

The Post-Merger Performance of Acquiring Firms: Evidence from a Comprehensive Greek Sample Using Accounting Data

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Abstract

One of the main elements of contemporary corporate restructuring, with a universal acceptance, is the formation of new business entities via mergers and acquisitions (M&As). This study examines the impact of M&As on the operating performance of merger-involved firms in Greece. From a sample of 560 M&As transactions in the period from 2003 to 2005 are examined only forty of them as they concern companies listed on the Athens Stock Exchange, which had executed at least one merger or acquisition as acquirers during this period. At this sample of forty Greek firms their post-merger performance is investigated using accounting data. For the purpose of the study, a set of ten accounting ratios is employed in order to measure firms' operating performance comparing pre- and post-merger operating performance for two years before and after the M&A announcements. The results revealed that two (current ratio, total debt ratio) out of the ten accounting ratios had change significantly due to the M&A event; the first increased and the second decreased, respectively. The rest eight ratios, including two examined profitability ratios, did not change significantly. The final conclusion that conducted is that M&As have had a particular impact (positive and negative) on post-merger operating performance of merger-involved firms only at some specific accounting ratios.

Keywords: mergers, acquisitions, accounting ratios, operating performance

JEL classifications: G34, M40

Introductory comments

The main hypothesis in successful M&As activities is that potential economic benefits arising from them are changes that increase economic performance that would not have been made in the absence of a change in control (Pazarskis, 2008). However, many researchers and business practitioners regard with scepticism this hypothesis, despite the fact that many others are confident and enthusiastic.

Related to the above statement is a characteristic declaration for this contradiction from Dennis Mueller (1989) that, even two decades ago, it is still holds:

No topic in industrial organization generates as much disagreement and controversy as mergers. Why do they occur? What are their economic and noneconomic consequences? What ought government policies toward mergers be? Each question has been given a variety of answers, some diametrically opposed to one another (Mueller, 1989, p. 1)

In order to provide further evidence on this issue and especially with Greek business, this study examines the post-merger operating performance of a sample of Greek firms after M&As activities, listed at the Athens Stock Exchange (ASE) in Greece that executed at least one merger or acquisition in the period from 2003 to 2005, using accounting characteristics (financial ratios), and attempts to investigate the M&As effects on their post-merger performance.

The structure of the paper is as follows: the following section analyses the research design of this study (related past researches with accounting data, sample and data, selected accounting ratios, research methodology and hypothesis). Next section presents and analyses the results, and last section concludes the paper.

Research design

Literature review

Several studies on post-merger performance after M&As that employed accounting variables (financial ratios) concluded on ambiguous results (Pazarskis, 2008). Many of them supported an improvement in the post-merger performance after the M&As action (Cosh et al., 1980; Parrino & Harris, 1999; and others), while other researchers claimed that there was a deterioration in the post-merger firm performance (Meeks, 1977; Salter & Weinhold, 1979; Mueller, 1980; Kusewitt, 1985; Neely & Rochester, 1987; Ravenscraft & Scherer, 1987; Dickerson et al., 1997; Sharma & Ho, 2002; and others), and others researchers concluded a "zero" result from the M&As action (Kumar, 1984; Healy et al., 1992; Chatterjee & Meeks, 1996; Ghosh, 2001; and others).

Sample and data

From a sample of 560 M&As transactions in the period from 2003 to 2005, firstly are selected 83 M&As cases as they concerned Greek firms listed at the ASE, and from them, for further analysis, are examined only forty as they concern companies, which had executed at least one merger or acquisition as acquirers during this period. The study consider this final sample of forty firms as these firms have not had done any other important M&As action during this period and their M&As transactions have consisted of an important investment that assure the acquiring firm management. The percentage of sample's M&A events by year is illustrated at Table 1 (see below).

The study proceeds to an analysis only of listed firms as their financial statements are published and it is easy to find them and evaluate from them firm post-merger operating performance. The M&As activities of the listed Greek firms have been tracked from their announcements on the web sites of the ASE and of the company PricewaterhouseCoopers. The data of this study (accounting ratios) are computed from the financial statements of the M&As-involved firms and the databank of the Library of the University of Macedonia (Greece).

