.	KOLVLAN TEXTILES S.A.	4,434,093,000	HORIZONTAL	7	17.21%	100.00%	58.61%											
7	1995	01-Mar-1995	INDUSTRY	FOOD	7,476,384,000	BARBA STATHIS S.A.	FROZA S.A.	4,996,203,000	HORIZONTAL	5	39.62%	100.00%	69.81%											
8	1996	31-Dec-1996	SERVICES	BANKS	2,072,763,161,000	NATIONAL MORTGAGE BANK	NATIONAL HOUSING BANK	100,927,869,000	HORIZONTAL	8	4.64%	50.00%	27.32%											
9	1996	31-Mar-1996	INDUSTRY	FOOD	4,725,867,000	SELONDA AQUACULTURE S.A.	ARGOLIDA AQUACULTURE S.A.	876,375,000	HORIZONTAL	9	15.64%	100.00%	57.82%											
10	1997	Within 1997	SERVICES	INSURANCE	209,994,389,000	ETHNIKI GENERAL INSURANCE S.A.	ASTIR INSURANCE S.A.	53,116,484,000	HORIZONTAL	13	20.19%	100.00%	60.09%											
11	1997	30-Apr-1997	INDUSTRY	TEXTILES	11,402,966,000	A&D HATZIOANNOU S.A.	ILIOFIN S.A.	2,157,341,000	VERTICAL	14	15.91%	75.00%	45.45%											
12	1997	Within 1997	INDUSTRY	TEXTILES	7,467,604,000	VARVARESOS NAOUSA TEXTILES S.A.	VARVARESOS TEXTILES OSTIL S.A.	926,017,000	HORIZONTAL	15	11.03%	100.00%	55.52%											
13	1997	30-Jun-1997	INDUSTRY	FOOD	14,944,731,000	NIREPS S.A.	THALASSA PISCICULTURE	4,579,141,000	HORIZONTAL	17	37.16%	100.00%	63.68%											

15	1997	30-Nov-1997	INDUSTRY	COSMETICS AND PHARMACEUTICAL	14,137,161,000	SARANTIS S.A.	TRILET S.A.	2,242,965,000	HORIZONTAL & VERTICAL	11	13.69%	100.00%	56.85%
16	1998	Within 1998	SERVICES	BANKS	13,164,285,318,000	NATIONAL BANK OF GREECE	NATIONAL MORTGAGE BANK	2,515,763,143,000	HORIZONTAL	18	16.04%	75.00%	45.52%
17	1998	31-Jul-1998	SERVICES	BANKS	685,257,000,000	EUROBANK S.A.	BANK OF ATHENS S.A.	119,520,113,000	HORIZONTAL	16	14.83%	25.00%	19.93%
18	1998	31-Dec-1998	SERVICES	BANKS	129,276,101,000	EGNATIA BANK	BANK OF CENTRAL GREECE	165,889,000,000	HORIZONTAL	17	56.20%	100.00%	78.10%
19	1998	31-Dec-1997	SERVICES	INSURANCE	4,254,273,000	INIOHOS INSURANCES S.A.	ASPIS PRONIA DAMAGES INSURANCE S.A.	2,491,698,000	HORIZONTAL	21	36.94%	100.00%	68.47%
20	1998	30-Jun-1998	SERVICES	CONSTRUCTIONS	9,494,171,000	ETANE S.A.	EFKLIDIS S.A.	5,070,304,000	HORIZONTAL	19	34.81%	100.00%	67.41%
21	1998	01-Jan-1999	INDUSTRY	TEXTILES	7,054,991,000	BRITANNIA TEXTILES S.A.	MICROMEDIA S.A. AND MIKOR S.A.	10,064,746,000	CONGLOMERATE	23	58.79%	50.00%	54.40%
22	1998	31-Jul-1998	INDUSTRY	FOOD	7,628,637,000	SELONDA AQUACULTURE S.A.	RIOPESCA AQUACULTURE S.A.	5,241,376,000	HORIZONTAL	20	40.73%	100.00%	70.36%
23	1998	15-Apr-1998	INDUSTRY	PUBLISHING AND PRINTING	1,478,678,000	INTERYP S.A.	EPIPHANIA S.A.	1,518,810,000	HORIZONTAL	22	50.67%	100.00%	75.33%

