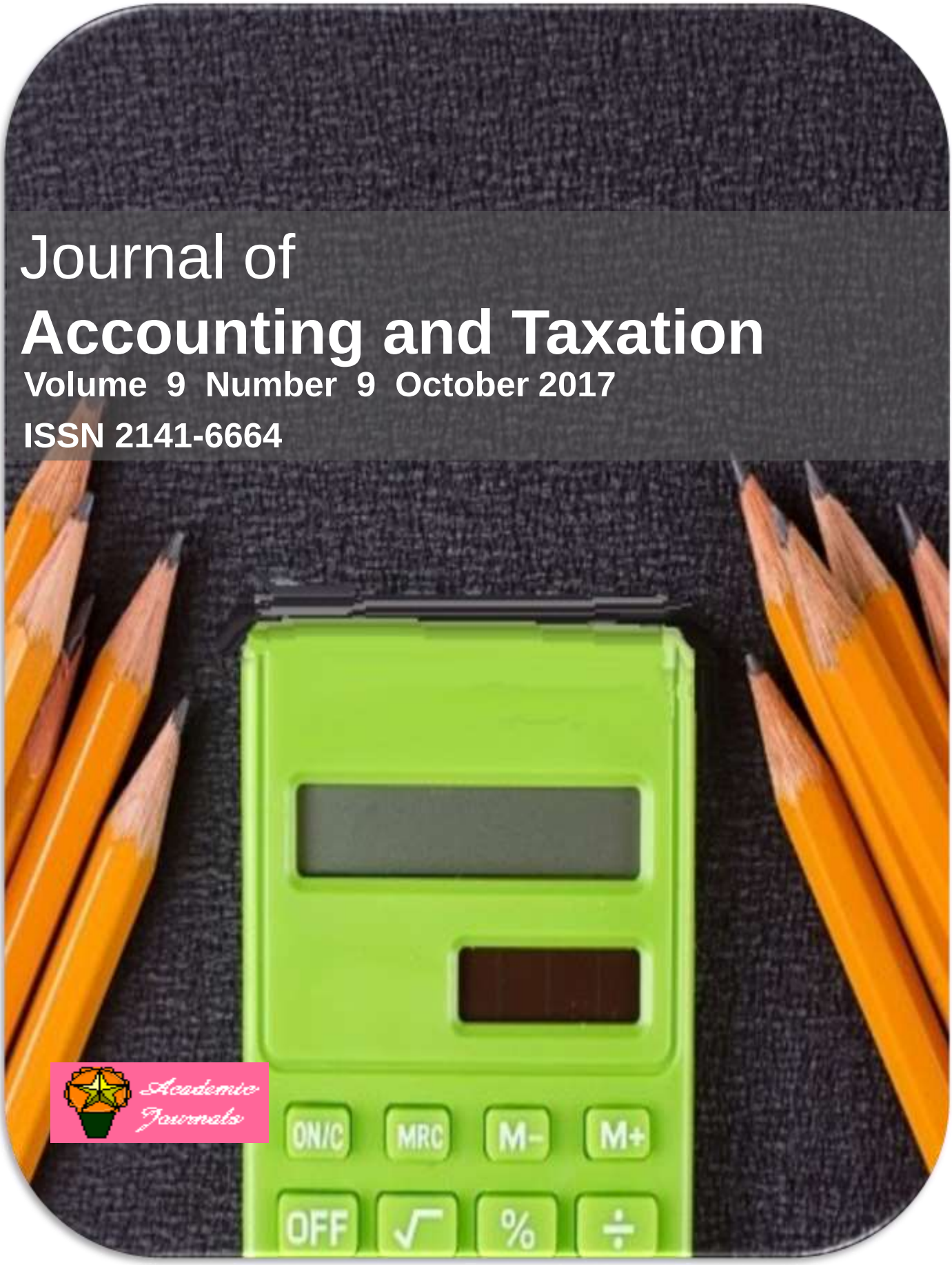
Journal of Accounting and Taxation

Volume 9 Number 9 October 2017
ISSN 2141-6664



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Journal of Accounting and Taxation

Table of Contents: Volume 9 Number 9 October 2017

ARTICLES

academicJournals

Vol. 9(9), pp. 109-118, October 2017
DOI: 10.5897/JAT2017.0251
Article Number: AE6C94966189
ISSN 2141-6664

http://www.academicjournals.org/JAT

Journal of Accounting and Taxation

Full Length Research Paper

Environmental accounting: A tool for conserving biodiversity in tropical forests

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Received 2 February, 2017; Accepted 4 July, 2017

Loss of biodiversity threatens the world's ecosystem and tropical forests provide the last hope of sustainability. Environmental accounting focuses on sustainable production and development, generates data and employs methodologies for valuing natural resources. Thus, by providing these accounting realities conservation is not only encouraged but becomes a critical necessity. This study aimed to evaluate the potential roles of environmental accounting in conserving biodiversity in tropical forests. Specifically, it is aimed to estimate the rate of deforestation and evaluate its effect on biodiversity for accounting purposes. The study was conducted in the Forest Reserves of Osun State, Nigeria through a survey of communities around the Forest Reserves to obtain the Contingent Values of biodiversity. Data on rates of deforestation were obtained from records of the Forestry Management Department of the Ministry of Environment in Osun State, Nigeria. These data were analyzed using the LOGIT regression Model and the amounts of WTP was aggregated and extrapolated to obtain the total value of biodiversity losses in the Forest Reserves. Results showed a per capita annual cost of 25USD resulting to over 2,824,408.125 USD as the lost value or depreciation of biodiversity in the study area. This depreciation cost is tremendous requiring urgent attention to conservation. It was concluded that the emergence of environmental accounting tools has significant consequence on biodiversity preservation because what is counted is what is valued and what is valued is what is treasured. This calls for policy and stringent action towards conservation of forest resources.

Key words: Biodiversity, environmental accounting, deforestation, depreciation.

INTRODUCTION

Background to the study

The significance of tropical forests in the world's ecosystem cannot be overemphasized. It has been adjudged to be the last hope for sustainability of the earth. As Cuckston (2013), quoting Lindsey 2007), puts it, tropical forests contain about half of the species on earth. Biodiversity can be described as the variety of life on earth, that is, the number of species of plants, animals and microorganisms as well as the enormous diversity of genes in these species, the various ecosystems on the planet such as the deserts, rainforests and coral reefs are all part of biologically diverse earth (Shah, 2012). Cuckston (2013) further emphasizes that the biological diversity of trees, shrubs, animals and micro-organisms exists as a highly complex interconnected web of life and death comprising the tropical forest ecosystems.

The International Union for Conservation of Nature-IUCN (2011) indicates that the activities of man have fostered the degradation of forests so that an average of 100 species is lost daily. Tropical forests are of global importance, as they store and process large quantities of

carbon via photosynthesis and respiration, approximately six times as much carbon as humans release into the atmosphere through fossil fuel use, and houses between one-half and two-thirds of the world's species (Groombridge and Jenkins, 2002). Thus, small changes within the tropical forest biome can potentially lead to major global impacts on both the rate and magnitude of climate change and the conservation of biodiversity.

Among the causes of biodiversity loss are land use changes, pollution, changes in atmospheric CO_2 concentrations, changes in the nitrogen cycle and acid rain, climate alterations, and the introduction of exotic species, all coincident to human population growth. The primary factor is land conversion and not climate change or nitrogen problems because growth in rainforests is usually limited more by low phosphorus levels than by nitrogen insufficiency. The diversity in tropical forests reduces the effects of introducing exotic species than in temperate areas because there is so much that newcomers have difficulty becoming established. In effect, the chief cause of biodiversity loss is deforestation. The Inter Academy Partnership (IAP) (2010), observes that carbon is assimilated in the forest canopy and is stored in trees, roots and soils; a process that is a function of complex biodiversity. However, deforestation and over-exploitation in tropical regions are major contributors to the sixth global mass extinction event. The loss of this store of genetic diversity will compromise the capacity of all life on earth to adapt to human-induced climate change.

The critical issue is that as vital as biodiversity is, its values are quite controvertible. Yet, as observed by Sukhdav (2008), the lack of valuation is an underlying cause of degradation of ecosystems and loss of biodiversity. As can be observed, nations are assessed on the basis of GDP growth or lack of it, yet the GDP, as it is known, does not capture many vital aspects of national wealth, especially nature's endowment like the biomass. In his assessment, Cuckston (2013), the exclusion of primary forests from Clean Development Mechanism (CDM) is largely due to accounting difficulties encountered in designing Reducing Emissions through Deforestation and Degradation (REDD) projects. Rather than merely estimating carbon taken up as a result of new plantations, REDD was supposed to provide a means of determining emissions that could have taken place in the absence of existing trees by constructing an accounting model to reflect the ecosystem services of forests through carbon sequestration. The concern is to begin to construct accounting models that will not only value biodiversity aright but integrate the values into accounting framework.

Statement of the problem

It is widely acknowledged that there is no solution to climate change without concrete efforts towards conservation of forest biodiversity, which by extension is to slow down deforestation. The benefits associated with such efforts are as varied as watershed protection, tourism revenues, and existence values for species preservation (Dixon and Sherman, 1994). The focus of recent works is on the benefits estimation to the exclusion of costs estimation (Kramer, 2014). Environmental accounting seeks to identify cost elements, measure impacts, monetization of impacts and integration of values in financial reports for the benefits of policy makers. There are a number of challenges traceable to environmental accounting efforts in the direction of biodiversity loss arising substantially from methodologies and measurements.

As observed by Kramer (2014), attention has focused on calculating and accruing benefits of biodiversity conservation in an accounting process, largely because of the need to convince policy makers and program managers that conservation investments can earn economic returns. Although these returns could be largely intangible, beset by methodological challenges, especially the non-market benefits of complex ecosystems. This paper explored the solution to the cost elements to be integrated for accounting purposes adopting the TEEB framework which relies on the amount the society is willing to pay for the services provided by the ecosystem.

Research questions

The following questions were raised to guide this study:

1. What is the rate of deforestation? What is the relationship between deforestation and biodiversity loss?
2. What is the value of biodiversity loss in forest reserves of Osun State, Nigeria?
3. What is the full cost of biodiversity conservation?
4. Can the identified costs be integrated into the accounts?

Research objectives

The main objective of this paper is to evaluate the roles of environmental accounting in conserving biodiversity in tropical forests. Accordingly, the specific objectives are:

1. To estimate the rate of deforestation and evaluate its

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effect on biodiversity;
2. To determine the value of biodiversity loss in the forest reserves of Osun state;
3. To estimate the full (environmental) cost of biodiversity conservation in the forest reserves of Osun State, Nigeria for accounting purposes; and,
4. To evolve a model for integrating the costs of biodiversity conservation into accounts.

Hypotheses

The following hypotheses were proposed for this study. They are all stated in null form.

Hypothesis I: There is no relationship between deforestation and biodiversity loss.
Hypothesis II: There is no difference in the perceptions of stakeholders on the value of biodiversity loss in the forest reserves of Osun State, Nigeria.

METHODOLOGY

The study area

The study area is the forest reserves of Osun State, located in the south-western Nigeria, Osun State and lies between 7 and 8° 30' North (7 - 8° 30' N) and longitude 4° and 50° East (4 - 50° E) having a population of three million, four hundred and twenty-three thousand, five hundred and twenty-five people (3,423,525) by 2006 Census (Figures 1 and 2) (Alamu, 2008; National Population Commission, 2007). The state had eleven legacy forest reserves which fell within her boundaries, after she was carved out of the then Oyo state. Only eight of these reserves are still in existence.

Five forest reserves were surveyed. The local population around the five forest reserves (that is, 5 km radius of the forest) is estimated at 300,000. The sample size is 390 computed as follows: Where, n = sample size; p = level of precision anticipated in respect of the research problem. Since there is no precedence 50% is selected. q = 1-p; ME= Margin of Error that can be tolerated in this research is 5%. Z = the alpha value is determined by calculating 1-confidence level, 1- 0.95 = 0.05 to estimate the critical value given as 1-(alpha/2), that is, 0.975. The value is 1.96, that is, n = $[(1.96)2*0.5*0.5 + (0.05)2] / (0.05)^2$; n = 0.9629/0.0025 = 385.16.

