

An Empirical Investigation during the economic crisis on the Labor Productivity after mergers in Greece

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Abstract

In this study is analyzed the interdependencies between employee benefits and productivity and evaluated the impact of a merger activity in the labor productivity. More specifically in this study, there is a relative literature review, the research sample of the companies is analyzed, the examined ratios and the research methodology followed, as well as the research hypothesis. Last, from the analysis of the results is clear that the mergers had no effect on labor productivity for the whole sample firms which merged from 2009 to 2013 and the productivity of workers has not improved significantly.

Keywords: mergers, acquisitions, labour productivity, ratios

JEL Classification: G34, M40, M50

Introduction

Mergers have been a worldwide business development tactic and commonly accepted as one of the mechanisms by which firms gain access to new resources and, via resource redeployment, increase revenues and reduce cost (Pantelidis et al., 2014; Eleftheriadis et al., 2012). How decision makers agree or disagree on strategic issues is an important topic for discussion over to organizations (Giovanis & Emmanouilides, 2013), and many researchers and business practitioners are confident and enthusiastic for mergers, despite the fact that many others regard with scepticism this hypothesis. Thus, it is quite interesting if this perspective it is actual and accurate in the period of an economic crisis, as was the outbreak of the sovereign debt crisis in Greece,

mainly in 2009 and during the following years of economic crisis in Greece till now (Giovanis et al., 2014).

During the last few years, the budgets allocated for human resources have significantly decreased worldwide within the global economic and financial crisis, and especially in Greece. Employee benefits represent a major business cost with a complex set of incentives granted by employers in order to acquire and maintain their workers and to increase security and labor productivity within the framework of a specific job (Caran & Noja, 2015; Caran et al., 2016).

As Caran & Noja (2015) also supports employers try to transfer the costs of employee accounting and the entire process of adopting these types of decisions towards their workers. Simultaneously, employers continue to shape their employee benefits schemes, by insuring a higher responsibility to workers for their coordination. However, during the last decades in the European Union there is an increase of employee benefit costs due to the legislative changes and new benefits options. Employee benefits are a set of incentives granted by employers to hire and maintain their employees, and increased the productivity and workplace safety.

From January 2005 all the listed firms in the EU member states were required to prepare their financial statements according to the International Accounting Standard-IAS and International Financial Reporting Standards-IFRS (Pazarskis et al., 2011). Moreover, employee benefits are described by the IAS 19, which has the primary objective to prescribe the accounting and to submit information for employee benefits (Caran & Noja, 2015). IAS 19 Employee Benefits (amended 2011) outlines the accounting requirements for employee benefits, including short-term benefits (e.g. wages and salaries, annual leave), post-employment benefits such as retirement benefits, other long-term benefits (e.g. long service leave) and termination benefits. The IAS 19 establishes the principle that the cost of providing employee benefits should be recognized in the period in which the benefit is earned by the employee, rather than when it is paid or payable, and outlines how each category of employee benefits are measured, providing detailed guidance in particular about post-employment benefits (Caran et al., 2016; Deloitte: <http://www.iasplus.com/en>).

Considering that the most valuable asset of an organization is its staff (Giovanis & Emmanouilides, 2013), this research investigates the impact of mergers on employees productivity before and after the merger period during the economic crisis in Greece. In order to examine the labor productivity of Greek firms after mergers activities, this study proceeds to an analysis of a sample of firms, listed at the Athens Stock Exchange (ASE) in Greece that executed at least one merger in a five-year-period (from 2009 to 2013), using accounting data (financial ratios).

The structure of the paper is as follows: next section analyses the literature review, the following the research design of this study (sample and data, selection of variables-financial ratios, research methodology and hypothesis). The following section presents and analyses the results, and the last section concludes the paper.