Πανεπιστήμιο Πειραιώς

Table 15 – Total assets and relative size of the target to both participants' assets

YEAR	Number of Deals	TOTAL ASSETS (in GRD.)			RELATIVE SIZE		
		MEAN	MIN	MAX	MEAN	MIN	MAX
1993	1	1,718,536,000	1,718,536,000	1,718,536,000	1,750,720,000	1,750,720,000	1,750,720,000
1994	3	6,379,703,000	4,137,277,000	9,933,148,000	3,757,777,667	2,822,567,000	5,093,804,000
1995	3	14,979,455,000	7,476,384,000	21,327,438,000	4,181,475,000	3,204,129,000	4,906,203,000
1996	2	1,038,744,514,000	4,725,867,000	2,072,763,161,000	50,902,122,000	876,375,000	100,927,869,000
1997	6	93,750,141,833	7,467,604,000	304,564,000,000	43,416,658,000	926,017,000	196,487,000,000
1998	8	1,751,091,146,125	1,478,678,000	13,164,285,318,000	353,194,898,750	1,518,810,000	2,515,763,143,000
FULL SAMPLE	23	484,443,915,993	1,478,678,000	13,164,285,318,000	76,200,608,569	876,375,000	2,515,763,143,000
							MEAN
							50.46%
							37.07%
							21.82%
							4.67%
							31.65%
							16.78%
							30.21%

NOTES: The sample consists of deals taking place from 1993 to 1998. The Assets were calculated from the Balance Sheets of the Companies the year before the merger took place. Relative size equals target mean total assets divided by target plus acquirer mean total assets.

Table 16 - Changes in performance related to merger – relative size and comparable data weights

	Mean Difference $\Delta X_{1-T,2-T}$		
GROWTH RATIOS			
SALES GROWTH	-0.031	-0.339	0.441
EARNINGS GROWTH	5.614	0.964	27.938
ASSETS GROWTH	-0.118	-1.005	0.565
PROFITABILITY RATIOS			
GROSS PROFIT MARGIN ON SALES	-0.008	-0.255	0.154
NET PROFIT MARGIN ON SALES	-0.381	-0.993	1.838
ROAA I	0.025	0.628	0.193
ROAA II	0.012	0.765	0.073
ROAE I	0.109	0.750	0.697
ROAE II	-0.125	-0.814	0.735
EFFICIENCY RATIOS			
TOTAL OPERATING EXPENSES ON SALES	0.024	0.661	0.174
OPERATING EXPENSES ON SALES	0.010	0.715	0.066
ADMINISTRATIVE EXPENSES ON SALES	0.000	0.012	0.035
SELLING EXPENSES ON SALES	0.008	0.938	0.039
R&D EXPENSES ON SALES	-0.001	-0.660	0.004
BALANCE SHEET RATIOS			
D/E RATIO	-0.488	-1.496	1.564
DEBT RATIO	-0.003	-0.074	0.188
E/A	-0.001	-0.062	0.066
BANK DEBT/E	0.123	0.863	0.681
LIQUIDITY RATIOS			
CURRENT RATIO	0.257	1.480	0.831
QUICK RATIO	0.182	1.075	0.814

Note: Significance at 10%, 5% and 1% level respectively: (\pm) 1.721, (\pm) 2.080, (\pm) 2.831.

Table 17 –Changes in performance related to merger – relative size weights

	Mean Difference ΔX ₁ - ΔX ₂ (T-TEST)		
GROWTH RATIOS			
SALES GROWTH	-0.036	-0.629	0.273
EARNINGS GR O WT H	3.187	1.018	15.015
ASSETS GROWTH	-0.073	-1.066	0.330
PROFITABILITY RATIOS			
GROSS PROFIT MARGIN ON SALES	-0.006	-0.311	0.088
NET PROFIT MARGIN ON SALES	-0.137	-1.018	0.648
ROAA I	0.018	0.757	0.115
ROAA II	0.006	0.639	0.045
ROAE I	0.066	0.732	0.435
ROAE II	-0.041	-0.718	0.275
EFFICIENCY RATIOS			
TOTAL OPERATING EXPENSES ON SALES	0.002	0.092	0.124
OPERATING EXPENSES ON SALES	0.001	0.152	0.047
ADMINISTRATIVE EXPENSES ON SALES	-0.003	-0.576	0.029
SELLING EXPENSES ON SALES	0.004	0.870	0.023
R&D EXPENSES ON SALES	0	-0.479	0.001
BALANCE SHEET RATIOS			
D/E RATIO	-0.27	-1.022	1.267
DEBT RATIO	-0.005	-0.182	0.134
E/A	-0.007	-0.896	0.038
BANK DEBT/E	0.066	0.599	0.526
LIQUIDITY RATIOS			
CURRENT RATIO	0.099	1.090	0.436
QUICK RATIO	0.063	0.700	0.429

