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ARTICLES

Full Length Research Paper

Assessing employment effects of mergers using accounting measures: Some evidence from Greece in the period of economic crisis

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This study analyzed the interdependencies between employment and accounting measures, in order to evaluate the merger effects during the period of the economic crisis in Greece. More specifically, the study analyses five accounting measures in comparison to the total number of employees, as financial ratios, from a sample of all Greek listed firms in the Athens Exchange that executed one merger in the period from 2009 to 2013 as acquirers. From the analysis of the results, it is clear that the mergers had no effect on employment and labor productivity for the whole sample firms merged from 2009 to 2013 and the productivity of workers have not improved significantly after the mergers. Lastly, the study examined the industry differentiation of labor productivity after mergers. The results reveal, in general, a better performance for the commerce and services (CMS) firms from the sample in contrast to the three other basic industry categories: Primary sector (PRI), industrial sector (IND), and constructions and building materials (CNB).

Key words: Mergers, employment, labor productivity, ratios.

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 (Leepsa and Mishra, 2013; Omoye and Aniefor, 2016). How decision makers agree or disagree on strategic issues is an important topic for discussion over to organizations and many researchers and business practitioners are confident and enthusiastic for mergers,

despite the fact that many others regard with scepticism this hypothesis (Rodionov and Mikhalchuk, 2016; Tao et al., 2017). Furthermore, there is always an impact of mergers on business activity and firms' human factor (the workers at every management level), which are one of the most valuable assets of an organization.

According to Liu et al. (2015), the labor market effects of mergers and acquisitions (M&As) are worth intensive empirical investigation, besides the important policy implications for the host country, as the theoretical

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analyses do not reach a consensus. While the existing literature on mergers analyzes their impact on business activity and human factor from several aspects and using several methodologies, "there is very little systematic empirical evidence on the employment effects of mergers and almost none outside the USA" (Conyon et al., 2002: 32). An explanatory study for the UK market was conducted by Conyon et al. (2002), while till now there are few studies outside the US and UK market that examine the impact of mergers on employment effects. Also, there are many research methods (both qualitative and quantitative) over the last years for the examination of an empirical problem, such as the employment effects from merger activities. However, Conyon et al. (2002) argue that the limited extant literature on US market exhibits a variety of sampling procedures and methodologies, while there is no clear consensus on research methodology, as well as on expected findings from a research.

Furthermore, 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). Moreover, employee benefits are described by the IAS 19 (Amended 2011), which 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 outlines how each category of employee benefits are measured, providing detailed guidance in particular about post-employment benefits (Giovanis et al., 2016; Deloitte: http://www.iasplus.com/en).

Last, in Greece, after the U.S crisis in mid-2007, there was an evolving economic crisis, which started at the end of 2009 and everyone noticed that this crisis due to public debt was not temporary and affects several industry sectors (Georgantopoulos and Filos, 2017; Pazarskis et al., 2017). The Greek government resorted to the 'support mechanism' to cover its public debt and actually, from 2010 it has begun in Greece the era of 'troika': the European Central Bank, the European Union and the International Monetary Fund are for the first time in European history parts of the 'troika'. Thus, it is quite interesting to examine mergers effects on employment and productivity and their status in the period of this 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., 2016).

Considering that the most valuable asset of an organization is its staff, the aim of the study is to investigate the impact of mergers on employee's productivity before and after the merger period during the economic crisis in Greece. In order to examine the employment effects and labor productivity of Greek firms after mergers activities, this study proceeds to an analysis of a sample of firms, listed at the Athens Exchange in Greece that executed one merger in a five-year-period (from 2009 to 2013), using accounting measures and computing five ratios.

LITERATURE REVIEW

Many past studies on merger performance that employed accounting data or ratios and labor productivity were conducted diachronically and concluded on ambiguous results (Giovanis et al., 2016). Over the last years, the majority of the studies are concentrated at the US market, while there are few studies on this subject for other countries (Conyon et al., 2002). Also, regarding the research methods (both qualitative and quantitative) there is no clear consensus on research methodology, as well as on expected findings from a research on this subject. Several past studies for the examination of the employment effects from merger activities are presented here.

One initial research that examines the labor effects of M&As in China was carried out by Liu et al. (2015). They examined the causal effect of foreign acquisitions on the labor market in China and their sample consists of 496 foreign completed acquisition deals in China over the period of 1998 to 2007. Their results showed that the impacts of foreign acquisitions in China are different from but also comparable to those in developed countries found in the literature. Specifically, Liu et al. (2015) argued that foreign acquisitions have significant positive effects on the levels of wage and employment of target firms.

For the Canadian market, Oldford and Otchere (2016) examined labor market effects of cross-border acquisitions using a large sample of acquired Canadian firms. Their sample includes all the Canadian firms involved in cross-border acquisitions from 1980 to 2008. For benchmarking, they use a sample of firms involved in domestic acquisitions for the same time period. Their final sample consists of 362 firms acquired in cross-border M&As and 342 firms acquired by domestic bidders. Oldford and Otchere (2016) presented financial data analysis for each target firm five years before and five years after the completion of their deal. Their results implied that the targets reduced employment levels and increased wages after the acquisitions, while productivity and efficiency improved significantly after the foreign acquisition.

Regarding the Japanese market, Hosono et al. (2009) investigated the impact of mergers on productivity. Their study analysed fifty five mergers during the period of 1995 to 1999 of a sample of Japanese acquiring firms in the manufacturing sector, with firms' data analysis for on year before and three years after the merger events. Hosono et al. (2009) found a significant increase in the debt-to-asset ratio, while the total factor productivity

decreases immediately after mergers and does not capture the pre-merger level within the next three years after mergers. They argued that the costs of business integration are large and persistent for the merger decision in Japan. Hosono et al. (2009) further analyzed the post-merger performance by classifying the M&As into several merger types and industries: they claimed that the recovery of total factor productivity after mergers is significant for mergers across industries and only horizontal M&As lead to better results, as the merged firms are within the same business group and this implies for a synergy effect in this type of mergers. For the EU market, Furlan et al. (2016) examined a large sample of European M&As for post-M&A employment effects with firm level analysis according to their balance sheet information and profit and loss accounts. Their sample consists of 1.350 firms and the study examined period is between 2003 and 2010. Furlan et al. (2016) found in the full sample positive employment effects for all levels of acquired ownership above 25%. They also try to capture the main patterns of M&A-induced employment effects with specific subsamples: Furlan et al. (2016) claimed for domestic M&As significant employment effects only observable above 75% of acquired ownership, while there is significant positive employment effects for cross-border M&As above the 25% ownership of shares.