The variables for this study are:

1. Size and changes in forest reserves of Osun state (1992-2015) to depict the rate of deforestation
2. Biodiversity loss due to deforestation
3. Socioeconomic characteristics of respondents
5. Willingness to Pay for Biodiversity (dichotomous choice)
6. Mean Amount of Willingness to Pay for biodiversity

Data analysis was done as follows:

1. Trends of forest size changes, timber harvesting and tree regeneration were calculated and the t-test was used to test the degree of association between them;
2. LOGIT regression model was adopted to determine WTP in determining the value of biodiversity;
3. The mean value of WTP was computed as per capita value of biodiversity in the forest reserves;
4. An extrapolation of the mean WTP to determine accounting value to reflect in the books.

Model specification

1. To measure the Willingness To Pay (WTP) for biodiversity in the forest reserves, the following models were used.
2. The LOGIT regression model analyzes the dichotomous choice between "Yes" and "No" of the WTP and is mathematically expressed as:

$$L\frac{F(BDV)}{1-F(BDV)} = \frac{f(X1+X2+X3+\cdots+Xn)}{fi} \quad (1)$$

Where, P(BDV)is the probability of a respondent showing a WTP; X1 = Gender of respondents; X2 = Marital Status of respondents; X3 = State of origin of respondents; X4 = Education of respondents Xs = Size of farm of respondents; X6 = Annual Income of respondents; X7 = Age of respondents; X8 = Size of family of respondents; X9 = Distance from Forest Reserves.

To determine the appropriate value for biodiversity in Osun State, Nigeria the mean amount of WTP is regarded as per capita valuation of watershed services in the state and thus is extrapolated over the entire population for full values to be obtained:

$$Mean\ WTP_{(i)} = \frac{Intercept}{Bidcoeff}(i) \quad (2)$$

$$V_{BDV} = X.[WTP(BDV)].\ POPosun \quad (3)$$

V_{BDV} refers to the value of biodiversity; $X(WTP_{BDV})$ is the mean amount of Willingness to Pay for biodiversity. POPosun is the population of Osun state by 2006 Census.

Modeling value for integration into annual accounts

The last step involves the computation of the annualized cost using the rate of deforestation as a factor for annual depreciation of forest environmental services. The rate of deforestation in Osun State Forest reserves is 3.3%.

Annualized Cost $(_{BIODIVERSITY\ LOSS)}) = V_{BDeV} * R_{DEFORESTATION}$

FINDINGS

Analysis of trends and rates of deforestation in the forest reserves of Osun State, Nigeria

The data available in respect of forest cover at inception of Osun State, Nigeria in 1991 and subsequent years to 2015 show the status of the forest reserves from year to year giving effect to the various changes occurring over the years. These were plotted in Figure 3 with a trend line showing the linearity of the phenomenon of deforestation. The principal forest conversions were reflected alongside the cumulative effects of unsustainable logging. The data on trend of deforestation comprised of forest land cover over the 25-year period that Osun state has

Figure 1. Map of Nigeria showing Osun State highlighted.

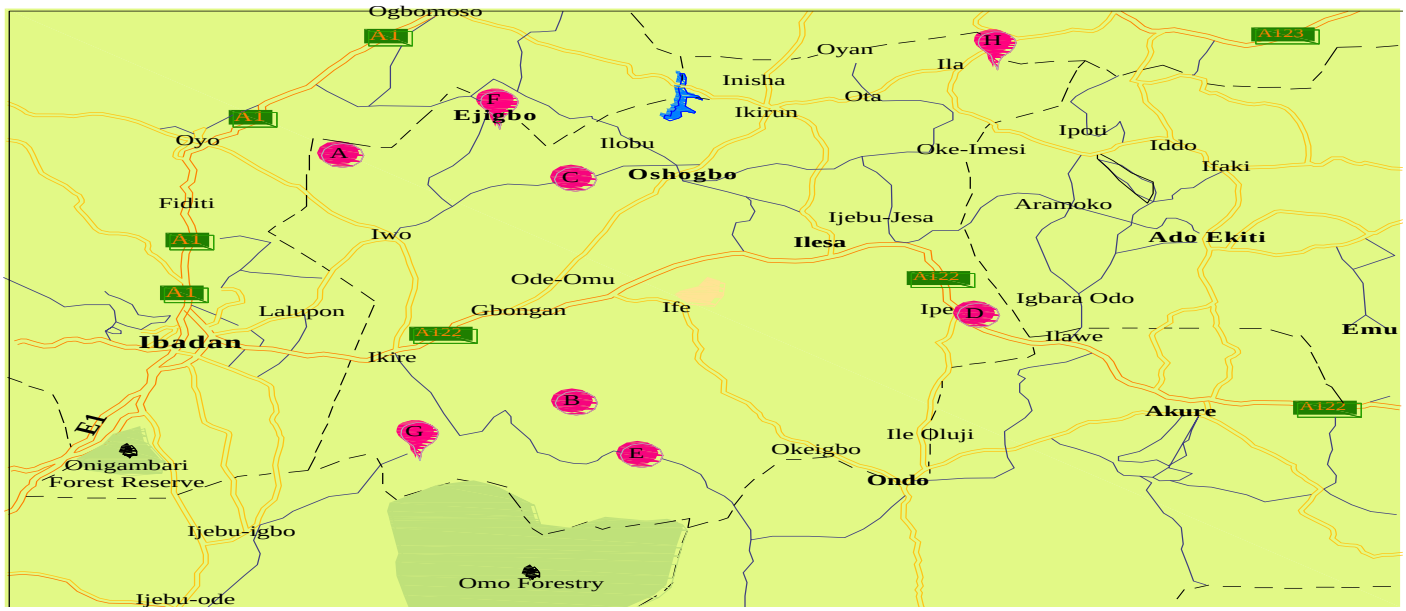

Figure 2. Location Map of Study Area- 2. Source: Google Map Data, 2013 digitized at LAUTECH GIS Laboratory. A, Oba Hills Forest Reserve Nigeria; B, Ife Forest Reserve Nigeria; C, Ede Forest Reserve Nigeria; D, Ikeji Forest Reserve Nigeria; E, Shasha Forest Reserve Nigeria; F, Ejigbo Forest Reserve Nigeria; G, Ago Owu Forest Reserve Nigeria; H. Ila Forest Reserve Nigeria.

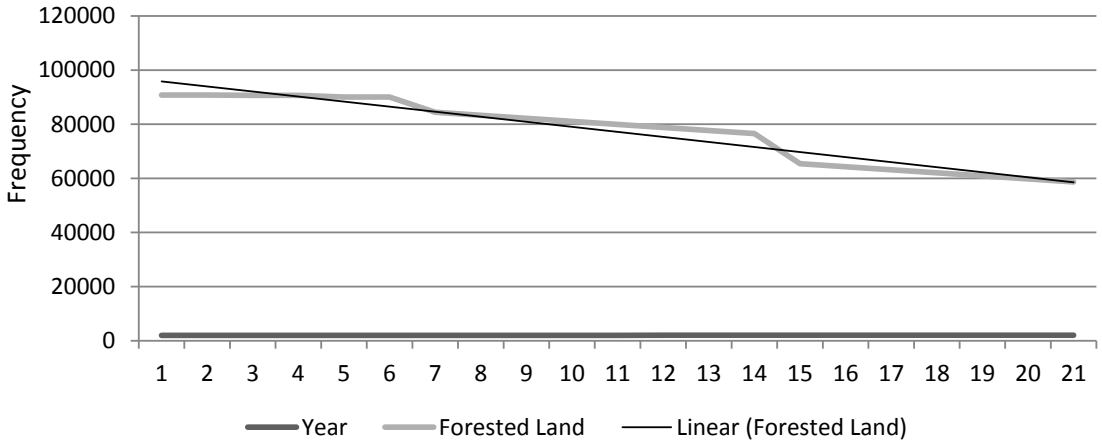

Figure 3. The trend of deforestation in the forest reserves of Osun State, Nigeria.
Source: Department of Forestry Management, Ministry of Environment, Osun State, Nigeria (2011).

existed. The trend was subjected to time series analysis through a 5-year moving averages (autocorrelation). The results were indicative of the rate of forest cover loss over the years, with an average rate of decline at 0.383 forest depreciation with an annual rate of (120.873/16 = 5.7558; 5.7558/120.873 = 0.0476) (Table 1). All the years show p-values that were significant at 1, 5 and 10% levels of significance indicating that deforestation is prevalent in Osun state and at the present stands at 38.3% of the legacy forest reserves with annual growth rate 4.76%.

The trends of deforestation in the forest reserves of Osun State, Nigeria

Butler (2010) in a study with mongabay.com, hinted that Nigeria has the highest deforestation rate in the world. Although Brazil has the largest area of deforested land and Congo has the heaviest consumption of bush-meat, threatening wildlife, Nigeria's rate is much higher than any other country. The finding of this study showed that whereas the rate of national deforestation in Nigeria was reported as 1.8% per annum (Salami, 2009), through remote sensing and the Nig-Sat1, a study on Osun state forests showed an average rate of deforestation of 3.1% per annum (Olatunji, 2005).

The implications of deforestation are divers but its prevalence is equally worrisome. Among the most threatened tropical rain forest are those in Africa, with

Togo, Congo and Nigeria being at worst risk. It would seem that the Kuznet's hypothesis is playing out because most of the regions at risks are developing countries. It should be recalled that the Kuznet's hypothesis argues that environmental concerns only become predominant after basic economic growth are resolved (Pasternak and Schlissel, 2001).

Desertification is known to result from deforestation especially in the fragile lands (expunge WPF). When considered with the attendant climate change, it is apparent that every effort to stop desertification is worthwhile. No other approach has been more suitable than afforestation or curbing of deforestation. Recently, it was reported that Nigeria loses about $6 billion annually to deforestation (Butler 2010). At the present rate of deforestation there would be nothing left in the next six to ten years.

FAO, reports Nigeria as having the world's highest deforestation rate of primary forests. She has lost more than half of its primary forest in the last five years. Causes cited are logging, subsistence agriculture, and the collection of fuel wood. Almost 90% of West Africa's rainforest has been destroyed (Csupomona.edu2011.on http://www.csupomona.edu/~admckettrick/ projects/ag101_project/html/size.html). Schmidt (2012) observed that the global cost of deforestation transcends the costs of financial system collapse and these costs were calculated from the perceived costs of losing the services that forests provide. Yet it is impossible to accrue such costs without initially ascertaining the level and rate of deforestation.

The records of tree felling for the period under review show that although some troughs are noticeable in the

curve there is a continuous rise in the volume of tree felled from year to year. When this record is juxtaposed with those of regeneration, the sustainability of current practice can be determined. Also it points to the possible consequences of current practices on the long run.

Data on forests regeneration (1993-2015)

Forest regeneration cover activities involved with raising tree seedlings, silviculture and establishment of plantations- whether directly or through collaborative Desertification is known to result from deforestation

Table 1. Autocorrelations: Forested land (1991-2015).

Year	Autocorrelation	Std. error[a]	Box-Ljung statistic		
			Value	df	Sig.[b]
1	0.877	0.203	18.564	1	0.000
2	0.745	0.198	32.679	2	0.000
3	0.605	0.193	42.490	3	0.000
4	0.456	0.188	48.405	4	0.000
5	0.303	0.182	51.176	5	0.000
6	0.143	0.176	51.833	6	0.000
7	0.003	0.170	51.833	7	0.000
8	-0.069	0.164	52.011	8	0.000
9	-0.153	0.158	52.956	9	0.000
10	-0.229	0.151	55.269	10	0.000
11	-0.299	0.144	59.599	11	0.000
12	-0.361	0.137	66.575	12	0.000
13	-0.413	0.129	76.859	13	0.000
14	-0.455	0.120	91.156	14	0.000
15	-0.440	0.111	106.729	15	0.000
16	-0.383	0.102	120.873	16	0.000

[a]The underlying process assumed is independence (white noise). [b]Based on the asymptotic chi-square.