Note: Significance at 10%, 5% and 1% level respectively: (±) 1.721, (±) 2.080, (±) 2.831.

Table 18 - Changes in performance related to merger (relative size weights) without industry-adjustment

	Mean Difference	t-TEST	Standard Deviation
GROWTH RATIOS			
SALES GROWTH	-0.061	-1.231	0.237
EARNINGS GROWTH	3.137	0.996	15.104
ASSETS GROWTH	-0.059	-1.235	0.231
PROFITABILITY RATIOS			
GROSS PROFIT MARGIN ON SALES	-0.015	-1.303	0.056
NET PROFIT MARGIN ON SALES	-0.132	-0.989	0.642
ROAA I	-0.021**	-2.135	0.047
ROAA II	-0.004	-0.634	0.028
ROAE I	-0.069**	-2.572	0.129
ROAE II	-0.063	-1.203	0.251
EFFICIENCY RATIOS			
TOTAL OPERATING EXPENSES ON SALES	-0.015	-0.842	0.087
OPERATING EXPENSES ON SALES	-0.002	-0.304	0.028
ADMINISTRATIVE EXPENSES ON SALES	-0.004	-0.773	0.024
SELLING EXPENSES ON SALES	0.002	0.851	0.008
R&D EXPENSES ON SALES	0	-0.002	0.001
BALANCE SHEET RATIOS			
D/E RATIO	-0.781**	-2.464	1.519
DEBT RATIO	-0.038**	-2.332	0.078
E/A	0.015**	2.359	0.030
BANK DEBT/E	-0.1	-1.415	0.338
LIQUIDITY RATIOS			
CURRENT RATIO	0.128*	1.771	0.346
QUICK RATIO	0.094	1.336	0.337

Note: Significance at 10%, 5% and 1% level respectively: (±) 1.721, (±) 2.080, (±) 2.831.