For the UK market, Schiffbauer et al. (2017) examined the causal link between foreign acquisitions and firm productivity in the UK and they analyzed the productivity of acquired firms from the UK over the period from 1999 to 2007. Their sample consists of over 10.000 M&As transactions (25% of these transactions were international M&As). They concluded that the productivity of foreign-acquired firms depends on characteristics of acquiring and acquired firms, while there is a significant heterogeneity in the total factor of productivity effects of foreign M&A at the industry level. More specifically, productivity gains are linked to acquisitions by foreign firms operating in industries intensive in R&D, but are less likely when foreign acquirers operate in marketing-intensive industries. Another study for the UK market of Conyon et al. (2002) examined the effects of M&As activity on firm employment at a sample of 400 M&As transactions during the period from 1967 to 1996. Conyon et al. (2002) found significant rationalizations in the use of labor cost and increase efficiency in the post-merger period, in particular for related mergers and even more for hostile mergers.

As M&As transactions attract the interest of researchers worldwide and are worth intensive empirical investigation, while there are important policy implications for every host country of international M&As, Dessaint et al. (2017) studied the employment protection and takeovers from a comprehensive sample that covers 21 developed countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece,

Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the UK, and the US. They examined 45.696 M&As deals during the period of 1985 to 2007 from these countries and their final sample included M&As that the transaction value is at least fifty million US dollars and the bidding firm try to acquire over 50% of shares. Dessaint et al. (2017) claimed that labor restructuring is a key driver of takeovers, as major increases in employment protection reduce takeover activity by 14 to 27% and the combined firm gains (synergies) by over half. The results of Dessaint et al. (2017) are providing evidence that workforce restructuring is a significant source of cost synergies.

Also, there are some studies that examined the employment effects from merger activities only for one European Union's member state. Thus, for Sweden, Bandick and Karpaty (2011) investigated the employment effects of foreign acquisitions in acquired firms in Swedish manufacturing during the period of 1993 to 2002. From a sample that includes all manufacturing firms with 20 employees or more (over 5.000 firms), they studied a sample of 464 target firms. They found some evidence of positive employment effects in acquired firms. Also, Bandick and Karpaty (2011) claimed for positive employment effects more pronounced in acquired non-Multinational Enterprises (MNEs) than in Swedish MNEs. Another study for Sweden in the 1990s, a period characterized by a dramatic increase in foreign ownership, is carried out by Siegel and Simons (2010), which analysed in one model after M&As firms, plants and workers, as parts of the M&As process. They have studied virtually the entire population of Swedish manufacturing firms and employees during the period from 1985 to 1998. Siegel and Simons (2010) claimed, consistent with human capital theory, that M&As lead to improvements in firm performance and plant productivity, and simultaneously, M&As result in downsizing of firms.

In Germany, Weche (2015) studied foreign and domestic acquisitions to account for a general takeover effect. His study covered all enterprises of manufacturing sectors with at least 20 employees and the time period was from 2007 to 2009. From a preliminary sample of 255 foreign and 894 domestic takeovers in Germany, after controlling identification failures at the data to eliminate his sample (which errors are excluded), he examined 133 foreign and 155 domestic takeovers. His results indicated a negative impact of foreign takeovers on employment and no productivity improvements.

Last, Lehto and Bockerman (2008) examined the employment effects of M&As on targets by using matched establishment-level data from Finland. Their data analysis concentrated over the years 1989 to 2003 at several cross-border and domestic M&As, which are further sub-tracked, in order to analyse the employment effects at several different types of M&As. Their study considered three different industry blocks, which are: (a)

considered three different industry blocks, which are: (a) manufacturing (including utility industries), (b) construction and other services, and (c) trade (including hotels and restaurants). Lehto and Bockerman (2008) argued that cross-border M&As have a negative impact only in manufacturing firms and that domestic M&As with foreign-owned purchasers have a substantial negative impact on employment in construction and other services industries.

METHODOLOGY

Research design

Sample selection

All merger events of listed firms in the Athens Exchange (Greece) at the period from 2009 to 2013 are tracked on the web site of the Athens Exchange; this is a preliminary sample of seventy firms. As the study examines only the performance of listed firms, the merger transactions of their subsidiaries are excluded from the sample. From this preliminary sample, the firms of the financial sector are excluded for further analysis (seven firms). Also, the firms with multiple merger activities in the period from 2009 to 2013, as well as some firms that have been de-listed from the Athens Exchange for various reasons (bankruptcy, not meeting the standards of the market, etc.) are excluded from the sample (thirty two firms). Thus, the final sample consists of thirty one firms listed in the Athens Exchange that executed one merger action as acquirers in Greece in the period 2009 to 2013 (Table 1).

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 performance (Giovanis et al., 2016). The available data of this study (accounting measures) are computed from the financial statements of the merger-involved firms. The merger events of our sample, the financial statements and any other data (total number of employees) were received from the published data on the Athens Exchange's website. Furthermore, the study categorizes the sample firms from their industry type into four basic industry categories: primary sector (PRI), industrial sector (IND), commerce and services (CMS), and constructions and building materials (CNB) (Table 2).

Accounting measures-quantitative variables

Accounting data analysis with financial statements and ratios provide useful information regarding companies' merger decisions in general. The aim of the study is to analyze the total number of employees of the sample firms in relation with several basic accounting measures, such as firm's profitability (net income before taxes, operating income), capital adequacy (shareholders' funds, total assets), and firm's liquidity (working capital). The ratios chosen (VAR_1-VAR_5) for the analysis and evaluation of the sample, in accordance with the methodologies following previous studies that employed accounting measures (Hosono et al., 2009; Liu et al., 2015; Schiffbauer et al., 2017), describe basically the employment effects and the efficiency of labor (labor productivity) of a company. More specifically, the ratios of the present study study are presented at Table 3.