Literature review

In general, many past studies on mergers performance, that employed accounting data or ratios, and labor productivity were conducted during the last three decades and concluded on ambiguous results:

Caran et al. (2016) finds that comparative analysis of employee advantages (post-employment benefits under the form of pension schemes) granted by companies in Romania and Serbia in recent years highlights the importance given to retirement benefits, the sustainability of this system and legislative measures to ensure transparency and facilitate the change in the method of pension indexation. The results obtained after processing various models developed for the analysis of the economic impact of pension systems in Romania and Serbia conforms to the relevant elements of the literature which shows that the post-employment benefits to employees, including those in the form of pensions, are important incentives that may lead increase productivity and income, and improve the standard of living and level of education.

Shuang & Zhanq (2006) investigate the decision by a sample of Continental European firms to voluntarily adopt the International Accounting Standards (IAS) or U.S. GAAP. The strong employment protection laws in Continental Europe lead to labor practices that lack responsiveness to firm underlying economic performance. They argue that by switching to IAS/U.S. GAAP, a Continental European company can more credibly communicate with its labor force, and/or a potential third party (e.g. a government labor office, an arbitrator, or a labor court judge in the case of labor disputes). Shuang & Zhang (2006) support that the costs of rigid labor practices could lead to potential benefits of switching to IAS/U.S. GAAP, and especially to be particularly high for firms with low labor productivity. Therefore, they claim that firstly, firms with low labor productivity are more likely to adopt IAS/U.S. GAAP after controlling for other factors potentially affecting the adoption decision; secondly, firms adopting IAS/U.S. GAAP and with low labor productivity report lower earnings than before the adoption and the earnings change is more negative than for similar non-adopting firms; thirdly, firms adopting IAS/U.S. GAAP and with low labor productivity are more likely to reduce labor forces than before the adoption.

Siegel & Simons (2006) analyses after mergers and acquisitions and in one model: firms - plants - workers, as transactions that simultaneously have cross-levels effects. They make a set of predictions regarding these three factors, based on the theory of human capital, and they have studied virtually the entire population of Swedish manufacturing firms and employees for the period 1985-1998. They claimed, consistent with human capital theory, that mergers and acquisitions (M&As) lead to improvements in firm performance and plant productivity, and simultaneously, M&As result downsizing of firms. These transactions also appear to: "...enhance the careers of workers because they provide a mechanism for improving the sorting and matching of workers and managers to firms and industries that best suit their skills".

Conyon et al. (2002) studied with an empirical analysis the effects of M&As activity on firm employment in the United Kingdom at a sample of 400 M&As transactions in the period 1967-1996. Their results indicate that significant rationalizations in the use of labor cost and

increase efficiency in the post-merger period. These effects are particularly pronounced in the case of related and especially hostile mergers.

Lehto & Bockerman (2008) examines the employment effects of mergers and acquisitions by using matched establishment-level data from Finland. Our data register practically almost all M&As in all sectors. They compare the employment effects of cross-border M&As with the effects arising from two different types of domestic M&As and internal restructurings. Their results show that cross-border M&As lead to downsizing in manufacturing employment. Also, changes in ownership associated with domestic M&As and internal restructurings cause, in general, employment losses (with a sector variation).

Hosono et al. (2009) investigate the impact of merger on innovation and efficiency using a sample of Japanese manufacturing firms during the period of 1995-1999. They found that the acquirer's total factor productivity decreases immediately after mergers and does not significantly recover to the pre-merger level within three years after mergers and only horizontal M&As lead to better results. They also found that the R&D intensity does not significantly change after mergers in spite of a significant increase in the debt-to-asset ratio. Their results suggest that the costs of business integration are large and persistent.

Odeck (2008) analyze mergers in the bus transport sector in Europe (and more with Norwegian data). In order to assess the impact that mergers have on the performances of bus companies, examines data in the period 1995-2002; 1995-1998 are the pre-mergers years and the post-merger years are 1999-2002. Odeck (2008) claims that: firstly, merged firm's outperformed non-merged firms as far as scale efficiency was concerned and secondly, the merger process led to productivity improvements in the post-merger periods for the reasons that merged companies utilized their scale economies to improve efficiencies while the non-mergers significantly became more technically innovative in order to be competitive.