Table 19 – Results of the mean performance changes in each merger case (part I)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SALES GROWTH	-0.031	-0.339	0.441	-0.072	-0.107	0.245	0.017	0.919	-0.087	0.132	-0.264	0.042	0.280	-0.035		
EARNINGS GROWTH	5.614	0.964	27.938	-0.394	-0.413	1.007	3.689	0.381	-10.250	133.247	-0.642	0.031	0.174	-0.180		
ASSETS GROWTH	-0.118	-1.005	0.565	-0.014	-0.056	0.054	0.077	0.768	-0.172	0.045	-0.821	0.053	0.018	0.093		
GROSS PROFIT MARGIN ON SALES	-0.008	-0.255	0.154	-0.007	0.058	-0.064	-0.027	0.066	0.003	0.067	-0.041	0.019	0.026	-0.024		
NET PROFIT MARGIN ON SALES	-0.381	-0.993	1.838	-0.006	-8.807	-0.037	-0.052	0.010	-0.010	0.061	0.002	-0.044	0.013	-0.002		
ROAA I	0.025	0.628	0.193	-0.001	-0.001	-0.006	-0.024	0.015	0.000	0.108	-0.082	-0.034	-0.020	-0.012		
ROAA II	0.012	0.765	0.073	-0.001	-0.008	0.001	-0.006	0.006	-0.008	0.106	-0.020	-0.051	-0.014	0.001		
ROAF I	0.109	0.750	0.697	-0.025	0.178	-0.014	-0.207	-0.044	-0.111	0.197	-0.189	-0.058	-0.030	-0.029		
ROAF II	-0.125	-0.814	0.735	-0.003	-3.390	-0.041	-0.133	0.027	-0.070	0.243	-0.065	-0.095	-0.033	0.011		
TOTAL OPERATING EXPENSES ON SALES	0.024	0.661	0.174	0.007	0.288	-0.205	0.036	-0.010	0.008	-0.089	0.053	-0.009	-0.013	0.016		
OPERATING EXPENSES ON SALES	0.010	0.715	0.066	0.000	0.070	-0.070	0.009	-0.004	0.011	-0.021	0.012	0.009	0.013	-0.009		
ADMINISTRATIVE EXPENSES ON SALES	0.000	0.012	0.035	-0.006	0.052	-0.067	-0.020	0.002	0.008	-0.013	0.012	-0.001	0.002	-0.006		
SELLING EXPENSES ON SALES	0.008	0.938	0.039	0.000	-0.032	0.000	0.000	-0.005	0.003	-0.008	0.000	0.011	0.012	-0.002		
R&D EXPENSES ON SALES	-0.001	-0.660	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001		
D/E RATIO	-0.488	-1.496	1.564	-0.811	-2.082	-1.430	1.674	-2.704	-2.594	-2.347	-0.344	-0.003	-0.066	-0.087		
DEBT RATIO	-0.003	-0.074	0.188	-0.001	0.009	-0.182	-0.016	-0.059	-0.035	-0.101	-0.104	0.002	-0.025	-0.035		
E/A	-0.001	-0.062	0.066	0.001	-0.009	-0.017	0.016	0.059	0.035	0.101	0.104	-0.002	0.025	0.035		
BANK DEBT/E	0.123	0.863	0.681	0.361	-0.550	0.165	1.530	0.035	0.000	-0.276	-0.268	0.185	0.011	0.003		
CURRENT RATIO	0.257	1.480	0.831	-0.001	0.000	0.110	0.055	1.581	-0.453	2.751	0.806	-0.014	-0.297	0.286		
QUICK RATIO	0.182	1.075	0.814	-0.016	0.006	-0.208	0.033	1.581	-0.453	2.751	0.783	-0.020	-0.334	0.210		

Table 20 - Results of the mean performance changes in each merger case (part II)

ΑΑΡΘΡΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	ΕΤΕΡΟΣΤΑΤΙΣΤΙΚΟ	
SALES GROWTH	-0.031	-0.339	0.441	0.021	0.013	-0.897	0.015	0.120	0.025	-1.279	-0.426	0.741	-0.003	-0.122	0.005					
EARNINGS GROWTH	5.614	0.964	27.938	-0.197	0.218	0.067	0.400	0.921	-0.211	-2.441	0.274	3.665	0.015	-0.642	0.412					
ASSETS GROWTH	-0.118	-1.005	0.565	0.001	-0.217	-0.955	0.036	-0.190	-0.272	-1.888	0.126	1.076	0.021	-0.450	-0.051					
GROSS PROFIT MARGIN ON SALES	-0.008	-0.255	0.154	-0.004	0.033	-0.012	-0.003	0.043	0.014	-0.487	-0.099	0.484	-0.134	0.004	-0.043					
NET PROFIT MARGIN ON SALES	-0.381	-0.993	1.838	0.006	0.018	-0.001	-0.026	0.072	0.119	0.030	-0.183	0.175	-0.018	-0.085	0.010					
ROAA I	0.025	0.628	0.193	-0.025	-0.009	0.005	0.091	0.056	0.057	-0.299	0.049	0.838	-0.018	-0.039	-0.067					
ROAA II	0.012	0.765	0.073	0.000	0.004	0.010	-0.010	0.064	0.049	0.037	-0.059	0.289	-0.003	-0.104	-0.016					
ROAE I	0.109	0.750	0.697	-0.080	-0.056	0.155	0.070	0.151	0.114	-0.495	0.177	3.212	-0.339	-0.012	-0.060					
ROAE II	-0.125	-0.814	0.735	-0.036	-0.006	0.016	-0.103	0.123	0.052	0.078	-0.039	0.767	-0.035	-0.144	0.007					
TOTAL OPERATING EXPENSES ON SALES	0.024	0.661	0.174	-0.006	-0.030	-0.007	-0.012	-0.014	0.022	0.025	0.077	0.673	-0.289	0.015	0.016					
OPERATING EXPENSES ON SALES	0.010	0.715	0.066	-0.009	0.004	-0.020	-0.015	0.029	0.036	0.048	-0.022	0.267	-0.102	0.019	-0.027					
ADMINISTRATIVE EXPENSES ON SALES	0.000	0.012	0.035	-0.018	-0.001	-0.005	0.010	0.003	0.021	0.025	-0.021	0.095	-0.086	0.021	-0.005					
SELLING EXPENSES ON SALES	0.008	0.938	0.039	0.008	0.025	-0.014	-0.025	0.026	0.010	0.024	-0.004	0.171	0.000	-0.002	-0.023					
R&D EXPENSES ON SALES	-0.001	-0.660	0.004	0.001	-0.020	0.000	0.000	0.000	0.005	0.000	0.003	0.000	0.000	0.000	0.001					
D/E RATIO	-0.488	-1.496	1.564	-0.138	-0.389	0.907	-1.094	-0.005	-0.040	0.053	0.235	3.149	-4.128	0.517	0.511					
DEBT RATIO	-0.003	-0.074	0.188	-0.026	-0.126	0.084	-0.238	0.012	-0.016	0.039	0.083	0.715	-0.290	0.161	0.083					
E/A	-0.001	-0.062	0.066	0.026	0.126	-0.084	-0.052	-0.012	0.016	-0.038	-0.083	0.009	-0.031	-0.161	-0.083					
BANK DEBTE	0.123	0.863	0.681	-0.039	-0.242	0.551	0.108	-0.160	-0.008	-0.390	0.145	2.265	-1.279	0.324	0.350					
CURRENT RATIO	0.257	1.480	0.831	-0.056	1.078	-0.086	0.069	0.180	-0.457	0.074	1.662	0.203	-0.349	-1.117	-0.125					
QUICK RATIO	0.182	1.075	0.814	-0.117	0.626	-0.091	-0.082	-0.257	-0.628	0.247	1.381	0.247	-0.346	-1.105	-0.013					