Evaluation of merger effects on employment and labor productivity

While the existing literature on mergers analyzes their impact on business activity and human factor from several aspects, "…there is very little systematic empirical evidence on the employment effects of mergers and almost none outside the USA…" (Conyon et al., 2002:32). Over the last years, there are many research methods (either qualitative or quantitative), for the examination of an empirical problem, such as the employment effects from merger activities. However, Conyon et al. (2002) argues that the limited extant literature on US market exhibits a variety of sampling procedures and methodologies, while there is no clear consensus on research methodology, as well as on expected findings. This study with quantitative analysis attempts to evaluate the efficiency of the workforce, employment effects and labor productivity of a company after mergers for the Greek market, a small open economy that it is now during an economic crisis. More analytically, the study considers that the merger action of each firm from the sample is an investment decision that affects several business aspects. Based on this viewpoint, the study proceeds to its analysis and regards the impact of the merger action similar to the impact of any other important issue on the firm performance and accounting value to its ratios over the specific period of merger time (Healy et al., 1992, 1997; Leepsa and Mishra, 2013; Oruc and Erdogan, 2014). The crucial research question that is investigated by examining the aforementioned ratios is the following: "Is employment effects of mergers different in the post-merger period than it is in the pre-merger period in the period of economic crisis?". From this point of view, in this study the following first hypothesis has been formulated:

H_1: Mergers are not expected to have any employment effect in the post-merger period of the acquiring firms.

The selected ratios for each company of the sample over a one-year period before, namely: year (t - 1), or after, namely: year (t + 1), the merger events are calculated and the mean from the sum of each financial ratio for the years (t - 1) is compared to the equivalent mean from the years (t + 1), respectively. In this study, the mean from the sum of each financial ratio is computed than the median, as this could lead to more accurate research results, and this argument is consistent with many other researchers (Neely and Rochester, 1987; Sharma and Ho, 2002; Marfo and Kwaku, 2013; Muhammad and Zahid, 2014). The study does not include the year of merger event ($t = 0$) in the comparisons, because this usually presents a number of events with influence firm's accounting performance as one-time merger transaction costs, necessary for the deal (Healy et al., 1992; Oruc and Erdogan, 2014). Last, in order to test the difference in accounting performance in the post-merger period than in the pre-merger period two independent sample mean t-tests for unequal variances are applied.

Mergers, labor productivity and different industry types

Schiffbauer et al. (2017) argued that the employment effects and labor productivity of foreign acquisitions vary across industries and this implies to industry differentiation of labor productivity after mergers. Lehto and Bockerman (2008) provided similar indices; they argued that cross-border M&As have a negative impact only in manufacturing firms and that domestic M&As with foreign-owned purchasers have a substantial negative impact on employment in construction and other services sectors. In order to analyze any possible impact on the sample firms from the industry type, the merger impact over the four basic industry categories mentioned earlier were examined: primary sector (PRI), industrial sector (IND), commerce and services (CMS), and constructions and building materials (CNB). So, the second hypothesis that has been formulated is the following:

Table 1. Sample selection process for examined firms.

Variable	Total	2013	2012	2011	2010	2009
Preliminary sample: All merger events of listed firms in the Athens Exchange from 2009 to 2013	70	13	11	19	11	16
Eliminated: Banks, investment and financial institutions	7	3	0	4	0	0
Eliminated: Firms because full set of data were not available (multiple mergers, de-listed, etc.)	32	4	8	8	6	6
Final sample if the study	31	6	3	7	5	10

Table 2. Classification of firms per year: full sample and particular industry sector.

Year	Full sample	%	PRI	%	IND	%	CMS	%	CNB	%
2013	6	19	1	14	1	11	4	45	1	17
2012	3	10	1	14	1	11	0	0	0	0
2011	7	23	3	44	1	11	1	11	2	33
2010	5	16	1	14	3	33	1	11	0	0
2009	10	32	1	14	3	33	3	33	3	50
Total	31	100	7	100	9	100	9	100	6	100

Table 3. Classification of financial ratios.

Code	Variable name	Ratio analysis
VAR_1	Profit per employee	Net income before taxes / total number of employees
VAR_2	Operating revenue per employee	Operating income / total number of employees
VAR_3	Shareholders' funds per employee	Total share / total number of employees
VAR_4	Working capital per employee	Working capital / total number of employees
VAR_5	Total assets per employee	Total assets / total number of employees

H_2: Employment effects and labor productivity have a relative change on the post-merger performance of the acquiring firms from different industries

Thus, the sample firms from their industry type are categorized into four separate groups: (a) PRIM: 7 firms, which is 21% of the sample, (b) INDU: 9 firms and 29%, respectively, (c) CMS: 9 firms and this gives 29%, and (d) CNB: 6 firms that is 21% of our sample. Afterwards, the study computed the differences between the means of post-merger and pre-merger examined ratios and Δ represents the change in every ratio before and after the merger event. A modified methodology of Ramaswamy and Waegelein (2003) and Francis and Martin (2010), was applied where change in acquirer's performance is measured as the change in a ratio (e.g. VAR_1) from before to after the merger (thus: $_{\Delta VAR\_1}$). More specifically, ΔVAR_i is equal to the average of a ratio from year after ($t + 1$) and before the merger event ($t - 1$) for the sample firms, while $t = 0$ denotes the merger year and the ratio change is computed as:

$$\Delta VAR_i = \overline{VAR}_{2i} - \overline{VAR}_{1i}$$

where ΔVAR calculate the differences between the means

Table 4. Comparison results (t-tests) for total pre- and post-merger performance.

Variable	Mean pre-merger	Mean post-merger	t-value	p-value	95% CI
VAR_1	23.7	2.0	-1.28	0.208	(-56, 12.5)
VAR_2	475	509	0.17	0.866	(-364, 432)
VAR_3	363	465	0.91	0.368	(-124, 328)
VAR_4	205	241	0.42	0.676	(-139.3, 212.7)
VAR_5	773	849	0.38	0.709	(-333, 486)

***,**,*Indicate that the change of the mean is significantly different from zero at a significance level of 0.01, 0.05 and 0.10, respectively, as calculated by comparing the average of two independent subassemblies (two independent sample mean t-tests) at ratios of sample. More specifically, for the three cases the classification levels relative to the value of the p-value are the following: p<0.01 as strong evidence against Ho (***); 0.01≤p <0.05 moderate evidence against Ho (**); 0.05≤p <0.10 minimum evidence against Ho (*); 0.10≤p no real evidence against Ho. The amounts in all variables are in thousands euro.

Table 5. Comparison results (t-tests) for pre- and post-merger performance per year.