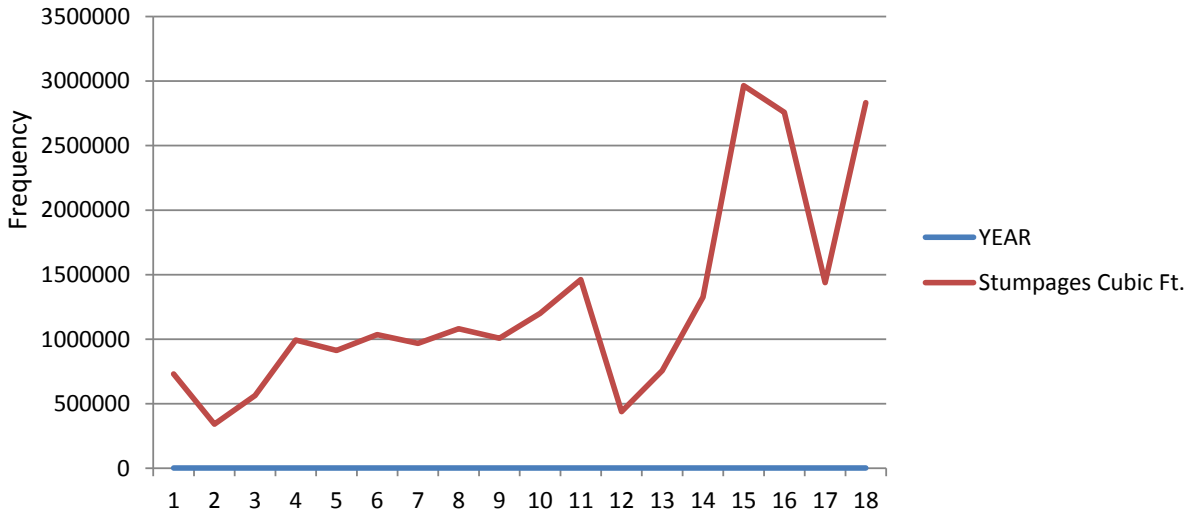

Figure 4. Annual tree felling records (1993-2015) in cubic feet.
Source: Forest Management Department, Osun State Ministry of Environment.

efforts (Tungyei agro-forestry system). Whereas it is possible to determine the volume of timber felled, the hectares achieved in rehabilitating, renewing or rejuvenating the forests is reckoned here. Thus in comparing tree felling to tree planting, the relativity of the trends could be studied.

The present record shows a steady decline in tree planting efforts (Figure 5). This constitutes an issue of grave concern especially with regards to sustainability of the forests. Besides, it would seem apparent that consumption has largely outstripped regeneration. This would easily be interpreted to mean that whereas tree felling was growing, tree planting was declining giving room to deforestation in the forest reserves.

Analysis of the gap between forest regeneration and timber harvests (Logging) in the forest reserves of Osun State, Nigeria

The study produced data that show the pattern of tree planting which is expected to guide harvesting activities

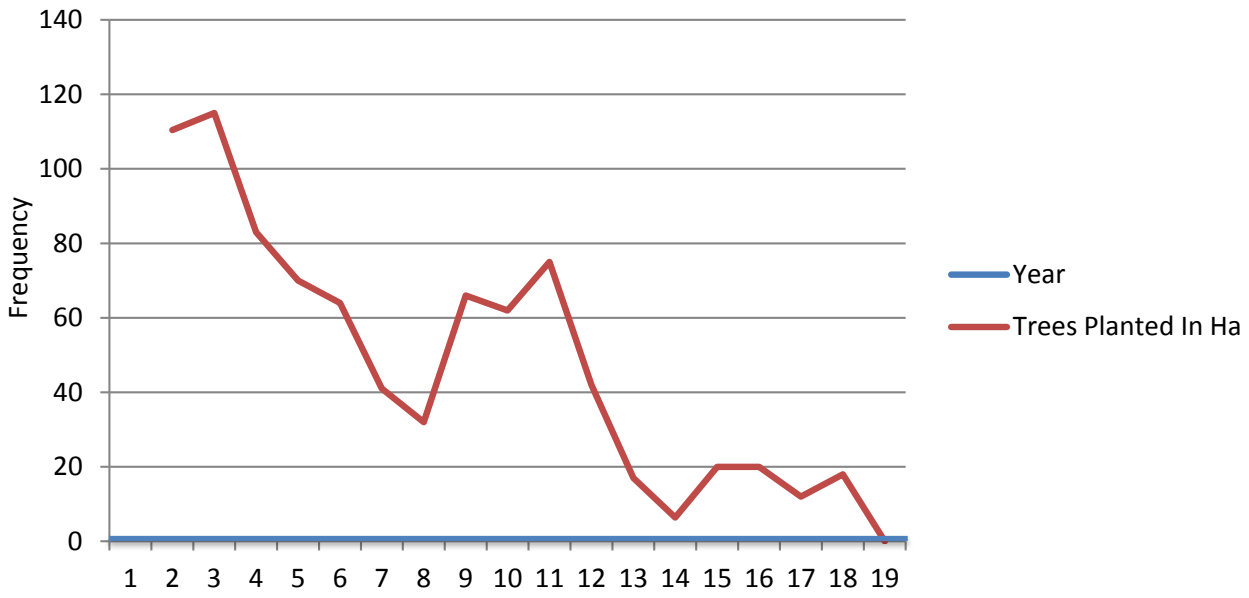

Figure 5. Tree planting/regeneration in forest reserves of Osun State, Nigeria.
Source: Forestry Management Department, Osun State Ministry of Environment.

Table 2. Analysis of tree planting and stumpages in Osun State Forest Reserves.

Model summary

R	R square	Adjusted R square
0.578	0.334	0.293

The independent variable is tree planting

ANOVA

	Sum of squares	Df	Mean square	F	Sig.
Regression	3.562E12	1	3.562E12	8.031	0.012
Residual	7.096E12	16	0.435E11		
Total	1.066E13	17			

The independent variable is tree planting

Coefficients

	Unstandardized coefficients		Standardized coefficients		
	B	Std. Error	Beta	T	Sig.
Tree planting	13120.511	4629.832	-.578		
(Constant)	1.890E6	269941.457		7.001	0.000

Source: Researcher's computations (2015).

to achieve sustainability. The relationship between tree planting and harvesting (logging) is a pointer to level of deforestation and its prevalence within the controlled areas. The data in respect of tree planting were obtained from Forestry Regeneration Department of Osun State Ministry of Environment; while, data relating to timber harvests (stumpages) were obtained from the Forestry Management Department of Osun State Ministry of Environment. Test of significance is carried out using the ANOVA and Student t-test. Results show F_{cal} as 8.031 and the p-value was 0.012 and this is significant at 0.05 level of significance. Thus the null hypothesis that there is no significant relationship between tree planting and tree felling in the Forest reserves of Osun State, Nigeria is upheld. The t_{cal} was -2.834, R = 0.578 and R^2 at 0.334 which implies that regeneration can only explain about 33.4% of tree felled showing a progressive gap of about 66.6% of tree harvest (Table 2).

Table 3. Willingness to pay for forests environmental services.

Forests environmental service	Willingness to pay					
	Yes	%	No.	%	Total	%
Preservation of biodiversity	187	70.3	79	29.7	266	100

DISCUSSION

As observed by Akande (2012), "the current rate of forest depletion in Nigeria implies that the forest base may be incapable of providing adequate biomass supply for the livelihoods of future generations." This is an issue for ecological footprint accounting.

The issue of deforestation was more graphic as it was examined by Salami (2009), through remote sensing and the Nig-Sat1. It was estimated that the rate of deforestation was about 1.8% per annum; here the rate of removal of the canopy was the basis of estimation. A closer study on Osun state forests showed an average rate of deforestation of 3.1% per annum (Olatunji, 2005). The efforts of United States of America at supporting nations in addressing the emissions problem through REDD (Reducing Emissions through Deforestation and Degradation) was reviewed by Butkiewicz (2011), and it showed that Nigeria alongside Democratic Republic of the Congo had the worst cases in Africa and behind Brazil and Indonesia.

The prevalence of deforestation was said to be worsened by corruption as previous efforts to intervene had only made corrupt politicians and officials richer to the detriment of the environment. Indeed, Kinver (2012) stated that tropical forests are the richest source of biodiversity but have been on steady decline, Nigeria is not exempted from this trend. The results of this study corroborate these previous findings. In addition, the sustainable yield has been flagrantly abused. The theory states that tree felling should be harmonized with regeneration efforts such that the net effects of harvesting is more than compensated for by regeneration (Fisher, 1904; Hotelling, 1925; Thampapilai and Uhlin, 1997; Bishop and Woodward, 2002; Chapman,1999; Forest Australia,2007).

Lange (2003) explained that "estimating the volume and cost of deforestation and forest degradation has been a major motivation for forest accounting, especially in developing countries." So, the determination of the gap between tree planting and tree felling will help explain the prevalence of deforestation for meaningful accounting process.

A contingent valuation of the environmental impacts of deforestation in Osun State Forest Reserves

Sangare (2006) observed that methods were developed in order to find a solution to fundamental asymmetry of treatment between manufactured goods and natural goods. These methods were attempts to find an 'approximate' value for natural goods through the creation of a fictitious market where the marginal Willingness to Pay (WTP) is analogous to price and then total WTP is analogous to consumer surplus (Luenberger, 2006).

WTP for biodiversity

The equation line is used for determining the probability and significance of the WTP for BDV. The outcome variable, z, is the willingness to pay for biodiversity. As stated earlier, the independent variables are X_1 to X_9. Thus, the expanded equation is given as:

$$L\frac{P(BDV)}{1-P(BDV)}=\frac{f(X_1+X_2+X_3+\ldots+X_9)}{f(BDV)}$$

This can be expressed as: $f(-1.63X_1 +1.72X_2+0.14X_3-2.55X_4+0.93X_5+2.48X_6-1.42X_7-2.12X_8 +0.51X_9 +2.24)$. The P values and odds ratio are given in Appendix Table 1. The combined influence of the nine variables to determine the willingness to pay for biodiversity was significant at P= 0.0017 which is less than 0.05 or 0.10 significance levels (Tables 3 and 4). Four variables exerted significant influence on the respondents choice, namely, X_4, that is, Education; X_6, Annual Income; X_8, Size of family (at 5% level of significance), and X_2, Marital Status. The mean WTP for biodiversity was ₦3750 or $25 (Table 5)

Computation of the annualized costs of biodiversity loss in Osun State forest reserves for accounting purposes is given in Appendix Table 2.

CONCLUSION AND RECOMMENDATIONS

The study was conducted on the declining forest reserves and its ecosystems. The phenomenon of deforestation and its consequence on biodiversity was examined. Attempt was made to evaluate the biodiversity loss prevalent in the forest reserves. These values were construed for accounting purposes and formed into a framework that is akin to accounting depreciation values. It was concluded that deforestation had significant effects on biodiversity loss and that the values derived from contingent valuation provides needed value for accounting purposes. It was recommended that

Table 4. The LOGIT outcomes of the WTP.

Variable	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
P values	0.102	0.085	0.890	0.011	0.352	0.013	0.156	0.034	0.609
Odds ratio	0.554	2.385	1.046	0.859	1.215	1.390	0.665	0.564	1.207

Table 5. Willingness to pay for forest environmental services (amounts).

Amount	₦	<1000	1001-10,000	10,001- 20,000	>20,000	Total	Mean
Midpoint	X	500	5500	15000	20000		
BDV	F	124	46	11	11	192	
	Fx	82000	253000	165000	220000	720000	3750

biodiversity loss should be adequately accounted for. Accounting systems and frameworks should be developed to cater for this purpose through collaboration with other fields to achieve synergy in achieving precise values.

CONFLICTS OF INTERESTS

The author has not declared any conflict of interests.

REFERENCES

Akande JA (2012). The Bastion of Green Advocacy: Our Forests, Our Welfare. MaidenInaugural Lecture. Bowen University, Iwo. P 38.

Alamu LO (2008) Evaluation of Log Conversion Efficiency of Band Saws in Osun State Sawmills, in New Era Res. J. Engin. Sci. Technol. P 119.

Bishop RC, Woodward RT (2002) Sustainability, Economy and Environment, in D. Chapman (ed.) Environmental Economics: Theory, Application and Policy. Addison- Wesley. P 373.

Butkiewicz JL (2011). Institutions and the Impact of Government Spending on Growth,"(with HalitYanikkaya), J. Appl. Econ. XIV(2):319-341.

Butler RA (2010). World Deforestation Rates and Forest Cover Statistics in www.mongabay.com

Chapman D (1999). Environmental Economics: Theory, Application and Policy Addison-Wesley. P 85.