Table 22 - Correlations of performance with size of the participants and relative size of the target

GROWTH RATIOS						
SALES GROWTH	0.071	0.326	0.096	0.444	0.019	0.089
EARNINGS GR O WT II	0.253	1.197	0.306	1.475	0.059	0.269
ASSETS GROWTH	0.09	0.414	0.036	0.167	-0.205	-0.959
PROFITABILITY RATIOS						
GROSS PROFIT MARGIN ON SALES	0.029	0.132	-0.063	-0.290	-0.302	-1.450
NET PROFIT MARGIN ON SALES	-0.358*	-1.755	-0.377*	-1.865	0.004	0.020
ROAA I	0.236	1.115	0.184	0.857	-0.251	-1.187
ROAA II	-0.198	-0.927	-0.264	-1.254	-0.151	-0.698
ROAE I	0.05	0.230	-0.051	-0.233	-0.323	-1.562
ROAE II	-0.254	-1.206	-0.236	-1.115	0.037	0.172
EFFICIENCY RATIOS						
TOTAL OPERATING EXPENSES ON SALES	0.171	0.797	0.113	0.520	-0.167	-0.777
OPERATING EXPENSES ON SALES	0.103	0.476	-0.033	-0.153	-0.412*	-2.070
ADMINISTRATIVE EXPENSES ON SALES	-0.185	-0.862	-0.228	-1.075	-0.088	-0.406
SELLING EXPENSES ON SALES	0.129	0.595	-0.041	-0.190	-0.498**	-2.634
R&D EXPENSES ON SALES	-0.078	-0.357	-0.141	-0.652	-0.107	-0.493
BALANCE SHEET RATIOS						
D/E RATIO	0.067	0.309	-0.135	-0.624	-0.462**	-2.385
DEBT RATIO	0.138	0.636	0.079	0.135	-0.326	-1.583
E/A	-0.138	-0.636	-0.029	-0.135	0.326	1.583
BANK DEBT/E	0.195	0.912	0.034	0.157	-0.373*	-1.844
LIQUIDITY RATIOS						
CURRENT RATIO	0.046	0.212	0.017	0.076	-0.116	-0.536
QUICK RATIO	0.045	0.205	0.02	0.094	-0.109	-0.503

Note: *Significance at 10%, 5% and 1% level respectively; (†) 1.721, (‡) 2.080, (‡) 2.831.