Table 1: M&As transactions by year

Year	Mergers	Acquisitions	All Events	All Events (%)
2005	9	1	10	25%
2004	15	3	18	45%
2003	11	1	12	30%
Total	35	5	40	100%

Selected accounting ratios

The post-merger performance of a firm is evaluated with its operating performance at some accounting ratios. For the purpose of this study, ten ratios (including two profitability ratios, see below: V07 and V08) are employed, which are the following ratios:

- 1 Current ratio, which is equivalent with: (Current assets / Current liabilities) and is symbolised with the code: V01.
- 2 Days sales in receivables ratio, which is equivalent with: (Accounts Receivable / (Sales/360)) and is symbolised with the code: V02.
- 3 Inventory turnover ratio, which is equivalent with: (Cost of Goods Sold / Inventory) and is symbolised with the code: V03.
- 4 Accounts payable turnover ratio, which is equivalent with: (Trade Creditors / (COGS - Depreciation + Closing Inventory - Opening Inventory)) and is symbolised with the code: V04.
- 5 Total debt ratio, which is equivalent with: (Total debt / Total assets) and is symbolised with the code: V05.
- 6 Total assets turnover, which is equivalent with: (Sales / Total assets) and is symbolised with the code: V06.
- 7 Return On total Assets (ROA) After Taxes, which is equivalent with: (Earnings After Taxes / Total Assets) and is symbolised with the code: V07.
- 8 Return to Owner's Equity (ROE) After Taxes, which is equivalent with: (Earnings After Taxes / Equity) and is symbolised with the code: V08.
- 9 Gross profit margin ratio, which is equivalent with: (Gross profit / Sales) and is symbolised with the code: V09.
- 10 EBITDA margin ratio, which is equivalent with: (EBITDA / Sales) and is symbolised with the code: V10.

Methodology and hypothesis

The M&As action of each acquiring company from the sample is considered as an investment that is evaluated by the NPV criterion (if $NPV \geq 0$, the investment is accepted). Based on this viewpoint, the study proceeds to its analysis and regards the impact of an M&A action similar to the impact of any other positive NPV investment of the firm to its ratios over a specific period of time (Healy et al., 1992; Pazarskis, 2008).

In this study the following case and sub-case have been considered for the sample:

- α : the case of the acquiring firms that executed M&As during the period 2003-2005, evaluating their performance two years before and after the M&As event
- β : the sub-case of the acquiring firms that executed M&As during the period 2003-2005, evaluating their performance one year before and after the M&As event

In order to evaluate the relative change with ratio analysis of the sample of the Greek firms that executed M&As actions, the general form of the hypothesis that is examined for each accounting ratio separately (ratios from V1 to V10) and for the above case and sub-case (α , β , respectively) is the following:

H_{0ij} : There is expected **no** relative change of the accounting ratio i from the M&As event of (sub-)case j for the acquiring firms.

H_{1ij} : There is expected relative change of the accounting ratio i from the M&As event of (sub-)case j for the acquiring firms.

where,

$i = \{V1, V2, \dots, V10\}$

$j = \{\alpha, \beta\}$

The crucial research question that is investigated by examining the above mentioned ratios is the following: "Operating performance in the post-merger period is greater than it is in the pre-merger period for the acquiring firm?" (Pazarskis, 2008).

The selected accounting ratios for each company of the sample over a two-year period before (year T-2, T-1) or after (year T+1, T+2) the M&As event are calculated, and for the case α the mean from the sum of each accounting ratio for the years T-2 and T-1 is compared with the equivalent mean from the years T+1 and T+2, respectively¹. In similar process, the sub-case β , for the one-year period before and after, is evaluated.

The study does not include in the comparisons the year of M&A event (Year 0) because this usually includes a number of events which influence firm's economic performance in this period (as one-time M&As transaction costs, necessary for the deal, etc.) (Healy et al., 1992; Pazarskis et al, 2008; Pazarskis, 2008).

Last, to test this hypothesis two independent sample mean t-tests are applied. The results are presented in the next section.