Csupomona.edu2011.onhttp://www.csupomona.edu/~admckettrick/projects/ag101project/html/ size.html).

Cuckston T (2013). Bringing Tropical Forest Biodiversity Conservation into Financial Accounting Calculation. Accounting, Auditing and Accountability Journal. Emerald Group Publishing Limited. 26(5):688-690.

Dixon JA, Margulis S (1994). Integrating the Environment into Development Policy Making In Making Development Sustainable, Ismail Serageldin and Andrew Steer (eds.), World Bank. pp. 21-24.

Fisher I (1904). Precedents for Defining Capital. Quart. J. Econ. P 18.

Forest Australia (2007). Sustainable Yield and Australia's Forests on Forests Australia- Fast Forest Facts.htm of the Department of Agriculture, Fishery and Forestry.

Groombridge B, Jenkins M (2002). World Atlas of Biodiversity, University of California Press, Ewing, NJ.

Hotelling H (1925). A General Mathematical Theory of Depreciation. J. Am. Stat. Asso. 20:151, 340.

Inter Academy Partnership (IAP)(2010). IAP Statement on Tropical Forests and Climate Change on www.interacademies.net/iap

Kinver M (2012). Protected Tropical Forests Biodiversity Declining" in BBC News on www.bbc.co.uk/news/science-environment-18970076

Kramer R (2014). Slowing Tropical Forest Biodiversity Loss: Cost and Compensation Considerations on http://economics.iucn.org

Lange G (2003). Policy Applications of Environmental Accounting" in Environmental Economics Series Paper No. 88 of the World Bank Environment Department. Washington: The International Bank for Reconstruction and Development/ THE WORLD BANK. pp. 3-6.

Lindsey R (2007). NASA Earth Observatory: tropical deforestation", available at: http:// earthobservatory.nasa.gov/Features/Deforestation/ (accessed 21 December 2011).

Luenberger DG (2006). Information Science. Economics and Business. Princeton University Press, ebook.

National Population Commission (2007). Nigeria Population Estimates. Federal Office of Statistics.

Olatunji TE (2005). Environmental accounting as a means of promoting sustainable forestry operations in Osun State. J. Bus. Manage. 3(1):129-131.

Pasternak D, Schlissel A (2001). Combating Desertification with Plants. Springer Science and Business Media New York.

Shah A (2012). Global Issues: Ecological Disturbances. Available from: http://www.globalissues.org/issue/169/biodiversity

Salami AT (2009). Space Applications and Ecological Haemorrhage: The Nigerian Experience, In Inaugural Lecture Series *220.*ObafemiAwolowo University Press Limited, Ile-Ife. pp. 9, 13, 21, 31, 40.

Sangare M (2006). Ivorian Forest Conservation in the Generalized Poverty Context: An Application Of The CVMto the Case of National Park of Taï. A Proposal Submitted to the Ivorian Government on the Valuation of Conservation Efforts at Tai National Park. pp. 11-15.

Sukhdav P (2008). The Economics of Ecosystem and Biodiversity (TEEB): An Interim Report. Germany: European Communities.

Schmidt GA (2012). Climate sensitivity - How sensitive is Earth's climate to CO_2? PAGES news. 20(1).

Thampapillai DJ, Uhlin H (1997). Environmental Capital and Sustainable Income: Basic Concept and Empirical Tests. In Cambridge J. Econ. 21(3):379-394.

The International Union for Conservation of Nature-IUCN (2011). International Union for Conservation of Nature: forest facts and figures available at: www.iucn.org/about/work/programmes/forest/iyf/facts_and_figure/ (accessed28 November 2011).

APPENDIX

Table 1.

Variable	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
P values	0.102	0.085	0.890	0.011	0.352	0.013	0.156	0.034	0.609
Odds ratio	0.554	2.385	1.046	0.859	1.215	1.390	0.665	0.564	1.207

Table 2. Annualized costs of biodiversity loss.

Forest environmental services	Amount (₦)	WTP amount (₦)* POPosun = 3,423,525	Annualized costs of deforestation in Osun State Forest Reserves at 3.3% (Table 2)
Preservation of biodiversity	3,750.00	₦12,838,218,750.00	₦423,661,218.75

Source: Researcher's computation.

academicJournals

Vol. 9(9), pp. 119-130, October 2017
DOI: 10.5897/JAT2017.0271
Article Number: 07E373166191
ISSN 2141-6664

http://www.academicjournals.org/JAT

Journal of Accounting and Taxation

Full Length Research Paper

Mergers, taxation and accounting performance: Some evidence from Greece

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Received 2 February, 2017; Accepted 4 July, 2017

The study examines the merger effects on the accounting performance of Greek firms, in parallel with their taxation impact, during the period of economic crisis in Greece. The study analyses twelve accounting measures from financial statements and financial ratios of a sample of Greek listed firms in the Athens Exchange that carried out one merger in the period from 2010 to 2015 as acquirers. The results revealed that none of the twelve examined accounting measures have changed significantly due to the merger event, one year after the merger transaction. Different results are proposed regarding the impact of the type of industry, as the findings of the study indicate a better accounting performance for the constructions firms than the others from our sample. Furthermore, the study investigates the impact of the new Greek Income Tax Code (GITC) (Law 4172/2013) that refers to the corporate restructuring in Greece. There is evidence that there is some effect from the new GITC and it provides further opportunities for capital gains, not subject to tax from mergers, during the period of the economic crisis in Greece.

Key words: Mergers, taxation, financial statements, financial ratios, Greece.

INTRODUCTION

Mergers and acquisitions (M&As) represent one of the main mechanisms for corporate restructuring. Firms with M&As try to gain access to new resources in several business sectors and, by way of the resource redeployment, increase revenues and reduce cost (Philippatos et al., 1985; Neely and Rochester, 1987; Eccles et al., 1999; Leepsa and Mishra, 2013; Omoye and Aniefor, 2016). The new management strategies, after the change of the control, could increase post-merger performance, as it is reported in the financial statements of a firm (Belz et al., 2013). Despite the fact that many researchers are very enthusiastic about the merger effects, some others are sceptic about this approach (Ramaswamy and Waegelein, 2003; Stunda, 2014; Tao et al., 2017). A characteristic declaration of this contradiction is in a well-known article from Jensen

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JEL classification: G34, M40.

and Ruback (1983) that claimed:

"Finally, knowledge of the source of takeovers gains still eludes us".

Over time, merger transactions attract the interest of researchers worldwide: Jensen and Ruback (1983) and Jarrell et al. (1988) provided a comprehensive literature review for the US studies; Gregory (1997) for the UK studies and Mueller (1980) presents, apart from the US and UK market, the experience for several European countries; Sharma and Ho (2002) for the Australian market, while Tao et al. (2017) provides a literature review of cross-border M&As deals for developed countries and emerging economies.

Further examination of the phenomenon of M&As during the last decades, has shown that most of the researches had focused on the financial performance with the analysis of stock returns around announcement dates, presenting a positive aspect of mergers, but always without testing the ex-post accounting performance (Caves, 1989). Nevertheless, Roll (1986) concludes that the null hypothesis of zero abnormal performance to acquirers should not be rejected and this conclusion of Roll (1986), in many subsequent articles, still holds (Agrawal and Jaffe, 2000). Furthermore, from another approach, a smaller body of work on the analysis of the financial performance after M&As has focused on the announcement period returns in a long-run perspective (Agrawal et al., 1992).

However, there is a common belief in several past research papers that stock price performance studies are unable to determine whether M&As create real gains or losses and to provide direct evidence on the sources of any merger-related result, as it is difficult to distinguish between stock-market inefficiencies and improvements in performance resulting from the merger (Sharma and Ho, 2002). The examined increases or decreases in equity values are typically attributed to some unmeasured source of real economic factors (such as synergy) or a general and not well established idea (as management past decisions) (Healy et al., 1992; Pazarskis et al., 2011). Within this aspect, Jensen and Ruback (1983) argued that:

"These post-outcome negative abnormal returns are unsettling because they are inconsistent with market efficiency and suggest that changes in stock prices overestimate the future efficiency gains from mergers."

This kind of research, along with their explanations, could partially not be correct as many other factors influence stock prices and their conclusions do not provide clear consciousness of their result argumentation; the use of post-merger accounting data (and especially, financial ratios) is a better and safer path to test directly for changes in accounting performance that result from mergers than stock price studies (Healy et al., 1992; Chatterjee and Meeks, 1996).

Accounting performance and the examination of the financial statements of a firm are partially connected to the effects of a merger decision and tax issues, while the taxation is a major factor that may influences the choice of the exact form of corporate restructuring (Auerbach and Reishus, 1987a; Landsman and Shackelford, 1995; Ayers et al., 2007; Becker and Fuest, 2011; Belz et al., 2013). Also, there is no common methodology with universal acceptance in past research for the impact of opportunity at mergers to carry over net operating losses and unused tax credits or depreciation new policies of the merged firms on corporate performance (Breen, 1987).

Last, in Greece, after the U.S's crisis in mid 2007, there was an outbreak of an economic crisis, which started at the end of 2009 and everyone noticed that this crisis due to public debt was not temporary. In recent years, the lack of liquidity and the reduction of profitability dominated almost every business section in Greece (Pantelidis et al., 2014). From this point of view, a contemporary study for the Greek business in the period of the economic crisis with the analytical examination of the accounting performance could be interesting and useful.

Thus, the aim of the study is to investigate the merger effects of Greek firms on their accounting performance in parallel with their taxation impact; and try to reveal new insights in mergers transactions during the period of an economic crisis in a small open economy, as it is happening now in Greece. To the best of knowledge, this is the first study that examines a sample of merged firms, regarding the impact of the Law 4172/2013, the new Greek Income Tax Code (GITC), and more specifically, the provisions of the articles 52 to 56 of this Law that refers to the corporate restructuring in Greece made from 1 January 2014 onwards.

In order to examine the post-merger accounting performance, we proceed to an analysis of a sample of eighteen firms, listed at the Athens Exchange in Greece that executed one merger in a six-year-period (2010 to 2015), using accounting measures from financial statements and financial ratios (with data analysis from 2009 to 2016). The results reveal some effect of the merger decision in the period of the economic crisis in Greece and that the new GITC provides further opportunities for capital gains, which are not subject to tax from mergers.

Legal framework on M&As in Greece

According to several regulations published in the Greek Government Gazette, the general legal framework on M&As activities is described by articles 68 to 80 of the Law 2190/1920, which concern public companies, limited by shares (S.A.), and were amended by the Presidential

Decree 498/1987. M&As activities that concern L.T.D. companies are directly regulated by the Law 3190/1955, and more specifically, according to articles 54 to 55 of this Law. This basic framework changed, into some specific areas on M&As, by the Law Decree 1297/1972, and articles 1 to 5 of the Law 2166/1993 that concern fiscal incentives for the formation of larger companies by mergers.

Furthermore, the article 16 of the Law 2515/1997 specifies and enhances the legal process for bank mergers, in accordance to article 2 of the Law 2076/1992. Also, the Law 2515/1997 surrogates articles 1 to 15 of the Law 2292/1953, and there are special provisions and incentives for the concentration of the Greek banking system. In accordance with the Law Decree 1297/1972, and the Law 2166/1993, the Law 2992/2002 provides new incentives for investments and it expands the categories of investments, including the form of international M&As.

In relation to cross-border mergers of companies of different Member States in the European Union-EU, Law 2578/1998 (as amended by law 3517/2006) implemented the EU Mergers Tax Directive into Greek law (relative Directive 90/434, as amended by Directive 2005/19, respectively) and applies to corporate restructuring (mergers, demergers, contribution of assets, etc.). Also, Law 3777/2009 enhances the process of cross-border mergers of companies and was implemented, in accordance with the provisions of EU Directive 2005/56, as EU aims for the further expansion of the EU companies within the EU market.

Regarding the general legal framework of the taxation for the merger decision, it is described by Law 4172/2013 (Greek Income Tax Code (GITC)), according to the EU Merger Directive 2009/113. This EU directive provides a common system for the taxation of company restructuring (as mentioned above) concerning companies in different EU Member States and provides the opportunities for some merger transactions with capital gains that are not subject to tax from mergers. The provisions of articles 52 to 56 of the Law shall apply to corporate restructuring made from 1 January 2014 onwards.