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Πανεπιστήμιο Πειραιώς

Table 15 – Total assets and relative size of the target to both participants' assets

YEAR	Number of Deals	TOTAL ASSETS (in GRD.)						RELATIVE SIZE
		MEAN	MIN	MAX	MEAN	MIN	MAX	
1993	1	1,718,536,000	1,718,536,000	1,718,536,000	1,750,720,000	1,750,720,000	1,750,720,000	50.46%
1994	3	6,379,703,000	4,137,277,000	9,933,148,000	3,757,777,667	2,822,567,000	5,093,804,000	37.07%
1995	3	14,979,455,000	7,476,384,000	21,327,438,000	4,181,475,000	3,204,129,000	4,906,203,000	21.82%
1996	2	1,038,744,514,000	4,725,867,000	2,072,763,161,000	50,902,122,000	876,375,000	100,927,869,000	4.67%
1997	6	93,750,141,833	7,467,604,000	304,564,000,000	43,416,658,000	926,017,000	196,487,000,000	31.65%
1998	8	1,751,091,146,125	1,478,678,000	13,164,285,318,000	353,194,898,750	1,518,810,000	2,515,763,143,000	16.78%
FULL SAMPLE	23	484,443,915,993	1,478,678,000	13,164,285,318,000	76,200,608,569	876,375,000	2,515,763,143,000	30.21%

NOTES: The sample consists of deals taking place from 1993 to 1998. The Assets were calculated from the Balance Sheets of the Companies the year before the merger took place. Relative size equals target mean total assets divided by target plus acquirer mean total assets.

Table 16 - Changes in performance related to merger – relative size and comparable data weights

	Mean Difference $\Delta X_{1-T2-T1}$		
GROWTH RATIOS			
SALES GROWTH	-0.031	-0.339	0.441
EARNINGS GR O WT H	5.614	0.964	27.938
ASSETS GROWTH	-0.118	-1.005	0.565
PROFITABILITY RATIOS			
GROSS PROFIT MARGIN ON SALES	-0.008	-0.255	0.154
NET PROFIT MARGIN ON SALES	-0.381	-0.993	1.838
ROAA I	0.025	0.628	0.193
ROAA II	0.012	0.765	0.073
ROAE I	0.109	0.750	0.697
ROAE II	-0.125	-0.814	0.735
EFFICIENCY RATIOS			
TOTAL OPERATING EXPENSES ON SALES	0.024	0.661	0.174
OPERATING EXPENSES ON SALES	0.010	0.715	0.066
ADMINISTRATIVE EXPENSES ON SALES	0.000	0.012	0.035
SELLING EXPENSES ON SALES	0.008	0.938	0.039
R&D EXPENSES ON SALES	-0.001	-0.660	0.004
BALANCE SHEET RATIOS			
D/E RATIO	-0.488	-1.496	1.564
DEBT RATIO	-0.003	-0.074	0.188
E/A	-0.001	-0.062	0.066
BANK DEBT/E	0.123	0.863	0.681
LIQUIDITY RATIOS			
CURRENT RATIO	0.257	1.480	0.831
QUICK RATIO	0.182	1.075	0.814

Note: Significance at 10%, 5% and 1% level respectively: (\pm) 1.721, (\pm) 2.080, (\pm) 2.831.

Table 17 –Changes in performance related to merger – relative size weights

	Mean Difference ΔX _i (TENS)		
GROWTH RATIOS			
SALES GROWTH	-0.036	-0.629	0.273
EARNINGS GR O WT H	3.187	1.018	15.015
ASSETS GROWTH	-0.073	-1.066	0.330
PROFITABILITY RATIOS			
GROSS PROFIT MARGIN ON SALES	-0.006	-0.311	0.088
NET PROFIT MARGIN ON SALES	-0.137	-1.018	0.648
ROAA I	0.018	0.757	0.115
ROAA II	0.006	0.639	0.045
ROAE I	0.066	0.732	0.435
ROAE II	-0.041	-0.718	0.275
EFFICIENCY RATIOS			
TOTAL OPERATING EXPENSES ON SALES	0.002	0.092	0.124
OPERATING EXPENSES ON SALES	0.001	0.152	0.047
ADMINISTRATIVE EXPENSES ON SALES	-0.003	-0.576	0.029
SELLING EXPENSES ON SALES	0.004	0.870	0.023
R&D EXPENSES ON SALES	0	-0.479	0.001
BALANCE SHEET RATIOS			
D/E RATIO	-0.27	-1.022	1.267
DEBT RATIO	-0.005	-0.182	0.134
E/A	-0.007	-0.896	0.038
BANK DEBT/E	0.066	0.599	0.526
LIQUIDITY RATIOS			
CURRENT RATIO	0.099	1.090	0.436
QUICK RATIO	0.063	0.700	0.429