Analysis of Results

The results revealed that over a two-year period before and after the M&As event only two (current ratio, total debt ratio) out of the ten accounting ratios had a statistically significant change due to the M&A event; the first increased and the second decreased, respectively. The rest eight ratios, including two examined profitability ratios, did not change significantly and they did not have had any particular impact (positive or negative) on post-merger operating performance of merger-involved firms. Furthermore for the sub-case of one-year period before and after the M&As event, there is not any significant change at any accounting ratio in the post-merger operating performance of merger-involved firms. More analytical review of the research results is presented in the next two sub-sections.

¹ In this study, the mean from the sum of each accounting ratio is computed than the median, as this could lead to more accurate research results (Pazarskis, 2008). This argument is consistent with many other researchers diachronically (Philippatos et al., 1985; Neely & Rochester, 1987; Cornett & Tehnarian, 1992; Sharma & Ho, 2002; Pazarskis et al, 2008; Pramod Mantravadi & A. Vidyadhar Reddy, 2008; and others).

Results for post-merger performance two years before/after the M&As

The research presents over a two-year period before and after the M&As event that two out of the ten accounting ratios had changed significantly due to the M&A event (see, Table 2):

- a) The variable V01 (current ratio) present an increase after the M&As transactions (Pre-merger average: 1,670 vs. Post-merger average: 6,200) that it is statistically significant at the 0.1 level (P-Value=0,082*), with 95% Confidence Interval (-0,590; 9,710). This high increase of current assets could be attributed to the extended liquidity level that was created from the action of unity by the merged firms.
- b) The variable V05 (total debt ratio) present an increase after the M&As transactions that is actually a deterioration of the firm performance in this ratio, as it is valid for the total debt ratio that a lower price shows a better performance, (Pre-merger average: 0,440 vs. Post-merger average: 0,508) that it is statistically significant at the 0.1 level (P-Value=0,059*), with 95% Confidence Interval (-0,0026; 0,1379). This reveals that after the M&As events the sample firms have increased their total debt amount (due to bank loans, atc.) to their total assets two years later.

The rest eight ratios (V02-Days sales in receivables ratio, V03-Inventory turnover ratio, V04-Accounts payable turnover ratio, V06-Total assets turnover, V07-Return On total Assets (ROA) After Taxes, V08-Return to Owner's Equity (ROE) After Taxes, V09-Gross profit margin ratio, V10-EBITDA margin ratio), including two examined profitability ratios (V07 and V08), did not change significantly and they did not have had any particular impact (positive or negative) on post-merger operating performance of merger-involved firms.

Table 2: Mean pre-merger and post-merger ratios for two years before/after M&As

Variable	Pre-merger (2 years avg.)	Post-merger (2 years avg.)	T-statistic (Two-tail)	P-Value	Confidence Interval 95%
V01	1,670	6,200	1,76	0,082*	(-0,5900; 9,7100)
V02	239,0	204,0	-1,26	0,211	(-91,100; 20,300)
V03	9,400	11,10	0,37	0,715	(-7,2000; 10,460)
V04	2,540	2,960	0,75	0,457	(-0,6980; 1,5430)
V05	0,440	0,508	1,90	0,059*	(-0,0026; 0,1379)
V06	0,512	0,617	1,39	0,168	(-0,0453; 0,2566)
V07	0,064	0,049	-0,81	0,418	(-0,0519; 0,0217)
V08	0,173	0,123	-0,70	0,483	(-0,1877; 0,0891)
V09	0,280	0,254	-0,99	0,323	(-0,0791; 0,0262)
V10	0,213	0,169	-1,50	0,136	(-0,1033; 0,0142)

Note:

*** : statistically significant at the 0.01 level,

** : statistically significant at the 0.05 level,

* : statistically significant at the 0.1 level.

Results for post-merger performance one year before/after the M&As

All the ten accounting variables (V01-current ratio, V02-Days sales in receivables ratio, V03-Inventory turnover ratio, V04-Accounts payable turnover ratio, V05-total debt ratio, V06-Total assets turnover, V07-Return On total Assets (ROA) After Taxes, V08-Return to Owner's Equity (ROE) After Taxes, V09-Gross profit margin ratio, V10-EBITDA margin ratio), including two examined profitability ratios (V07 and V08), did not have a statistically significant change significantly and they did not have had any particular impact (positive or negative) on post-merger operating performance of merger-involved firms one-year period before and after the M&As event (see, Table 3). From this result it can be assumed that one year after the M&As, this transaction were for sample firms an action of "zero" result for their performance.