As it is specified in the laws aforementioned, the type of M&As, or more specifically under which an exact way of M&As activity can be formed is possible in three ways in Greece:

1. Merger by absorption, where the acquiring firm retains its name and its identity, and it acquires all of the assets and liabilities of the acquired company; after the merger the acquired firm ceases to exist as a separate business entity.
2. Merger by consolidation, where an entirely new firm is created; both the acquiring firm and the acquired firm terminate their previous legal existence and become part of the new firm, and
3. Merger by acquisition, where one firm purchases another firm's stock for cash or shares of stock (but always less than 10% of the transaction value in shares).

Also, according to the process and the nature of the negotiations, as well as the agreement of companies' management, if it is pro- or contra-oriented to the M&As action (this is partially regulated in Greece by the Law 3461/2006 for the process of a public offer), M&As activities are distinguished as (Sudarsanam, 1995):

1. Friendly M&As, where the acquirer and the acquired company achieve a common agreement on this specific action, there is a common consensus, and no official reaction on the completion of the process and
2. Hostile M&As or takeovers, where the target company express its disagreement to the M&A action, and attempt to defend itself through some precise actions from the eventual acquirer company.

Last, starting from 2005 all publicly listed firms in the European Union (EU) member states were required to prepare their financial statements according to the International Accounting Standards (IAS) (EU Regulation 1606/2002 for the mandatory adoption of IAS from 2005 onwards). Compliance with IAS is compulsory for the publicly listed firms in Greece since January 2005, while other firms that are not obliged to apply IAS still use Greek General Accounting Principles (GAAP) (Seetharaman et al., 2008; Iatridis and Rouvolis, 2010). The relevant IAS is the IFRS 3 - Business Combinations, which is designed to determine the accounting when an acquirer obtains control of a business (M&As). It sets out the principles on the recognition and measurement of acquired assets and liabilities, and the determination of goodwill with the use of the "acquisition method", which requires assets acquired and liabilities assumed to be measured at their fair values at the acquisition date (Hamberg et al., 2011).

LITERATURE REVIEW

Many past studies on post-merger performance that employed accounting ratios and were conducted during the last decades supported an improvement in the corporate performance after the M&As action (Cosh et al., 1980; Parrino and Harris, 1999; Vijayakumar and Sridevi, 2013; Muhammad and Zahid, 2014; Oruc Erdogan and Erdogan, 2014; Rao-Nicholson et al., 2016), while others claimed that there was a deterioration in the post-merger firm performance (Meeks, 1977; Salter and Weinhold, 1979; Mueller, 1980; Kusewitt, 1985; Ravenscraft and Scherer, 1987; Dickerson et al., 1997; Sharma and Ho, 2002; Oduro and Agyei, 2013), and some others concluded a "zero" result or ambiguous results from the M&As action (Kumar, 1984; Healy et al., 1992; Chatterjee and Meeks, 1996; Ghosh, 2001;

Srivastava and Prakash, 2014; Rodionov and Mikhalchuk, 2016).

Also in Greece, there is a scarcity of studies that evaluate the performance of firms after M&As using accounting ratios and with an extensive analysis of financial statements. As earlier mentioned, some Greek studies supported a partial improvement to the corporate performance after the M&As action (Mylonidis and Kelnikola, 2005; Agorastos et al., 2012), while others claimed that there was a deterioration in the post-merger firm performance (Pazarskis et al., 2011; Pantelidis et al., 2014). Furthermore, regarding the taxation effects and merger decision several studies have been conducted over time:

Auerbach and Reishus (1987a) examine the impact of taxes on the frequency of mergers and acquisitions in the United States in 1968 to 1983 on a sample of 318 large mergers and acquisitions. In order to achieve this, the tax characteristics of a sample of merged firms were compared to a similar sample of randomly selected non-merged firms. Their results showed that a possible tax increase in tax rates is not an important factor in the influence of mergers during that period. The tax benefits associated with acquiring a business when we have tax relief seem to have an insignificant effect on M&As activity. The frequency and magnitude of the tax benefits appear to be broadly the same in both samples, and the magnitude of the potential tax benefit is not an incentive for mergers.

Breen (1987) focused on the four provisions of the Tax Code which are widespread and create significant merger incentives in the United States. Firstly, the opportunity to transfer net operating losses and unused tax credits between businesses; secondly, the opportunity to use the assets or the new sales prices regarding a new basis for depreciation after merger; thirdly, the incentive provided by the lowest rate of income tax on capital gains; fourthly, the opportunity for the acquiring company to deduct the interest payments from the taxable income. His findings do not support the general perception that merger decisions are often driven by specific tax code provisions for the potential tax advantages and Breen (1987) claimed that there is not a clear link between specific tax benefits and the merger decision.

Auerbach and Reishus (1987b) also examined whether taxes really play an important role in the merger decision. After studying the sample of the 318 largest mergers and acquisitions between 1968 and 1983, their results show that for the M&As of the decade 1970 and early 1980s among the major publicly listed companies in the United States, the possibilities of transferring unused tax credits and tax losses was the most important tax factor. This was in particular the case where the benefits were used by the acquiring company in order to protect the taxable income. However, and when potential tax benefits were recognized, no evidence was found that they have played an important role in the structure and frequency of merger decisions.

Landsman and Shackelford (1995) examined the capital gains resulting from the acquisition of RJR Nabisco in 1989. Access to confidential shareholder records enabled them to accurately assess the impact of tax gains during this acquisition. The results showed a negative correlation between the stock price and the weighted average number of shares sold during the acquisition period. Thus, their findings suggested that for every dollar taxed, shareholders were asking for 20 cents in the stock price for their capital gains.

Erickson (1998) approaches the structure of corporate acquisitions from the perspective of investment finance, and provides evidence that the tax regime of M&As affects the way in which these transactions take place. A sample of 344 business acquisitions completed between 1985 and 1988 from a variety of sources was collected. In order to be included in the final sample, the following criteria had to be met:

1. Both the buyer and the target were listed companies in the United States before the transaction
2. Both the buyer and the target were in Compustat's data
3. The acquiring company and the target company were not in the financial services industry before the transaction
4. The buyer has no controlling vote as shareholder in the target before the acquisition
5. Information about the merger event, the date of completion and the terms of the transaction are available to the public.

Also, acquisitions of businesses are categorized as taxable and non-taxable. The results support the view that the fiscal characteristics of the target firm, as well as the potential tax gains on the liabilities of the target firm, affect the structure of M&As.

Ayers et al. (2007) investigated the role of tax policy and its impact on takeover activity with an analysis of the lock-in effect for corporate acquisitions. In particular, an analysis was made examining if the takeover activity is inversely related to capital gains arising from the shareholders' tax rates. Measures were taken for each acquisition within three months from 1973 to 2001 (7,358 mergers over 115 quarters). In principle, their results have shown that the policy of tax rate is very important in capital gains' taxation as there is a significant negative association between this and the acquisition activity. They claimed that consistent with the lock-in effect, they provide evidence that capital gains taxes represent significant transaction costs, which actually could decrease acquisition activity during periods of high capital gains taxation.

Becker and Fuest (2007) studied whether the US government should take steps to advance from the tax

relief system to a tax exemption scheme. For this reason, they looked at how taxation affects the international distribution of double-taxation capital regimes and examined the taxation of firms in a model where international capital flows are either possible investment plans with relocation of real capital or acquisitions of existing businesses. The investments are motivated by either cost reduction or market entry. The conclusion is that international taxation prevails in the case of possible investment plans, as the system of deduced tax rates is not always the optimal and the foreign tax system fails to ensure neutrality.

Mescall (2007) using a large sample of mergers and acquisitions from 27 countries over a 16-year period (5,837 M&As between 1990 and 2005), investigated how fiscal and economic policies affect cross-border mergers and acquisitions. In his study, he provides evidence that tax policies can affect the profits of cross-border mergers and acquisitions. The study is the first proof that the risk associated with transfer pricing is affected by M&As and the countries' policies influence the merger decision. Finally, this study may be of interest not only to policy makers who are directly involved in pricing policy, but also in the relevant international accounting standard.

There is no clear answer in the past researches about the precise and basic sources of merger profits (Jensen and Ruback, 1983). Tax reductions could be considered as a part of synergies that could lead to the composition of extra merger profits. Devos et al. (2008) calculated the average of the synergy earnings, which was estimated at 10.03% of the share capital of the merged companies by analyzing the cash flow forecasts for the acquiring, target and combined entities in a sample of 264 large merged industrial firms during 1980 to 2004. Devos et al. (2008) estimated that the economic synergies from tax savings are only 1.64%, arguing that tax issues usually only play a small role in mergers. Also, business synergies with an average of about 8.38%, may in fact be much higher, varying from merger to merger. According to Devos et al. (2008) there is strong evidence that mergers generate profits from improving the allocation of resources and not by reducing the tax burden or increasing the market power of the merged firm.

Becker and Fuest (2011) analyzed tax competition and tax coordination in a model where capital flows are presented in the form of mergers and acquisitions rather than greenfield investments. Thus, they created a model in which they assumed a world of two countries: domestic and foreign. Each country is inhabited by a large number of households and households live only for two periods. The results were as follows:

If governments only used the tax code applied across the country's borders, tax levels they choose in the context of tax competition are effective for the economy as a whole, meaning there is no room for improving effectiveness of transnational fiscal coordination. Therefore, a change in this country's taxation does not affect M&As investments in other countries, provided no tax exogenous impact arises. On the other hand, if there is a different tax code for both income within and outside the country, tax competition leads to negative financial consequences that result in inefficiently high tax rates.

Belz et al. (2013) analysed the post-merger operating performance of the target firm. They compared three indicators of tax avoidance at the target before and after the deal:

1. Profitability
2. Leverage and
3. Effective tax rate (ETR = tax expense divided by pre-tax income).

They found that target tax avoidance improves, resulting in lower tax payments in the post-merger period. Similar results was found in the studies of Ravenscraft and Scherer (1989), Clark and Ofek (1994) and Tropina (2015). Belz et al. (2013) argued that this decrease in target operating performance following M&As (consistent with previous results) may be partially explained by tax motivated transfer pricing.

Edwards et al. (2016) examined all the M&As events by U.S. listed firms with foreign targets that were announced and completed between the years 1993 to 2012. They investigated the effect of cash trapped overseas on these U.S. multinational corporations in cross-border M&As. They observed that firms with high levels of trapped cash make less profitable cross-border M&As with their cash payment and present a decreased return on assets (ROA). Also, they supported that the American Jobs Creation Act (AJCA) of 2004 was an incentive for some U.S. firms to repatriate their foreign earnings, which were held as cash abroad (but at a much lower tax cost than before the AJCA).

METHODOLOGY

Accounting measures-quantitative variables

An event study on mergers with the examination of the abnormal returns could be critical to evaluate the company's performance (Jensen and Ruback, 1983; Caves, 1989). As mentioned earlier, the study aims to evaluate the performance based on the post-merger accounting data and financial ratios, and did not want to be exposed to this factor by using abnormal returns (Healy et al., 1992). Furthermore, the abnormal returns in order to be calculated with the market model depend on the market index.

According to Spyrou (1998), Michailidis et al. (2006) and Artikis et al. (2010), the Greek market index (the General Market Index of the Athens Exchange) needs to be redefined in terms of the way it is structured, because it does not represent the Greek stock market well (Pazarskis et al., 2011).

Therefore, the examination of accounting performance and the financial statements of a firm for the merger decision is a better and safer path (Healy et al., 1992; Chatterjee and Meeks, 1996; Ramaswamy and Waegelein, 2003; Marfo et al., 2013; Halimahton et al., 2014; Muhammad and Zahid, 2014; Oruc et al., 2014). Thus, the sample processing and examination in the study were

Table 1. Accounting measures used.