Variable	Mean Pre-M.	Mean Post-M.	Mean Pre-M.	Mean Post-M.	Mean Pre-M.	Mean Post-M.	Mean Pre-M.	Mean Post-M.	Mean Pre-M.	Mean Post-M.
	2013		2012		2011		2010		2009	
VAR_1	5,5	8.9	-14.9	-23.4	22.6	64	-11.8	22.3	-11.8**	19.3**
VAR_2	311	452	726	346	1133	911	280	385	280	385
VAR_3	742	592	592	251	408	336	305	294	305	294
VAR_4	139	222	743	290	312	260	181	172	181	172
VAR_5	965	1028	1493	931	1080	914	566	591	566	591

***, **, *: Rejection of the null hypothesis at a significance level of 0.01, 0.05, 0.1, respectively. The amounts in all variables are in thousands euro.

of post-and pre-merger ratios, i refers to the examined ratios { VAR_1, ..., VAR_5} of a sample firm, while $\overline{VAR}_1$ presents the mean of pre-merger examined ratios and $\overline{VAR}_2$ is the mean of post-merger examined ratios.

Then, for these data, after the rejection of the null hypothesis that the data sample has the normal distribution, a non-parametric test is applied, as non-parametric tests imply that there is no assumption of a specific distribution for the data population: the Kruskall-Wallis test. The Kruskall-Wallis test is a nonparametric test, alternative to a one-way ANOVA, which the study uses for the analysis of accounting measures in mergers. The test does not require the data to be normal, but instead uses the rank of the data values rather than the actual data values for the analysis (Pazarskis et al., 2017).

RESULTS AND DISCUSSION

Evaluation of merger effects on employment and labor productivity

The sample firms were assessed on the basis of five ratios and after statistical analysis (two independent samples mean t-tests) no statistically significant change was presented. More analytically, the ratios VAR_1-VAR_5 did not show a statistical significant change before and after the mergers of the firms. Table 4 presents the comparison results (t-tests) of accounting

measures and employees' the number used for the evaluation of the pre- and the post-merger performance, while Table 5 presents more analytically the research results per year.

The result of this study is not consistent with the results of some past studies that found improved labor productivity immediately after the merger transaction (Conyon et al., 2002; Siegel and Simons, 2010; Bandick and Karpaty, 2011; Furlan et al., 2016; Oldford and Otchere, 2016; Schiffbauer et al., 2017) or, in general, an important negative effect after mergers (Lehto and Bockerman, 2008; Hosono et al., 2009; Weche, 2015). All-in-all, as mergers have not any employment effect in the post-merger period of the acquiring firms, the earlier stated proposition of the hypothesis H_1 is accepted.

Mergers, labor productivity and different industry types

The findings of the study for the change (Δ) in every ratio at the pre- and post-merger period and after the Kruskall-Wallis test are tabulated in Table 6. As the inferences of the analysis indicated that three (ΔVAR_3-ΔVAR_5) out of five variables are statistically significant, this could reveal a different accounting performance in the post-merger period for the examined industry types. In particular, the ratios ΔVAR_3, Δ VAR_4 and Δ VAR_5

Table 6. Comparison results (Kruskal-Wallis tests) of change in performance by industry type.

Variable	ΔVAR_1	ΔVAR_2	ΔVAR_3	ΔVAR_4	ΔVAR_5
PRIM	43,170	-22,665	3,715	19,671	-18,203
INDU	0.000	-7,194	-28,954	7,291	0.000
CMS	48,910	120,605	69,247	57,530	79,133
CNB	11,342	-139,378	-166,819	-182,613	-243,321
p-value	0.511	0.154	0.007***	0.019**	0.009***

***, **, *: Rejection of the null hypothesis at a significance level of 0.01, 0.05, 0.1, respectively. The amounts in all variables are in thousands euro.

that measure the change in total share, working capital and total assets to total number of employees ratios from before to after the merger is statistically significant ($p < 0.01$, the first and the third ratio and $p < 0.05$ the second, respectively). This reveals, in general, a better accounting performance for the commerce and services (CMS) firms from our sample in contrast to the three other basic industry categories: primary sector (PRI), industrial sector (IND), and constructions and building materials (CNB).

Similar results with industry differentiation of labor productivity after mergers found Schiffbauer et al. (2017) that argued that the employment effects and labor productivity of foreign acquisitions vary across industries. Also, Lehto and Bockerman (2008) implied that employment effects and labor is different among industries. Their study explored the effect of M&As on employment in three different industry blocks: (a) manufacturing (including utility industries), (b) construction and other services, and (c) trade (including hotels and restaurants). Lehto and Bockerman (2008) argued that cross-border M&As have a negative impact only in manufacturing firms and that domestic M&As with foreign-owned purchasers have a substantial negative impact on employment in construction and services industries. Another study for the Japanese market of Hosono et al. (2009) found differentiation of labor productivity after mergers that vary across industries. Hosono et al. (2009), as they analyzed the post-merger performance by classifying the M&As into several merger types and industries, claimed that the recovery of total factor productivity after mergers is significant for mergers across industries and only horizontal M&As lead to better results, as the merged firms are within the same business group and this implies for a synergy effect in this type of mergers. All-in-all, as there are employment effects and labor productivity with a relative change on the post-merger performance of the acquiring firms from different industries, the stated proposition of the hypothesis H_2 is accepted.

Conclusion

Mergers considered important business transactions and

a very attractive research field for economists, specialists in business issues and policy makers, but there is not a common agreement for their final result (Rodionov and Mikhalchuk, 2016). Also, recent international developments (enlargement of European Union) and global integration of markets prompted companies to search worldwide for new partners and merger deals in order to profit by reducing production costs, expanding their distribution network and ultimately increasing profits (Tao et al., 2017). This study analyzes the effect of mergers on employment and labor productivity with the analysis of acquiring firms after the merger transactions. The final sample of the study includes thirty one Greek firms listed on the Athens Exchange (Greece) with a merger event during a five-year-period (from 2009 to 2013)

The study proceeds to ratio analysis of the sample for one year before and after the merger event. For the evaluation of the effect of mergers on employment and labor productivity five ratios were used, as extracted from firms' financial statements and other published data on the Athens Exchange's website. More analytically, the study analyzes the total number of employees of the sample firms in relation with several basic accounting measures, such as firm's profitability (net income before taxes, operating income), capital adequacy (shareholders funds, total assets) and firm's liquidity (working capital). The ratios' analysis reveals that mergers had no effect on labor productivity, as there are not any statistically significant changes in the examined ratios. Also, the merger events of the involved firms and the impact of different industry type were examined according to their performance. The findings of the study indicate a statistically significant change in three out of five accounting measures to total number of employees at the post-merger period and a different performance of the examined basic industry categories. Last, the research results could be used: (a) to accounting research for the evaluation of the efficiency of the workforce, employment effects and labor productivity after the merger decision. Furthermore, alternative examined samples could be analyzed (not only of merger-involved listed firms in the Athens Exchange, but also non-listed firms) or within different time intervals or firms involved in international merger activities and (b) as a recent empirical result of

the merger activity and labor productivity in Greece during the economic crisis for policy makers, tax and other state authorities or investors for their potential investments.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Full Length Research Paper