Table 3: Mean pre-merger and post-merger ratios for one year before/after M&As

Variable	Pre-merger (2 years avg.)	Post-merger (2 years avg.)	T-statistic (Two-tail)	P-Value	Confidence Interval 95%
V01	1,530	5,500	1,44	0,157	(-1,6000; 9,5400)
V02	248,0	203,0	-1,15	0,255	(-123,40; 33,300)
V03	6,100	8,600	0,80	0,427	(-3,8500; 8,9700)
V04	2,110	3,020	1,40	0,169	(-0,3990; 2,2070)
V05	0,455	0,508	1,07	0,287	(-0,0452; 0,1509)
V06	0,510	0,618	1,04	0,304	(-0,1000; 0,3160)
V07	0,067	0,057	-0,31	0,761	(-0,0697; 0,0511)
V08	0,189	0,157	-0,27	0,785	(-0,2590; 0,1970)
V09	0,279	0,261	-0,47	0,642	(-0,0949; 0,0589)
V10	0,208	0,176	-0,75	0,454	(-0,1177; 0,0532)

Note:

- *** : statistically significant at the 0.01 level,
- ** : statistically significant at the 0.05 level,
- * : statistically significant at the 0.1 level.

Summary and conclusion

A special topic in industrial organization that generates much disagreement and controversy is mergers and acquisitions (M&As) (Mueller, 1989). Many researchers and business practitioners regard with scepticism M&As, while many others are confident and enthusiastic. The main hypothesis in successful M&As activities is that potential economic benefits arising from them are changes that increase economic performance that would not have been made in the absence of a change in control (Pazarskis, 2008). In order to provide new evidence in this area, this study examines the impact of M&As on the operating performance of merger-involved firms in Greece using accounting variables (financial ratios).

From a sample of 560 M&As transactions that has been tracked in the period from 2003 to 2005 are examined only forty of them as they concern companies listed on the Athens Stock Exchange, which had executed at least one merger or acquisition as acquirers during this period and presented some other selected research characteristics. At this sample of forty Greek firms their post-merger performance is investigated using a set of ten accounting ratios (current ratio, days sales in receivables ratio, inventory turnover ratio, accounts payable turnover ratio, total debt ratio, total assets turnover, Return On

total Assets (ROA) After Taxes, Return to Owner's Equity (ROE) After Taxes, gross profit margin ratio, EBITDA margin ratio) in order to measure acquiring firms' operating performance comparing pre- and post-merger operating performance for two years before and after the M&As announcements. Also, for a more comprehensive research analysis is examined the sub-case of one year before and after at the same M&As transactions.

The results revealed for two years before and after the M&A announcements that two (current ratio, total debt ratio) out of the ten accounting ratios had statistically significantly changed due to the M&As event; the first increased and the second decreased, respectively. The first reveals a high increase of current assets and extended liquidity level that was created from the action of unity by the merged firms in the second year after M&As. The other ratio reveals that after the M&As events the sample firms have increased their total debt amount (due to bank loans, atc.) to their total assets two years later. Combining these two results it could be interfered that this augmentation of total debt amount could be attributed to the above referred (perhaps, in some way unused) surplus of liquidity. The rest eight ratios, including two examined profitability ratios, for two years before and after the M&A announcements did not change significantly and they did not have had any particular impact (positive or negative) on post-merger operating performance of merger-involved firms.

Furthermore, for the sub-case of one-year period before and after the M&As event at the same transactions, there is no change significantly at any accounting ratio in the post-merger operating performance of merger-involved firms.

The final conclusion that conducted is that M&As have had a particular impact (positive and negative) on post-merger operating performance of acquiring firms only at some specific accounting ratios.

Future extensions of this study could examine the effects of the type of the M&As transaction not only with ratios, but also with stock returns. Also, this study could be applied to a larger sample that could include not only M&As-involved Greek firms listed in the ASE, but also non-listed firms and within other or larger time frame periods.

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