Variable	Accounting measures	Analysis
TASS	Total assets	Total assets
SFUND	Shareholders' funds	Shareholders' funds
SAL	Sales	Sales
OPINC	Operating income	Operating income
PLBT	P/L before taxes	P/L before taxes
NETIN	Net income	P/L After taxes
EPR	Earning power ratio	Operating Income / Total assets
OPM	Operating profit margin	Operating income / Sales
ROABT	Return on assets (before taxes)	P/L before taxes / Total assets
ROEBT	Return on equity (before taxes)	P/L before taxes / Shareholders' funds
ROAAT	Return on assets (after taxes)	Net income / Total assets
ROEAT	Return on equity (after taxes)	Net income / Shareholders' funds

carried out by main elements of financial statements and ratios. Accounting data analysis with financial statements and ratios provide useful information regarding companies' merger decisions in general and more specifically on taxation issues (Auerbach and Reishus, 1987a; Landsman and Shackelford, 1995; Chatterjee and Meeks, 1996; Seetharaman et al., 2008; Becker and Fuest, 2011; Belz et al., 2013). All the ratios that were used are presented and analyzed in Table 1.

In fact, there are many other approaches for business evaluation performance, different from the aforementioned. Return on investment (ROI) type of measures are considered as the most popular and the most frequently used when accounting variables are utilised to determine performance. However, in considering Kaplan (1983) arguments against excessive use of ROI types of measurements, the aforementioned referred ratio selection of this study is confirmed as better:

"Any single measurement will have myopic properties that will enable managers to increase their score on this measure without necessarily contributing to the long-run profits of the firm" (Kaplan, 1983).

Thus, an adoption of additional and combined measures is believed to be necessary in order to provide a holistic view of the accounting performance of a firm (Pazarskis et al., 2011; Agorastos et al., 2012; Pantelidis et al., 2014).

Sample selection

From a sample of all merger events, the transactions of listed firms in the period from 2010 to 2015 in Greece are tracked. Secondly, for further analysis, the firms that performed M&As activities in less than a one-year period before and after the several merger examined events are excluded. Also, some firms from this preliminary sample firms have been de-listed from the Athens Exchange for various reasons (bankruptcy, not meeting the standards of the market, etc.), they were excluded from the sample, as well as the firms with bank activities, which present special peculiarities in their accounting evaluation.

Furthermore, firms from different basic industry categories are selected per year, while firms in the same industry with merger activity were eliminated, in order to minimize the effect of a specific industry sector and thus, to exclude any specific industry variation in our sample (instead of the use of an industry adjustment mean). Finally, they are examined for the six-year-period (2010 to 2015) three firms per year and in total, eighteen acquiring firms, which is the final firm sample that carried out a merger action as acquirers in Greece during the examined period.

Their type of transaction is a merger by absorption (where the acquiring listed firm acquires all of the assets and liabilities of the acquired company; after the merger the acquired firm ceases to exist as a separate business entity). Merger by consolidation (where a new firm is created and both the acquiring firm and the acquired firm terminate their previous legal existence and become part of the new firm) is not examined as an option for listed firms in Greece, as this transaction will lead them to be de-listed from the Athens Exchange, while the transaction of the acquisition is beyond the scope of this study.

The study proceeds to an analysis only of listed firms as their financial statements are published and it is easy to find and evaluate them from the firms' post-merger accounting performance. The accounting measures of the sample firms are computed from their financial statements. The merger events of our sample, the financial statements and any other data were received from the published data on the Athens Exchange's website. The examined industry sectors of these firms are four different basic industry categories:

(1. Primary sector-PRI: 4 firms
2. Industrial sector-IND: 6 firms
3. Commerce and services-CMS: 5 firms
4. Constructions-CNS: 3 firms.

The analysis of sample firms is tabulated at the following table per industry sector and 'pre' or 'post' of the new Greek Income Tax Code (regarding the fact that the provisions of articles 52 to 56 of the GITC - Law 4172/2013 shall apply to corporate restructuring made from 1 January 2014 onwards) (Table 2).

Evaluation of accounting performance after merger

The merger action of each firm from the sample is considered as an investment that is evaluated by the Net Present Value criterion (if NPV≥0, the investment is accepted). 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 positive NPV investment of the firm to its ratios over a specific period of time (Healy et al., 1992; Agorastos et al., 2012). The crucial research question that is investigated by examining the aforementioned ratios is the following:

Table 2. Analysis of merger events per year, industry and difference in the Greek income tax code.

Year	2010			2011			2012			2013			2014			2015		
IND.	CMS	CMS	PRI	PRI	PRI	IND	IND	PRI	CNS	CMS	CMS	IND	IND	IND	CNS	CMS	IND	CNS
GITC	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Post	Post	Post	Post	Post	Post

"Is accounting performance in the post-merger period greater than it is in the pre-merger period?".

The selected financial ratios for each company of the sample over a one-year period before (year T-1) or after (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; Agorastos et al., 2012; Pantelidis et al, 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; Erdogan and Erdogan, 2014). Last, in order to test the difference in accounting performance of the post-merger and pre-merger period, two independent sample mean t-tests for unequal variances are applied.

Mergers, accounting performance and different industry types

Healy et al. (1992) argued the accounting performance of merged firms was greater in comparison with non-merged firms, and this implies to industry differentiation of accounting performance after mergers. Ramaswamy and Waegelein (2003) claimed that merged firms that are in dissimilar industries may have a better performance.

For the Greek market and before the outbreak of the economic crisis, Agorastos et al. (2012) argued that the accounting performance of the acquiring firms in the post-merger period is affected by industry type, as there are, in general, different results at the post-merger performance for the examined acquiring firms of each industry. Similar results were found by Pantelidis et al. (2014) in the beginning of the economic crisis (examined years with merger activity 2008 to 2009) in Greece, while Rao-Nicholson et al. (2016) also claimed that there are differences at the Association of Southeast Asian Nations (ASEAN) countries. In order to analyze any possible impact on the sample firms from the industry type, regarding the four basic industry categories mentioned earlier (primary sector (PRI), industrial sector (IND), commerce and services (CMS), constructions (CNS)) we divide the study sample in four separate groups:

1. PRIM: 4 firms, which is 22% of the sample
2. INDU: 6 firms, 33%
3. CMS: 5 firms, 28% and
4. CNS: 3 firms, 17% of the sample.

Afterwards, the study computed the differences between the means of post-merger and pre-merger ratios for the examined accounting measures and Δ represents the change in every accounting measure before and after the merger event (Ramaswamy and Waegelein, 2003). 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 Analysis of variance (ANOVA) for the analysis of accounting measures in mergers (Sharma and Ho, 2002). 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 (Pantelidis et al., 2014).

Mergers and impact of the new Greek income tax code

The Law 4172/2013 (Greek Income Tax Code-GITC) according to the EU Merger Directive 2009/113, describes the new general legal framework of the taxation for the merger decision in Greece. As mentioned earlier, this EU Directive creates a common system for the taxation of company restructuring in EU and provides the opportunities for some merger transactions with capital gains that are not subject to tax from mergers. The provisions of articles 52 to 56 of the Law shall apply to corporate restructuring made from 1 January 2014 onwards.

In order to reveal any possible impact of the taxation on mergers in Greece, we examine the sample firms in two new different separate groups: the firms with mergers in the Pre-GITC period (years 2010 to 2013) and the firms with mergers in the Post-GITC period (years 2014 to 2015). There are twelve firms in the Pre-GITC period and six firms in the Post-GITC period, and we apply the Kruskall-Wallis test again for these new parameters.

Furthermore, it is well known that mergers provide the opportunity (after the unity of the merged firms) to carry over net operating losses and unused tax credits or depreciation new policies of the merged firms, with high impact on corporate performance (Breen, 1987; Scholes and Wolfson, 1990); particular indications on this issue could examined the study variables (ΔTASS, ΔOPINC, ΔPLBT and ΔNETIN).

RESULTS AND DISCUSSION

Evaluation of accounting performance after merger

Table 3 presents the comparison results (t-tests) of accounting measures used for the evaluation of the pre- and the post-merger performance. Regarding the impact of mergers on the examined twelve variables (TASS, SFUND, SAL, OPINC, PLBT, NETIN, EPR, OPM, ROABT, ROEBT,

Table 3. Comparison results (t-tests) of accounting measures used for pre- and post-merger performance.

Variable	Mean post-merger	Mean pre-merger	t-value	p-value	95% CI
TASS	319606	313162	0.03	0.976	(-420652; 433538)
SFUND	114756	118213	-0.04	0.970	(-187732; 180817)
SAL	224594	162879	0.52	0.605	(-178874; 302305)
OPINC	7580	8521	-0.07	0.946	(-28916; 27033)
PLBT	-1071	-1969	0.09	0.926	(-18588; 20386)
NETIN	-2729	-3113	0.05	0.962	(-15985; 16753)
EPR	0.0049	0.0138	-0.41	0.687	(-0.0536; 0.0359)
OPM	0.010	0.0152	-0.13	0.899	(-0.0864; 0.0763)
ROABT	-0.0263	-0.0156	-0.39	0.698	(-0.0666; 0.0452)
ROEBT	0.49	-4.6	1.10	0.287	(-4.70; 14.97)
ROAAT	-0.0329	-0.0205	-0.52	0.610	(-0.0616; 0.0368)
ROEAT	0.40	-4.9	1.08	0.295	(-5.06; 15.73)

Notes: ***,**,* 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 aforementioned cases the classification levels relative to the value of the p-value are the following: p <0.01 as strong evidence against Ho (see. on, ***); 0.01≤p <0.05 moderate evidence against Ho (see. on, **); 0.05≤p <0.10 minimum evidence against Ho (see. on *); 0.10≤p no real evidence against Ho. The amounts in variables: TASS, TDEBT, SAL, PLBT, NETIN, OPINC, SFUND, are in thousands euro.

ROAAT, ROEAT), there is no significant change of any variable. This result is consistent with the results of some studies (Kumar, 1984; Healy et al., 1992; Chatterjee and Meeks, 1996; Ghosh, 2001; Srivastava and Prakash, 2014). However, it is not consistent with the results of some other studies that found a decline of the profitability ratios (Meeks, 1977; Salter and Weinhold, 1979; Mueller, 1980; Kusewitt, 1985; Ravenscraft and Scherer, 1987; Dickerson et al., 1997; Sharma and Ho, 2002; Oduro and Agyei, 2013; Pantelidis et al., 2014; Rodionov and Mikhalchuk, 2016 (in crisis periods). Also, the study results are not consistent with the results that found an improvement in accounting or profitability measures (Cosh et al., 1980; Parrino and Harris, 1999; Mylonidis and Kelnikola, 2005; Vijayakumar and Sridevi, 2013; Halimahton et al., 2014; Muhammad and Zahid, 2014; Erdogan and Erdogan, 2014). Furthermore, the study results for the Greek market, since there is no significant profitability improvement, do not support the hypothesis of market power (Lubatkin, 1983; Pazarskis et al., 2011). According to this approach, the market power that was gained by the acquirer after the merger or the acquisition should increase the new firm's profit margins and therefore, its profitability (Table 3).

Mergers, accounting performance and different industry type

The findings of the study for the change (Δ) in every accounting measure at the pre- and post-merger period and after the Kruskall-Wallis test are tabulated in Table 4. The results indicate that six (ΔTASS, ΔOPINC, ΔEPR, ΔOPM, ΔROAB, ΔROAAT) out of twelve variables have changed significantly. This reveals, in general, a better accounting performance for the constructions (CNS) firms from our sample in contrast to the three other basic industry categories: primary sector (PRI), industrial sector (IND) and commerce and services (CMS). Similar results (better accounting post-merger performance for the constructions' sector) for the Greek market were found by Pantelidis et al. (2014) in the beginning of the economic crisis (examined years of merger activity 2008-2009). However, it is not consistent with the results of Agorastos et al. (2012) that came to the conclusion that, even if they found different results at the post-merger performance for the acquiring firms of each examined industry in Greece and before the outbreak of the economic crisis, they have not found a better accounting performance of the acquiring firms of the constructions' sector in the post-merger period.

Mergers and impact of the new Greek income tax code

The new GITC is the general legal framework of the taxation for the merger decision, according to the EU Merger Directive 2009/113, which provides a common system for the taxation of company restructuring in the EU and opportunities for some merger transactions with capital gains that are not subject to tax from mergers. Table 3 presents the comparison results (kruskal-wallis tests) of change in accounting measures used for the new GITC (Law 4172/2013, articles 52 to 56). This reveals that four (ΔTASS, ΔOPINC, ΔPLBT, ΔNETIN) out of twelve variables have significantly changed, while the firms with mergers in the Post-GITC period (years 2014-2015) present a better accounting performance in these

Table 4. Comparison results (kruskal-wallis tests) of change in accounting measures of industry type.