Schiffbauer et al. (2009) examine the causal relationship between foreign mergers and acquisitions and firm productivity in the UK over the period 1999-2007 at a sample of over 10.000 M&As transactions (which 25% of these transactions were international M&As). Schiffbauer et al. (2009) have found positive aggregate effects after M&As on labor productivity due to capital deepening.

Girma (2006) studied the impact of M&As on labor productivity of acquiring firms in UK for the period 1981-1996. He found several principle results: firstly, acquiring firms performance in terms of total factor productivity increases post-merger compared to pre-merger performance and firms that don't undertake any merger; secondly, performance increase of related mergers is more prominent than unrelated mergers; thirdly, when the acquisition is taking place in smaller firms post merger productivity and labor productivity is higher than post merger performance of larger firms.

Research design

Sample and data

Firstly, in the period from 2009 to 2013, all merger activities from firms of Greek interests, listed in the Main market of the Athens Exchange, are tracked, excluding from them the actions of their subsidiaries, as only a parent's M&As action is examined. Secondly, from them for further analysis, are excluded the firms that performed merger activities in less than a two-year period before and after the several merger examined events. Also, in case of that some firms from this preliminary sample firms have been de-listed from the ASE for various reasons (bankruptcy, not meeting the standards of the market, etc.) or are in the financial sector, they were excluded from the sample.

Thus, the final research sample consists of thirty one mergers activities from firms listed in the ASE that executed one merger action as acquirers in Greece during the period from 2009 to 2013 (2009:10 firms, 2010:5 firms, 2011: 7 firms, 2012:3 firms, 2013: 6 firms). 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's economic performance.

The merger activities of the listed Greek firms have been tracked from their announcements on the web sites of the ASE. The available data of this study (financial ratios) are computed from the financial statements of the merger-involved firms and the databank of the Library of the University of Macedonia (Greece).

Selection of variables-financial ratios

The ratios chosen (M1-M5) for the analysis and evaluation of the above sample, in accordance with the methodologies followed previous studies, is, describe basically the efficiency of labor (labour productivity) of a company. Specifically, the ratios of the present study are:

- Profit per employee, considered the ratio of net income before taxes to the total number of employees. In this study, the ratio is denoted by M1.
- Operating Revenue per employee, considered the ratio of operating income derived solely from sales of the company's products to the total number of employees. In this study, the ratio is denoted by M2.
- Shareholders funds per employee, considered as the quotient of the total share capital (shareholders funds, reserves, retained earnings, etc.) to the total number of employees. In this study, the ratio is denoted by M3.
- Working capital per employee, considered the ratio of working capital to the total number of employees. In this study, the ratio is denoted by M4.
- Total assets per employee, considered the ratio of total assets of an enterprise (long term assets, tangible and intangible assets, etc.), to the total number of employees. In this study, the ratio is denoted by M5.

Research methodology and hypothesis

The present study attempts to analyze and evaluate both the efficiency of the workforce (labour productivity) of a company. In order to analyze the change in the efficiency of the workforce of the sampled companies, financial ratios used by their financial statements. The measurement of relative change is an empirical question, which can be explored with hypothesis testing for changes in selected ratios (mentioned in the previous section).

In order to evaluate the relative change with ratio analysis of the sample of the Greek firms that executed merger actions, the form of the examined hypotheses are the following:

H_0 : There is no relative change of financial ratios of the merged companies before and after the mergers on the labour productivity.

H_1 : There is relative change of financial ratios of the merged companies before and after the mergers on the labour productivity.

The crucial research question that is investigated by examining the above mentioned ratios is the following: "Post-merger performance on labour productivity in the post-merger period is greater than it is in the pre-merger period for the listed firms involved in merger?" (Pazariskis, 2008).