The role of taxpayer awareness, tax regulation and understanding in taxpayer compliance

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The purpose of this study is to provide an insight into the government's need for sustainable socialization on the importance of paying taxes. This study also aims to analyze the taxpayer's awareness, whether it can mediate the knowledge and understanding of tax regulations on taxpayer compliance or not. The approach in this study is quantitative, with taxpayers as the respondents. The results show that knowledge and understanding of tax regulation and awareness of taxpayers simultaneously contribute to taxpayer compliance. Also, indirectly, knowledge and understanding of tax regulation in the society through the awareness of taxpayer do not have significant influence on tax compliance. Based on the questionnaire, the people have not fully mastered the tax administration using information technology and they have not fully realized the importance of paying taxes for the progress of the nation, due to the different demographic background. This study offers a new understanding and a better perspective of the influence of knowledge, understanding, and awareness of taxpayer compliance. The results will be useful for academics, communities, and governments as they are related to the subject of this study.

Key words: Knowledge and understanding of tax regulation, awareness, taxpayer compliance.

INTRODUCTION

The role of taxpayer awareness and compliance is very important for a nation in an effort to collect the state revenue from tax sector. Why is government attention focused on taxpayer awareness and compliance issues? The answer is, because the understanding and awareness of the people to obediently pay the tax are still relatively low. This is due to the non-optimal tax understanding obtained by the community. Therefore, the people need to be given the understanding of taxes so that their awareness can be developed. This research is based on the problem of unachieved Rural and Urban Land Value Taxes after the delegation of tax management from the central government to local governments, as well as the differences in the results of previous studies concerning the taxpayer compliance. Several studies have explained that: (a) Knowledge and understanding of tax regulation could affect taxpayer compliance, (b) Knowledge and understanding of tax regulation does not affect taxpayer awareness and (c) Knowledge and understanding of taxation can improve the taxpayer compliance through the willingness to pay taxes; the willingness to pay taxes increases due to the

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taxpayer awareness in which it is influenced by the attitude of the taxpayer itself.

Based on the study of Kariyoto (2010) and Geetha and Sekar (2012), factors that affect the consciousness of taxpayer are described by using the Theory of Planned Behavior (TPB) developed by Ajzen (1991). The TPB model shows that compliance behavior provides a significant explanation that the variables of attitudes, subjective norms and perceived behavioral controls have an effect on non-compliance behavior. Different results are also found in the research of Widayati and Nurlis (2010) where the variables of knowledge and understanding of taxation could affect taxpayer compliance. However, these results are inconsistent with that of other researchers who found a positive relationship in their research because taxpayers who already understand the taxation think that it is better to pay taxes than attaining tax sanctions.

This study was conducted because of the low level of tax awareness and compliance in Indonesia (Asri, 2004). Assessing the knowledge and understanding of taxation is a variable that can raise people's awareness to comply with the laws and regulations of taxation. Thus, it is considered necessary to equip the previous research by including the variable, awareness as a mediator of taxation knowledge and understanding towards taxpayer compliance because so far, some researches have explained that: (a) Directly, knowledge and understanding of taxation have influenced awareness, (b) Knowledge and understanding of taxation have direct effect on compliance and, (c) Tax compulsory awareness directly affect willingness to pay taxes and knowledge and understanding of taxation have an indirect effect on compliance through taxpayer awareness.

LITERATURE REVIEW

Theory of compliance

Rahayu (2010) explained that tax compliance is a condition in which the taxpayer meets all its tax obligations and performs the taxation rights. According to the Decree of Minister of Finance number 544/KMK.04/2000, taxpayer compliance is identified from the time of submitting tax returns for all taxes in the last two years, having no tax arrears for all types of taxes unless it has legal permission to repay or delay tax payments.

The underlying problem of low compliance can be caused by many things but the most important thing here is that there is no data on the taxpayer compliance (Marziana, 2010). The low taxpayer compliance rate will generate a greater difference between the amount of paid tax and the amount of payable tax; this difference will cause a loss of the state revenue.

The implementation of tax compliance at this time seems to still merely reflect the formal compliance of paying and reporting the tax on time, whereas compliance expected by the government is the material compliance which is filling the Annual Tax Return properly, clearly, and correctly. Formal compliance includes material compliance and taxpayers comply and implement the legislation.

Based on this issue, taxpayer compliance has a great role in government revenue; thus, it is necessary to be improved as well as create such obedience culture. To improve tax compliance, the government has conducted socialization, slogans, posters, warning letters, appeals and tax bills. Bobek and Hatfield (2003), Mustikasari (2007), Arniati (2009), Widi and Bambang (2014) and Imelda (2014) reported that taxpayer compliance can be explained by using the Theory of Planned Behavior (TPB) developed by Ajzen (1991). TPB model shows that compliance behavior provides a significant explanation that the variables of attitudes, subjective norms and perceived behavioral controls affect the non-compliant behavior of individual taxpayers.

With regards to the importance of taxpayer compliance according Randolph (2015), there are two things that make taxpayers not to be obedient. First, because of the inaccuracy in payment and/or report. Second, the discrepancies in the amount of paid tax due to the low knowledge and understanding of tax regulations. Third, the minimal awareness of taxpayers with regards to the meaning of paying taxes to the state.

Theory of taxpayer awareness

Alabede et al. (2011) believed that consciousness is a will accompanied by action from reflexion to reality. Taxpayer awareness is an effort or action accompanied by self-encouragement and willingness to perform the rights and obligations of taxation in accordance with the regulations. Taxpayer awareness is understood if the taxation regulation has been known, acknowledged, respected and obeyed. If the tax regulation is still limitedly known, then, the taxpayer's awareness is still low. The low awareness of taxpayer is suspected to be caused by the minimum knowledge and understanding of tax regulations.

Nugroho and Zulaikha (2012) examined the factors that influence the willingness to pay taxes with the awareness of paying taxes as an intervening variable. The results showed that the variables, knowledge and understanding of tax regulations, quality tax services and perceptions of taxation effectiveness have a significant influence on the awareness of paying taxes.