Variable	ΔTASS	ΔSFUND	ΔSAL	ΔOPINC	ΔPLBT	ΔNETIN	ΔEPR	ΔOPM	ΔROABT	ΔROEBT	ΔROAAT	ΔROEAT
PRIM	-10913	-13828	1834	-7608	-8527	-8139	-0,0912	-0.1922	-0.0822	-0.0783	-0.0808	-0.0839
INDU	5994	-470,0	648,5	534,5	562,9	377,5	-0,0053	-0.0055	0.0025	0.0051	-0.0031	-0.0033
CMS	-36504	-15614	-13786	-2777	-3562	-3146	-0,0301	-0,0531	-0.0254	-0.1087	-0.0234	-0.0975
CNS	-10770	-3857	38030	9849	17939	17096	0,0195	0,2213	0.0355	0.0582	0.0364	0.0595
p-value	0.071*	0.213	0.695	0,049**	0,214	0,174	0,060*	0,028**	0,096*	0.530	0.096*	0.511

***, **, *: rejection of the null hypothesis at a significance level of 0.01, 0.05, 0.1, respectively; The amounts in variables: TASS, TDEBT, SAL, PLBT, NETIN, OPINC, SFUND, are in thousands euro.

Table 5. Comparison results (kruskal-wallis tests) of change in accounting measures used for GITC.

Variable	ΔTASS	ΔSFUND	ΔSAL	ΔOPINC	ΔPLBT	ΔNETIN	ΔEPR	ΔOPM	ΔROABT	ΔROEBT	ΔROAAT	ΔROEAT
Post-GITC	5994	-337,9	-7101	1432	8954	4139	-0.0053	-0.0055	0.0025	0.0051	-0.0030	-0.0033
Pre-GITC	-18981	-13185	1347	-2896	-4085	-3545	-0.0216	-0.0343	-0.0333	-0.0323	-0.0289	-0.0281
p-value	0.031**	0.190	0.512	0.075*	0.049**	0.061*	0.349	0.223	0.223	0.512	0.160	0.574

***, **, *: Rejection of the null hypothesis at a significance level of 0.01, 0.05, 0.1, respectively; The amounts in variables: TASS, TDEBT, SAL, PLBT, NETIN, OPINC, SFUND, are in thousands euro.

variables than firms with mergers in the Pre-GITC period (years 2010-2013).

In more detail, our results indicate (variables ΔTASS, ΔOPINC, ΔPLBT and ΔNETIN) that the new GITC provides further opportunities for capital gains, which are not subject to tax from mergers. Similar results that merger transactions may be affected by the Income Tax Code or capital gains tax policy was found in the study of Erickson (1998), Ayers et al. (2007), Belz et al. (2013) and Edwards et al. (2016), while other studies do not claim that there is an important alignment of the merger decision and the taxation issues in the business arena (Auerbach and Reishus, 1987a; Breen, 1987; Devos et al., 2008) (Table 5).

Interpretation of results and discussion

Scholes and Wolfson (1990) support that the changes of taxation are partially connected to the effects of a merger decision and tax issues. The tax laws are a major factor that could influence the choice of the exact form of corporate restructuring (Ayers et al., 2007; Belz et al., 2013). Also, there is no common methodology with universal acceptance in past research for the impact of opportunity at mergers (Breen, 1987).

In this study, the examination of accounting performance and financial statements were chosen to examine the merger decision and corporate taxation in Greece, regarding the fact that the general legal framework of the taxation for the merger decision were changed by the new GITC, which affects corporate restructuring made from 1 January 2014 onwards. Despite the result that none of the examined accounting measures have changed significantly due to the merger event, the impact of different industry type indicates a significant change in the accounting performance of the sample firms. The findings of the study for the examined basic industry categories revealed different impact of mergers, while the examined merger transactions were affected positively from the new GITC, during the economic crisis in Greece. Devos et al. (2008) argued that there is strong evidence that mergers generate profits from improving the allocation of resources and not by reducing the tax burden or

increasing the market power of the merged firm. Furthermore, Pantelidis et al. (2014) supported that during the Greek economic crisis the lack of liquidity and the reduction of profitability dominated almost every business section in Greece.

Nevertheless, this study argues for a better accounting performance through mergers in Greece in particular industry sectors, while the whole image of the Greek economy is not prohibitive for merger investments. Also, there is clear evidence that the introduction of the new GITC generated a better accounting performance for the merger involved firms in the post-GITC period than for firms with mergers before. This signalises that the new GITC provides further opportunities for capital gains, which are not subject to tax from mergers.

All-in-all, it is clear that there are several opportunities for potential investors through mergers in the Greek business environment, but they should be very cautious to achieve capital gains, which are not subject to tax from mergers and should further analyse every target firm accordingly their specific industry sector, in order to decide a possible good merger deal.

Conclusions

The study aims to provide new insights regarding the merger effects of Greek firms on their accounting performance, in parallel with their taxation impact, during the period of the economic crisis in Greece. The study analyses several accounting measures from financial statements and financial ratios in order to examine the impact of mergers on the accounting performance of merger-involved firms in Greece. Furthermore, the study investigates the impact of the new GITC (Law 4172/2013), regarding the provisions of the articles 52 to 56 of this Law that refers to the corporate restructuring in Greece made from 1 January 2014 onwards.

Using six basic accounting sizes and six ratios (as employed accounting measures), the accounting performance in the post-merger period of a sample of Greek listed firms in the Athens Exchange that carried out one merger in the period from 2010 to 2015 as acquirers, is investigated (with data analysis from 2009 to 2016). The results revealed that none of the twelve examined accounting measures have changed significantly due to the merger event, one year after the merger transaction. Also, the merger events of the involved firms and the impact of different industry type were examined according to their accounting performance. The findings of the study indicate a significant change in six out of twelve accounting measures at the post-merger period and a different accounting performance of the examined basic industry categories.

Furthermore, an exploration of the influence from the new GITC (Law 4172/2013, articles 52 to 56) at the merger decision is performed. The study results found that four out of twelve variables have significant changed, while the firms with mergers in the Post-GITC period (years 2014-2015) present a better accounting performance in these variables than firms with mergers in the Pre-GITC period (years 2010-2013). More analytically, the results indicate, and especially for the variables with a relative change at Total Assets, Operating Income, P/L before taxes and Net Income, that the new GITC provides further opportunities for capital gains, which are not subject to tax from mergers. This reveals that merger transactions may be affected positively from the national Income Tax Code in Greece, during the period of economic crisis. Lastly, the research results could be used as:

1. Accounting research for the merger decision and with alternative examined samples (not only merger-involved listed firms in the Athens Exchange, but also non-listed) or within different time intervals or involved in international merger activities.
2. A recent empirical result of the merger activity 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.

REFERENCES

Agorastos K, Pazarskis M, Karagiorgos T (2012). The Post-Merger Performance of Acquiring Listed Firms among Different Industries in Greece", 7th MIBES International Conference, May 25-27, Larissa, Greece, Conference Proceedings: 1-22. Retrieved from http://mibes.teilar.gr/proceedings/2012/oral/Agorastos-Pazarskis-Karagiorgos.pdf

Agrawal A, Jaffe J, Mandelker G (1992). The post-merger performance of acquiring firms: A re-examination of an anomaly. J. Financ. 47(4):1605-1621. http://dx.doi.org/10.2307/2328956

Agrawal A, Jaffe J (2000). The post-merger performance puzzle", in book series: "Advances in mergers and acquisitions", 1:7-41. http://dx.doi.org/10.1016/S1479-361X(00)01002-4

Artikis P, Vrakas S, Karmi E (2010). Factors affecting expected stock returns: Evidence from the secondary and tertiary sectors of the athens stock exchange. Int. J. Financ. Serv. Manage. 4(3):175-198. https://doi.org/10.1504/IJFSM.2010.034551

Auerbach A, Reishus D (1987a). The Effects of Taxation on the Merger Decision", NBER Working Paper Series, Paper no. 2192. https://doi.org/10.3386/w2192

Auerbach A, Reishus D (1987b). The Impact of Taxation on Mergers and Acquisitions", In: A. Auerbach, ed., "Mergers and Acquisitions", NBER: 69-86. Retrieved from http://www.nber.org/chapters/c5822.pdf

Ayers B, Lefanowicz C, Robinson J (2007). Capital gains taxes and acquisitions activity: Evidence of the lock-in effect. Contemp. Account. Res. 24(2):315-344. https://doi.org/10.1506/1717-5042-0880-4P73

Becker J, Fuest C (2007). Corporate Tax Policy and International Mergers and Acquisitions - Is the Tax Exemption System Superior?", Annual Symposium 2007 - Oxford University Centre for Business Taxation. Retrieved from https://www.sbs.oxford.edu/sites/default/files/Business_Taxation/Events/conferences/symposia/2007/fuest-paper.PDF

Becker J, Fuest C (2011). Source versus residence based taxation with international mergers and acquisitions. J. Pub. Econ. 95(1-2):28-40. https://doi.org/10.1016/j.jpubeco.2010.10.001

Belz T, Robinson L, Ruf M, Steffens C (2013). Tax Avoidance as a Driver of Mergers and Acquisitions, SSRN Papers, Paper no 2371706. http://dx.doi.org/10.2139/ssrn.2371706

Breen D (1987). The Potential for Tax Gain as a Merger Motive: A Survey of Current Knowledge and Opportunities", FTC Bureau of Economics. Retrieved from https://www.ftc.gov/sites/default/files/documents/reports/potential-tax-gains-merger-motive-survey-current-knowledge-and-research-opportunities/232069.pdf

Caves R (1989). Mergers, takeovers, and economic efficiency; foresight vs. hindsight. Int. J. Ind. Organ. 7(1):151-174. https://doi.org/10.1016/0167-7187(89)90051-9

Chatterjee S, Meeks G (1996). The financial effects of takeover: accounting rates of return and accounting regulation. J. Bus. Financ. Account. 23(5-6):851-868. https://doi.org/10.1111/j.1468-5957.1996.tb01155.x

Clark K, Ofek E (1994). Mergers as a means of restructuring distressed firms: An empirical investigation. J. Financ. Quant. Anal. 29(4):541-565. https://doi.org/10.2307/2331109

Cosh A, Hughes A, Singh A (1980). The Causes and Effects of Takeovers in the U.K.: An Empirical Investigation for the late 1960s at the Microeconomic Level", In: D. Mueller, eds., "The Determinants and Effects of Merger: An International Comparison", Gunn & Horn Publications, Cambridge, U.K.

Devos E, Kadapakkam PR, Krishnamurthy S (2009). How do mergers create value? A comparison of taxes, market power, and efficiency improvements as explanations for synergies. Rev. Financ. Stud. 22(3):1179-1211. https://doi.org/10.1093/rfs/hhn019

Dickerson A, Gibson H, Tsakalotos E (1997). The impact of acquisitions on company performance: Evidence from a Large Panel of U.K. Firms", Oxford Econ. Pap., 49(3):344-361. Retrieved from http://www.jstor.org/stable/2663598

Eccles R, Lanes K, Wilson T (1999). Are you paying too much for that Acquisition?", Harv. Bus. Rev. 77(4):136-146. Retrieved from https://hbr.org/1999/07/are-you-paying-too-much-for-that-acquisition

Edwards Al, Kravet T, Wilson R (2016). Trapped cash and the profitability of foreign acquisitions. Contemp. Account. Res. 33(1):44-77. https://doi.org/10.1111/1911-3846.12140

Erickson M (1998). The effect of taxes on the structure of corporate acquisitions. J. Account. Res. 36(2):279-298. https://doi.org/10.2307/2491478

Ghosh A (2001). Does operating performance really improve following corporate acquisitions?. J. Corp. Financ. 7(2):151-178. https://doi.org/10.1016/S0929-1199(01)00018-9

Halimahton B, Rozita NM, Nurnafisah A (2014). The impact of financial ratios on the financial performance of a chemical company: The case of LyondellBasell Industries. World J. Entrepr. Manag. Sustain. Dev. 10(2):154-160. https://doi.org/10.1108/WJEMSD-07-2013-0041

Hamberg M, Paananen M, Novak J (2011). The Adoption of IFRS 3: The Effects of Managerial Discretion and Stock Market Reactions", Euro. Account. Rev. 20(2): 263-288. http://dx.doi.org/10.1080/09638181003687877

Healy P, Palepu K, Ruback R (1992). Does Corporate Performance Improve After Mergers?. J. Financ. Econ. 31(2):135-175. https://doi.org/10.1016/0304-405X(92)90002-F

Jarrell G, Brickley J, Netter J (1988). The market for corporate control: the empirical evidence since 1980. J. Econ. Perspect. 2(1):49-68. Retrieved from http://www.jstor.org/stable/1942739

Jensen M, Ruback R (1983). The market for corporate control: the scientific evidence. J. Financ. Econ.11(1-4):5-50. https://doi.org/10.1016/0304-405X(83)90004-1

Kaplan S (1983). Measuring manufacturing performance: A challenge for managerial accounting research. Account. Rev. 58(4):686-705. Retrieved from http://www.jstor.org/stable/247063

Kumar M (1984). Growth, Acquisition and Investment, Cambridge University Press, Cambridge, U.K.