Firstly, the selected financial ratios for each company of the sample over a year period before (year T-1) or after (year T+1) the merger event are calculated, and the mean from the sum of each ratio for the year T-1 is compared with the equivalent mean from the years T+1, respectively¹.

Furthermore, the study does not include in the comparisons the year of merger event ($T=0$) because this usually includes a number of events which influence firm's post-merger operating performance in this period, as one-time M&As transaction costs, necessary for the deal, etc. (Healy et al., 1992; Pazariskis, 2008; Alexandrakis et al., 2013).

Last, to test this hypothesis two independent samples mean t-tests for unequal variances are applied, which are calculated as follows:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

where,

n = number of examined ratios

\bar{X}_1 = mean of post-merger ratios

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 (Pazariskis, 2008). This argument is consistent with many other researchers diachronically (Philippatos et al., 1985; Neely & Rochester, 1987; Cornett & Tehnarian, 1992; Sharma & Ho, 2002; Pramod Mantravadi & A. Vidyadhar Reddy, 2007; Pazariskis et al., 2014a; 2014b; etc.).

- \bar{X}_2 = mean of pre-merger ratios
- s = standard deviation
- 1 = group of post-merger ratios
- 2 = group of pre-merger ratios

Finally, the research results are presented in the next section.

Analysis of results

The mergers of thirty one sample companies were assessed on the basis of five (5) ratios (M1 through M5) and after statistical analysis (two independent samples mean t-test) no statistically significant change was presented. More analytically, the ratios: profit per employee, operating revenue per employee, shareholders funds per employee, working capital per employee and working capital per employee, did not shown a statistical significant change before and after the mergers of the firms (see, Table 1).

This result is not consistent with the results of some past studies that found improved labor productivity immediately after the merger transaction (Schiffbauer et al., 2009; Girma, 2006; Siegel & Simons, 2006; Conyon et al., 2002) or, in general, an important negative effect after mergers (Hosono et al., 2009; Odeck, 2008; Lehto & Bockerman, 2008).

Table 1: Pre-merger and post-merger ratios with T-test

Variable	Pre-merger (1 year avg.)	Post-merger (1 year avg.)	T-statistic (Two-tail)	P-Value	Confidence Interval 95%
M1	23,7	2,0	-1,28	0,208	(-56; 12,5)
M2	475	509	0,17	0,866	(-364; 432)
M3	363	465	0,91	0,368	(-124; 328)
M4	205	241	0,42	0,676	(-139,3; 212,7)
M5	773	849	0,38	0,709	(-333; 486)

Note:

1. ***, **, * indicate that the mean change is significantly different from zero at the 0.01, 0.05, and 0.10 probability level, respectively, as measured by two independent sample mean t-tests.

More analytically, the P-value interpretation levels for the above referred three cases are described below:

- $p < 0.01$ strong evidence against H_0 (see, ***)
- $0.01 \leq p < 0.05$ moderate evidence against H_0 (see, **)
- $0.05 \leq p < 0.10$ little evidence against H_0 (see, *)
- $0.10 \leq p$ no real evidence against H_0

Summary and Conclusions

The mergers considered significant business transactions that have become a very attractive research field for economists, specialists in business issues and policy makers, but mergers may has controversial effects on competition and welfare (Katsos & Lekakis, 1991). Also, recent international developments, global integration of markets and enlargement of European Union prompted companies to search for new partners in order to profit by reducing production costs, expanding their distribution network and ultimately increasing profits (Agorastos et al., 2011).

In the present study we analyzed and evaluated the effect of mergers in labor productivity after the merger transaction. The examined sample consists of 31 Greek listed firms with a merger event in the five years from 2009 to 2013 (and with ratio analysis of one year before and after the merger event). For the analysis and evaluation of the above, ratios were used, as extracted from the financial statements of companies.

According the study results, the ratios: profit per employee, operating revenue per employee, shareholders funds per employee, working capital per employee and working capital per employee examined and the merger activity at the sample firms had no effect on labor productivity, as changes in the relative ratios are not statistically significant.

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