Munari (2005) also explained that taxpayers experience awareness when they: know the existence of laws and provisions of taxation; know the function of paying taxes to the state; understand the rights and obligations to be implemented; count, pay and report voluntarily; calculate, pay and report taxes correctly.

Based on previous studies, it is deemed necessary to

use the awareness variable as one of the variables and studied as a mediation variable. The indicators of taxpayer awareness are measured by knowing tax functions, understanding taxpayers' rights and obligations, being able to calculate taxes, being able to pay taxes, and being able to report taxes.

Theory of knowledge and understanding tax regulation

Nugroho and Zulaikha (2012) reported that the knowledge and understanding of taxation regulation is intended for taxpayers so that they can understand the General Provisions and Procedure of Taxation covering the delivery of Annual Tax Return, payment, place of payment, the reporting of Annual Tax Return, fines, as well as the due date of payment and reporting.

Bernadette et al. (2010) in their study concluded that, small business owners tend to have more opportunities not to pay taxes, it is likely because of the lack of meaningful tax knowledge. While on the other hand, Machogu and Amayi (2013), Marziana (2010), Laksono and Ardiyanto (2007), Kariyoto (2010), Margareth (2012) and Sjursen et al. (2013) agreed that there is an influence of taxation knowledge and understanding of an individual (taxpayer) on the compliance in carrying out taxation obligations

Krause (2000) and Santoso (2008) argued that the knowledge or understanding of taxpayers on tax regulation can also affect the obedience of the taxpayer itself. Krause's (2000) opinion is in line with OECD (2001) which stated that the knowledge of taxpayer will determine the level of taxpayer compliance. This understanding does not only provide knowledge but also makes the taxpayer understand the rights, obligations and sanctions including the tax of private entrepreneurship (Akintoye and Tashie, 2013).

Theory of the relationship and influence of variables studied

Theoretically, taxpayer compliance may be influenced by variables such as the knowledge and understanding of taxation regulations (Akintoye and Tashie, 2013; Tan and Fatt, 2007; Behnud and Fahr, 2013) and the taxpayer awareness (Geetha and Sekar, 2012; Chawla et al., 1996). From the aspect of knowledge and understanding of tax regulations, taxpayer compliance is influenced by sources of knowledge (information), tax regulations, as well as taxpayer rights and obligations (Larasati, 2013; Alfiah, 2014).

The basic theoretical model to be formed is the interconnection between knowledge and understanding of tax regulation and taxpayer awareness that can improve taxpayer compliance. Taxpayer compliance can be built from the knowledge and understanding of tax regulations that are continuously socialized from the government to the taxpayer. In addition, taxpayer compliance can be enhanced by raising taxpayer awareness through the concern of a country, fund allocation, tax consultation, documents payment preparation and tax report.

Conceptual framework

This research is conducted within the framework of Theory of Planned Behavior (TPB) (Ajzen, 1991) that the determinant of direct behavior is the intention behind the behavior. Intention itself is a motivating factor that affects a person's behavior.

Based on the tax regulations that taxes are coercive and indirect, this received a counter-achievement for taxpayers (Mardiasmo, 2009). Thus, the tax obligation must be obeyed by all communities. From the perspective of taxpayer obligation, tax compliance consists of formal compliance and material compliance. While, tax compliance from the intention of the taxpayer consists of voluntary compliance and compulsory compliance. The willingness to pay taxes in order to comply with the legislation is a behavior that is generally given and informed by the attitude of the individual (Kapisillai, 1999). By that, the attitude of the taxpayer in fulfilling the tax obligation is modeled as shown in Figures 1 and 2. Thus, the hypotheses can be formulated as follows:

Hypothesis 1: The knowledge and understanding of tax regulation and taxpayer awareness affected the taxpayer compliance partially and significantly.
Hypothesis 2: The knowledge and understanding of tax regulation and taxpayer awareness affected the taxpayer compliance simultaneously and significantly.

RESEARCH METHODS

To obtain relevant data from taxpayer information, this study combined the method of experiments and surveys by using questionnaires on knowledge and understanding of tax regulations, taxpayer awareness, as well as taxpayer compliance given to respondents as compulsory taxes (Alfiah, 2014; Purnamasari et al., 2015). The questionnaires which were submitted to the respondents consisted of:

1. Request to fill the questionnaire addressed to the taxpayer;
2. The respondent's demographics including name, sex, income, occupation, age, education, and taxation knowledge;
3. Instrument as information measurement tool consisting of knowledge and understanding of tax laws, taxpayer awareness and taxpayer compliance.

Respondents were asked to rate the instruments presented by using a Likert scale with 1 for a highly disagreeable rate to 5 for a strongly agreed answer.
The research population in this study amounts to 1,581,083 with Slovin sample determination together with the level of inaccuracy of
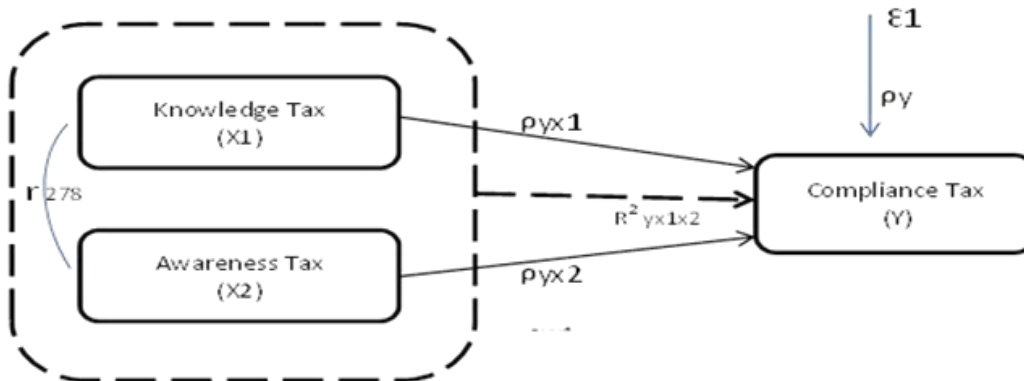
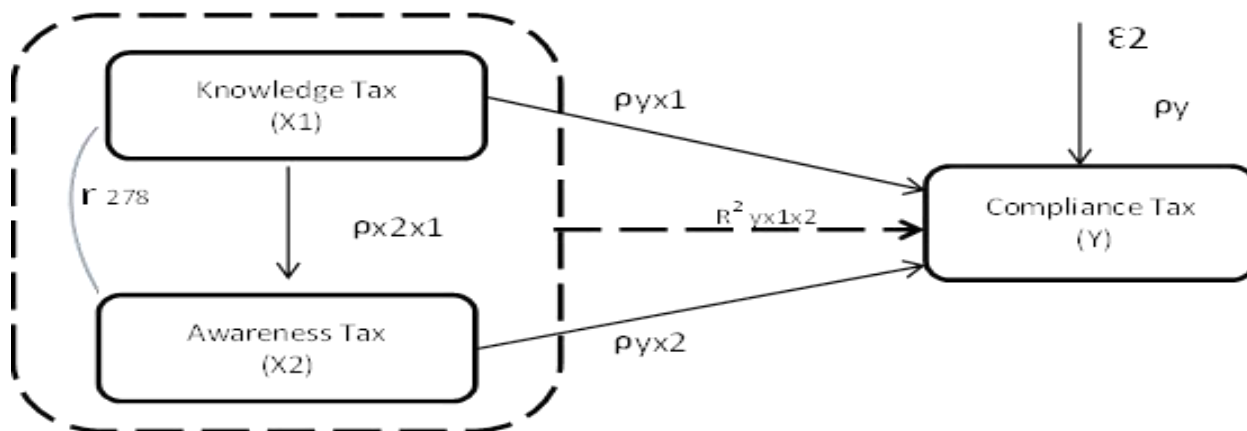**Figure 1.** The causal relationship of X1, X2 towards Y.