Kusewitt J (1985). An explanatory study of strategic acquisition factors relating to performance. Strat. Manage. J. 6(2):151-169. https://doi.org/10.1002/smj.4250060205

Landsman W, Shackelford D (1995). The lock in effect of capital gains taxes: Evidence from the RJR Nabisco Leveraged Buyout", Nation. Tax J. 48(2):245-259. Retrieved from http://www.jstor.org/stable/41789140

Leepsa NM, Mishra CS (2013). Wealth creation through acquisitions. Decision 40(3):197-211. https://doi.org/10.1007/s40622-013-0023-z

Lubatkin M (1983).Merger and the performance of the acquiring firm. Acad. Manage. Rev. 8(2):218-225. Retrieved from http://www.jstor.org/stable/257748

Marfo OI, Kwaku Agyei S (2013). Mergers and acquisition and firm performance: Evidence from the Ghana Stock Exchange. Res. J. Financ Account. 4(7):99-107. Retrieved from http://www.iiste.org/Journals/index.php/RJFA/article/download/6279/6644

Meeks G (1977). Disappointing Marriage: A study of the gains from Merger", University of Cambridge: Occasional Paper 51, Cambridge University Press, Cambridge, U.K.

Mescall D (2007). How Do Tax and Financial Reporting Policies Affect Cross-Border Mergers and Acquisitions?", PhD Thesis, University of Waterloo, Canada. Retrieved from https://uwspace.uwaterloo.ca/bitstream/handle/10012/3277/Devan%20Mescall%20revised.pdf;sequence=1

Michailidis GR, Tsopoglou S, Papanastasiou D, Mariola, E (2006). Testing the CAPM: The Case of the Emerging Greek Securities Market. Int. Res. J. Financ. Econ. 1(4):78-91. Retrieved from http://www.internationalresearchjournaloffinanceandeconomics.com/ISSUES/IRJFE%20ISSUE%204.htm

Mueller D (1980). The Determinants and Effects of Merger: An International Comparison", Gunn & Horn Publications, Cambridge, U.K.

Muhammad A, Zahid A (2014). Mergers and Acquisitions: Effect on Financial Performance of Manufacturing Companies of Pakistan", Middle-East J. Sci. Res. 21(4):689-699. Retrieved from https://www.idosi.org/mejsr/mejsr21(4)14/19.pdf

Mylonidis N, Kelnikola I (2005). Merging Activity in the Greek Banking System: A Financial Accounting Perspective", South Eastern Eur. J. Econ. 1(1):121-144. Retrieved from http://www.asecu.gr/Seeje/issue04/mylonidis.pdf

Neely W, Rochester D (1987). Operating Performance and Merger Benefits: The Savings and Loans Experience. Financ. Rev. 22(1):111-130. https://doi.org/10.1111/j.1540-6288.1987.tb00321.x

Omoye AS, Aniefor SJ (2016). Mergers and Acquisitions: The Trend in Business Environment in Nigeria. Account. Financ. Res. 5(2):10-19. https://doi.org/10.5430/afr.v5n2p10

Oruc EE, Erdogan M (2014). Effect of Acquisition Activity on the Financial Indicators of Companies: An Application in BIST", Int. J. Bus. Social Res. 4(7):17-22. http://dx.doi.org/10.18533/ijbsr.v4i7.569

Pantelidis P, Pazarskis M, Deloudi K, Stamatouros S (2014). Do M&As of Greek listed firms before the economic crisis improved their current liquidity and profitability?", MIBES Transactions 8(1):100-112. Retrieved from http://mtol.teithessaly.gr/vol8_2014/Pantelidis-Pazarskis-Deloudi-Stamatouros.pdf

Parrino J, Harris R (1999). The Effects of Taxation on FDI: Evidence from U.S., U.K. and Canadian Acquisitions of U.S. Firms", University of Virginia Working Paper, Virginia, U.S.

Pazarskis M, Lyroudi K, Pantelidis P, Christodoulou P (2011). An accounting examination of the long run performance of Greek acquiring firms. Int. J. Financ. Serv. Manage. 5(2):159-176. https://doi.org/10.1504/IJFSM.2011.041922

Philippatos G, Choi D, Dowling W (1985). Effects of Mergers on Operational Efficiency: A Study of the S&L Industry in Transition. Northeast J. Bus. Econ.11: 1-14.

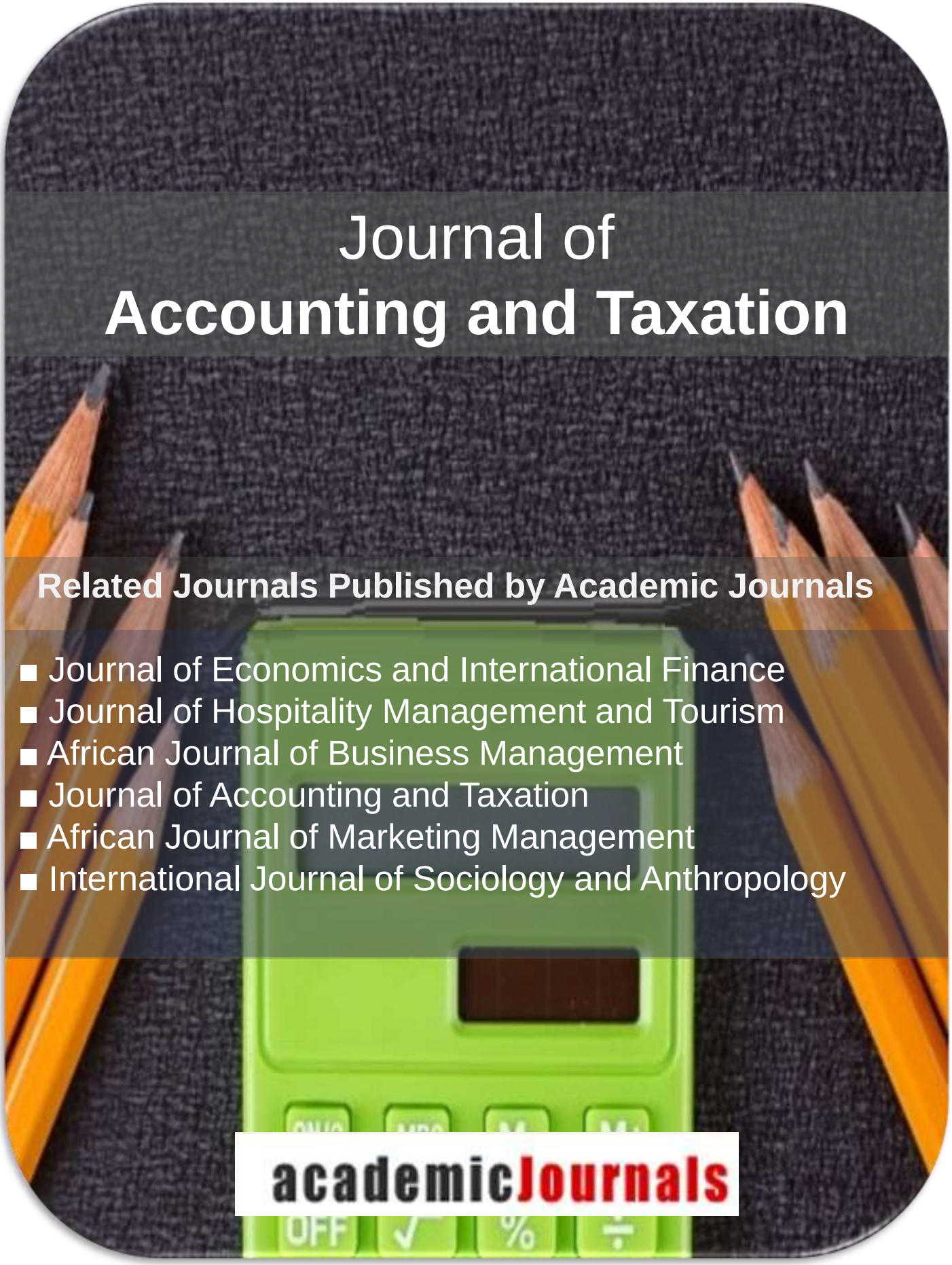
Ramaswamy KP, Waegelein J (2003). Firm Financial Performance Following Mergers", Rev. Quant. Financ. Account. 20(1):115-126. https://doi.org/10.1023/A:1023089924640

Rao-Nicholson R, Salaber J, Cao TH (2016). Long-term performance of mergers and acquisitions in ASEAN countries. Res. Int. Bus. Financ. 36(1):373-387. https://doi.org/10.1016/j.ribaf.2015.09.024

Ravencraft D, Scherer F (1987). Mergers, Sell-Offs and Economic Efficiency", Brookings Institution, Washington, U.S.

Ravenscraft D, Scherer F (1989). The Profitability of Mergers. Int. J. Ind. Organ. 7(1):101-116. https://doi.org/10.1016/0167-

7187(89)90048-9
Rodionov I, Mikhalchuk V (2016). M&A Synergies in Domestic M&A Deals in Russia in 2006-2014. Russian Manage. J. 14(2):3-28. https://doi.org/10.21638/11701/spbu18.2016.201
Roll R (1986). The Hubris Hypothesis of Corporate Takeovers. J. Bus. 59(2):197-216. Retrieved from http://www.jstor.org/stable/2353017
Salter M, Weinhold W (1979). Diversification Through Acquisition; Strategies for Creating Economic Value", Free Press, New York, U.S.
Scholes MS, Wolfson MA (1990). The effects of changes in tax laws on corporate reorganization activity. J. Bus. 63(1):S141-S164. Retrieved from http://www.jstor.org/stable/2353265
Seetharaman A, Balachandran M, Saravanan A (2008). Accounting Treatment of Goodwill: yesterday, today and tomorrow, Problems and Prospects in the International Perspective. J. Intell. Cap. 5(1):131-152. https://doi.org/10.1108/14691930410512969
Sharma D, Ho J (2002). The impact of acquisitions on operating performance: Some Australian Evidence. J. Bus. Finan. Account. 29(1-2):155-200. https://doi.org/10.1111/1468-5957.00428
Srivastava R, Prakash A (2014). Value creation through cross-border mergers and acquisitions by the Indian pharmaceutical firms. J. Strat. Manage. 7(1):49-63. https://doi.org/10.1108/JSMA-03-2013-0017
Stunda R (2014). The market impact of mergers and acquisitions on acquiring firms in the U.S. J. Account. Tax. 6(2):30-37. http://dx.doi.org/10.5897/JAT2014.0142
Tao F, Liu X, Gao L, Xia E (2017). Do cross-border mergers and acquisitions increase short-term market performance? The case of Chinese firms", Int. Bus. Rev. 26(1):189-202. https://doi.org/10.1016/j.ibusrev.2016.06.006
Tropina J (2015). The effect of foreign acquisitions on performance of firms in Norway: evidence of profit shifting?", in: "Essays on Multinational Firms and Profit-Shifting", Ph.D. Thesis, NHH Bergen, Norway.
Vijayakumar A, Sridevi S (2013). Analysis of operating efficiency of two and three wheeler sector of Indian automobile industry. Int. J. Manage. IT Eng. 3(10):434-450. Retrieved from http://indianjournals.com/IJOR.aspx?target=ijor:ijmie&volume=3&issue=10&article=034



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