Note: Significance at 10%, 5% and 1% level respectively: (±) 1.721, (±) 2.080, (±) 2.831.

Table 18 - Changes in performance related to merger (relative size weights) without industry-adjustment

	Mean Difference	t-TEST	Standard Deviation
GROWTH RATIOS			
SALES GROWTH	-0.061	-1.231	0.237
EARNINGS GROWTH	3.137	0.996	15.104
ASSETS GROWTH	-0.059	-1.235	0.231
PROFITABILITY RATIOS			
GROSS PROFIT MARGIN ON SALES	-0.015	-1.303	0.056
NET PROFIT MARGIN ON SALES	-0.132	-0.989	0.642
ROAA I	-0.021**	-2.135	0.047
ROAA II	-0.004	-0.634	0.028
ROAE I	-0.069**	-2.572	0.129
ROAE II	-0.063	-1.203	0.251
EFFICIENCY RATIOS			
TOTAL OPERATING EXPENSES ON SALES	-0.015	-0.842	0.087
OPERATING EXPENSES ON SALES	-0.002	-0.304	0.028
ADMINISTRATIVE EXPENSES ON SALES	-0.004	-0.773	0.024
SELLING EXPENSES ON SALES	0.002	0.851	0.008
R&D EXPENSES ON SALES	0	-0.002	0.001
BALANCE SHEET RATIOS			
D/E RATIO	-0.781**	-2.464	1.519
DEBT RATIO	-0.038**	-2.332	0.078
E/A	0.015**	2.359	0.030
BANK DEBT/E	-0.1	-1.415	0.338
LIQUIDITY RATIOS			
CURRENT RATIO	0.128*	1.771	0.346
QUICK RATIO	0.094	1.336	0.337

Note: Significance at 10%, 5% and 1% level respectively: (±) 1.721, (±) 2.080, (±) 2.831.