Figure 2. The causal relationship of X1 towards Y through X2.

6%. As a result, 278 samples of taxpayers were obtained consisting of the taxpayers of Rural and Urban Land Value Taxes in Malang; the sampling technique was carried out by using a proportional random sampling. The type of book (book I) was chosen with the classification of IDR 0,00 up to IDR 200,000 and book II by IDR 100,000 up to IDR 500,000. This group was chosen because the lower-middle-class community in carrying out the tax obligation is still questionable with regards tax compliance.

The data analysis used in this study was path analysis. Path analysis is a form of multiple regression application by using path diagrams as an indication of complex hypothesis testing. Analysis of this path can be done to estimate the magnitude of the effect either directly or indirectly.

RESULTS AND DISCUSSION

Based on Table 1, substructural 1 is about the relationship structure of knowledge and understanding of tax regulation (X_1), taxpayer awareness (X_2) and taxpayer compliance (Y). Simultaneously, knowledge and understanding of tax regulation and taxpayer awareness affect the taxpayer compliance by 0.779 or 779%; while

0.221 or 22.1% is influenced by other factors outside the model. The direct influence of knowledge and understanding of tax regulation has positive and significant effect on taxpayer compliance shown by path coefficient as much as 1,022, while the influence of individual knowledge and understanding of taxation on taxpayer compliance is shown by t-count which is equal to 17.998 with the significance of (ρ) 0.0000<0.05. Then, hypothesis 1 is acceptable that the influence of knowledge and understanding of tax regulation significantly contributes to taxpayer compliance. The direct influence of taxpayer awareness has a negative and significant effect on taxpayer compliance and is shown by the path coefficient (-0.166) or equal to -16.6%; the influence of taxpayer awareness on taxpayer compliance is shown by t-count that is -2.927 with the significance of (ρ) 0.0400<0.05. With that, based on hypothesis II, it is acceptable that the influence of taxpayer awareness has a negative and significant effect on taxpayer compliance.

As shown in Table 1, substructural 2 is in accordance

Table 1. Summary of parameter model estimation results.

Model	Path coefficient	t	ρ	R^2
Sub Structural 1. (X_1, X_2 to Y)				
X1 (ρ_{YX1})	1.022	17.998	0.0000	
X2 (ρ_{YX2})	-0.166	-2.927	0.0400	0.779
Sub Structural 2 (X_1 to X_2)				
X1 (ρ_{X2X1})	0.866	28.810	0.0000	0.750

Source: Primary data, processed in 2017.

Table 2. Analysis path table.

The influence of the variable	The influence of causal relationship		Residue ε_1	Total
	Direct	Non-direct pass through Y variable		
$X_1 \rightarrow Y$	1.022	-	-	1.022
	-	-0.1437	-	-0.1437
$X_2 \rightarrow Y$	-0.166	-	0.5	-0.166
$X_1 \rightarrow X_2$	0.866	-	-	0.866
$X_1, X_2 \rightarrow Y$	0.779	-	0.470	1.00
F:	483,313			

Source: Primary data, processed in 2017.

with the relationship structures of knowledge and understanding of tax regulation (X_1) on the taxpayer awareness (X_2). The path coefficient is 0.866 or 86.6% with the remaining 13.4% influenced by other factors outside the model. The direct influence of knowledge and understanding of tax regulation on taxpayer awareness is shown by t-count of 28.810 with the significance level of (ρ) 0.0000<0.04. As a result, hypothesis II is acceptable and there is a relationship between knowledge and understanding of tax regulation and taxpayer awareness.

Table 2 shows the value of F which is equal to 483.313 with the probability of (ρ) = 0.0000<0.05. Then, it can be said that hypothesis II is accepted; the knowledge and understanding of tax regulation and taxpayer awareness have an influence on taxpayer compliance, therefore, the partial (individual) test can be done.

In the partial test (individual), the path coefficient is 1.022 which indicates the direct influence of knowledge and understanding of tax regulation on tax compliance with t-count by 17.998 and probability (sig) by 0.0000. The value of $\alpha < 0.05$, makes H_0 to be rejected and H_a accepted which means that the path coefficient is significant. So, it can be said that the knowledge and understanding of tax regulation have contributed significantly to taxpayer compliance. Moreover, direct testing can be described as shown in Figure 3.

The analysis of X_1 for Y: from the above analysis, the significance value of X_1 was 0.0000<0.05, so that there is a significant effect on X_1 for Y. The analysis of X_2 for Y: the significance value of X_2 is 0.004<0.05. Thus, it can be concluded that X_2 is significantly affected by Y.

Taxpayer awareness testing as an intervening variable in the relationship of knowledge and understanding of tax regulation towards taxpayer compliance

The analysis of X_1 through X_2 to Y is known as the direct influence of X_1 to X_2 is 0.866, while the indirect influence of X_1 to X_2 on Y is -0.1437 obtained as 0.866 x -0.166. The total effect is generated from the sum of direct effect and indirect effect: 0.866 + (-0.1437) = 0.7223. Based on the calculation, the value of the direct effect is 1.022 and indirect effect is -0.1437 which means that the direct effect is greater than the indirect effect. The results show that, indirectly, X_1 through X_2 to Y does not have a significant influence on Y (Figure 4).