Table 19 – Results of the mean performance changes in each merger case (part I)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SALES GROWTH	-0.031	-0.339	0.441	-0.072	-0.107	0.245	0.017	0.919	-0.087	0.132	-0.264	0.042	0.280	-0.035			
EARNINGS GROWTH	5.614	0.964	27.938	-0.394	-0.413	1.007	3.689	0.381	-10.250	133.247	-0.642	0.031	0.174	-0.180			
ASSETS GROWTH	-0.118	-1.005	0.565	-0.014	-0.056	0.054	0.077	0.768	-0.172	0.045	-0.821	0.053	0.018	0.093			
GROSS PROFIT MARGIN ON SALES	-0.008	-0.255	0.154	-0.007	0.058	-0.064	-0.027	0.066	0.003	0.067	-0.041	0.019	0.026	-0.024			
NET PROFIT MARGIN ON SALES	-0.381	-0.993	1.838	-0.006	-8.807	-0.037	-0.052	0.010	-0.010	0.061	0.002	-0.044	0.013	-0.002			
ROAA I	0.025	0.628	0.193	-0.001	-0.001	-0.006	-0.024	0.015	0.000	0.108	-0.082	-0.034	-0.020	-0.012			
ROAA II	0.012	0.765	0.073	-0.001	-0.008	0.001	-0.006	0.006	-0.008	0.106	-0.020	-0.051	-0.014	0.001			
ROAF I	0.109	0.750	0.697	-0.025	0.178	-0.014	-0.207	-0.044	-0.111	0.197	-0.189	-0.058	-0.030	-0.029			
ROAF II	-0.125	-0.814	0.735	-0.003	-3.390	-0.041	-0.133	0.027	-0.070	0.243	-0.065	-0.095	-0.033	0.011			
TOTAL OPERATING EXPENSES ON SALES	0.024	0.661	0.174	0.007	0.288	-0.205	0.036	-0.010	0.008	-0.089	0.053	-0.009	-0.013	0.016			
OPERATING EXPENSES ON SALES	0.010	0.715	0.066	0.000	0.070	-0.070	0.009	-0.004	0.011	-0.021	0.012	0.009	0.013	-0.009			
ADMINISTRATIVE EXPENSES ON SALES	0.000	0.012	0.035	-0.006	0.052	-0.067	-0.020	0.002	0.008	-0.013	0.012	-0.001	0.002	-0.006			
SELLING EXPENSES ON SALES	0.008	0.938	0.039	0.000	-0.032	0.000	0.000	-0.005	0.003	-0.008	0.000	0.011	0.012	-0.002			
R&D EXPENSES ON SALES	-0.001	-0.660	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001			
D/E RATIO	-0.488	-1.496	1.564	-0.811	-2.082	-1.430	1.674	-2.704	-2.594	-2.347	-0.344	-0.003	-0.066	-0.087			
DEBT RATIO	-0.003	-0.074	0.188	-0.001	0.009	-0.182	-0.016	-0.059	-0.035	-0.101	-0.104	0.002	-0.025	-0.035			
E/A	-0.001	-0.062	0.066	0.001	-0.009	-0.017	0.016	0.059	0.035	0.101	0.104	-0.002	0.025	0.035			
BANK DEBT/E	0.123	0.863	0.681	0.361	-0.550	0.165	1.530	0.035	0.000	-0.276	-0.268	0.185	0.011	0.003			
CURRENT RATIO	0.257	1.480	0.831	-0.001	0.000	0.110	0.055	1.581	-0.453	2.751	0.806	-0.014	-0.297	0.286			
QUICK RATIO	0.182	1.075	0.814	-0.016	0.006	-0.208	0.033	1.581	-0.453	2.751	0.783	-0.020	-0.334	0.210			

Table 22 - Correlations of performance with size of the participants and relative size of the target

GROWTH RATIOS						
SALES GROWTH	0.071	0.326	0.096	0.444	0.019	0.089
EARNINGS GR O WT II	0.253	1.197	0.306	1.475	0.059	0.269
ASSETS GROWTH	0.09	0.414	0.036	0.167	-0.205	-0.959
PROFITABILITY RATIOS						
GROSS PROFIT MARGIN ON SALES	0.029	0.132	-0.063	-0.290	-0.302	-1.450
NET PROFIT MARGIN ON SALES	-0.358*	-1.755	-0.377*	-1.865	0.004	0.020
ROAA I	0.236	1.115	0.184	0.857	-0.251	-1.187
ROAA II	-0.198	-0.927	-0.264	-1.254	-0.151	-0.698
ROAE I	0.05	0.230	-0.051	-0.233	-0.323	-1.562
ROAE II	-0.254	-1.206	-0.236	-1.115	0.037	0.172
EFFICIENCY RATIOS						
TOTAL OPERATING EXPENSES ON SALES	0.171	0.797	0.113	0.520	-0.167	-0.777
OPERATING EXPENSES ON SALES	0.103	0.476	-0.033	-0.153	-0.412*	-2.070
ADMINISTRATIVE EXPENSES ON SALES	-0.185	-0.862	-0.228	-1.075	-0.088	-0.406
SELLING EXPENSES ON SALES	0.129	0.595	-0.041	-0.190	-0.498**	-2.634
R&D EXPENSES ON SALES	-0.078	-0.357	-0.141	-0.652	-0.107	-0.493
BALANCE SHEET RATIOS						
D/E RATIO	0.067	0.309	-0.135	-0.624	-0.462**	-2.385
DEBT RATIO	0.138	0.636	0.079	0.135	-0.326	-1.583
E/A	-0.138	-0.636	-0.029	-0.135	0.326	1.583
BANK DEBT/E	0.195	0.912	0.034	0.157	-0.373*	-1.844
LIQUIDITY RATIOS						
CURRENT RATIO	0.046	0.212	0.017	0.076	-0.116	-0.536
QUICK RATIO	0.045	0.205	0.02	0.094	-0.109	-0.503

Note: *Significance at 10%, 5% and 1% level respectively:(+) 1.721, (+) 2.080, (+) 2.831.

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