Model accuracy

The accuracy of the hypothesis model in this research is measured by the relationship of coefficient determinant R^2 in both equations. The test of model accuracy is necessary to be implemented to determine whether or not the model proposed is appropriate or consistent with the data. The model is presented by comparing the matrix theoretical correlation and matrix empirical correlation. If both matrices are appropriate, then the proposed theoretical model is perfectly acceptable.

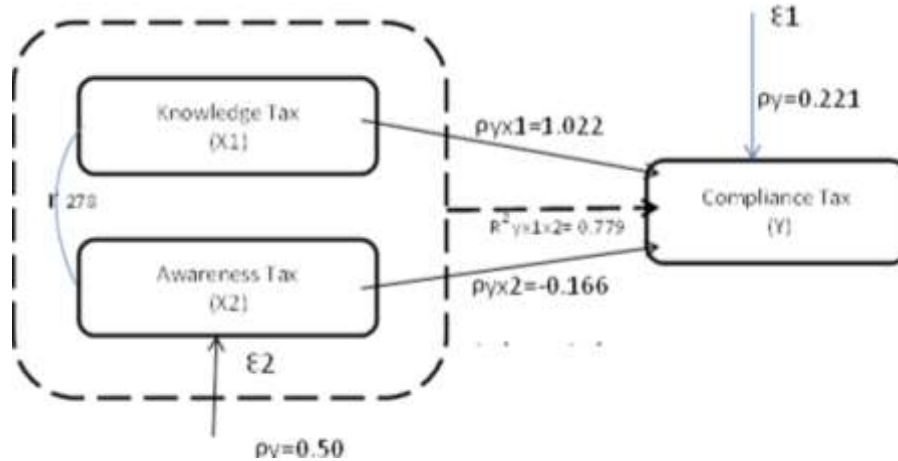R^2 Model = $1-(1-R^2_1)(1-R^2_2)$
= $1-(1-0.779)(1-0750)$

Figure 3. The empirical diagram of causal relationship of X1, X2 with Y.

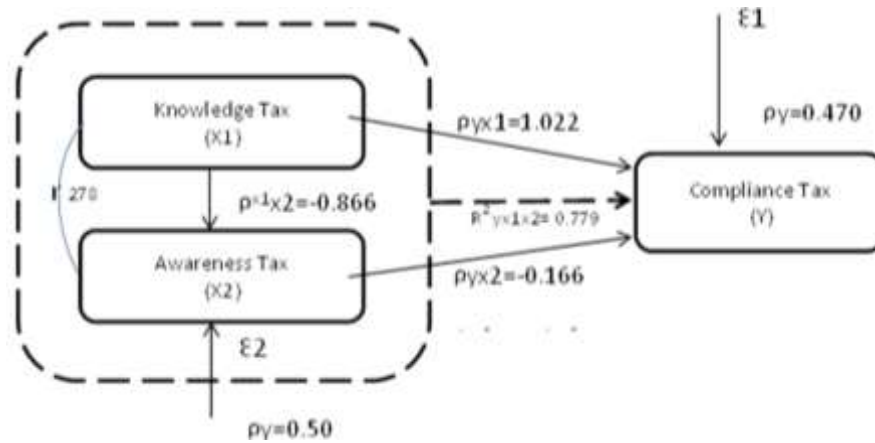**Figure 4.** The empirical diagram of causal relationship of X_1 with Y through X_2.

= 1-(0.221)(0.250)
= 1-(0.05525)
= 0.9447 or 94.47%

Based on the test results above, the value of 0.9447 or 94.47% points out that the model contribution could explain the relationship of the three variables studied.

DISCUSSION

The hypothesis test shows that knowledge and understanding of taxation in the society is already good, meaning that higher knowledge and understanding of taxation regulation will create higher compliance in carrying out the taxation obligation. In contrast, lower knowledge and understanding of taxation regulation will decrease the compliance of taxation. The findings of this study are in accordance with the research of Nugroho and Zulaikha (2012) and Munari (2005), discussing an economic class of a society; for example, this will increasingly determine who will get much and various information of taxation knowledge and all the consequences in the society. In such circumstances, the public is given the option to pay taxes on time in order to avoid fines and it is one form of public awareness of the importance of paying taxes for the construction of the nation.

This study proves that the contribution of knowledge and understanding of tax regulation leads to a better compliance in the society. The most influential aspect of tax compliance is the increased knowledge and understanding of tax regulation because tax collection is based on a law that can be imposed. With the laws andregulations of taxation, especially the imposition of sanctions, this can increase taxpayer compliance in carrying out its tax obligation. On the other hand, these findings are contradictory to the findings of Bernadette et al. (2010) who concluded on the lack of knowledge and understanding of taxation by small business owners who

are less likely to comply with the tax payment. Nevertheless, the results of this study support the research of Machogu and Amayi (2013), Mas'ut (2004), Laksono and Ardiyanto (2007), Kariyoto (2010), Pratama (2012) and Sjursen et al. (2014) who agreed that there is an influence of tax knowledge and understanding on the compliance in carrying out tax obligations. Krause (2000) and Santoso (2008) argued that the more, people understand the tax laws, the higher the state revenue obtained from the tax sector because the public realizes the importance of taxes to the state.

This study proves the awareness of taxpayers in making tax payments and reports has demonstrated the formal compliance that is, making tax payments and reports right on time. Knowledge and understanding of taxation regulation by the taxpayer not only gives an understanding of taxpayer's rights and obligation, and the importance of paying taxes to the state especially in making payment of Land and Building Tax, but also benefits regional development because Land and Building Tax is actually a local tax.

Conclusion

From the research, it can be concluded that: Firstly, the knowledge and understanding of tax regulation in the society will increase if the government conduct more socialization about the regulation and legislation of taxation and its amendments. Secondly, the research proves that the knowledge and understanding of tax regulation and taxpayer awareness has a significant direct effect on tax compliance, both individually and simultaneously.

Finally, it was also found that the direct effect of knowledge and understanding of tax regulation on tax compliance is greater than the indirect effect. This implies that the knowledge and understanding of tax regulation through taxpayer awareness does not have a significant influence on tax compliance.

Suggestion

The results of the research suggests that the Board of Regional State Revenue is expected to increase the quantity of taxation socialization to the community continuously or periodically in order to provide such additional knowledge and understanding of tax regulations, as well as to improve the service quality in terms of the facility to provide satisfaction to the taxpayer.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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