The impact of IFRS on ratios of listed and new listed companies of Athens Exchange

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ABSTRACT

In this study we are researching the effect of the implementation of International Financial Reporting Standards (IFRS) on financial ratios of listed companies of Athens Exchange (AE). Emphasis is given to the differences between Greek Accounting Standards (GAS) and IFRS and their impact on the calculation of financial ratios which are based on financial statements prepared in accordance with the first or the second accounting standard. Therefore, the study was applied to two samples of companies. The first sample includes companies that have been listed in AE for years and the second sample includes companies that have recently been listed in AE. Considering the particular characteristics of each group of companies, we are examining the probability of quantitative differentiations in financial ratios due to the transition from the one accounting standard to the other. The results of the research results showed that both samples of companies, when not influenced by other factors, do not have significant differences in their behavior.

Keywords: International Financial Reporting Standards, Accounting Standards, Financial Ratios, Athens Exchange
JEL classifications: M40, M41, G00

1. Introduction

The globalization of markets has increased the need for widely understood accounting information, which will be a result of generally accepted accounting procedures, in order to be used by all stakeholders. The existence of generally accepted accounting standards serves, on the one hand the function of multinational enterprises and on the other hand the comparison among accounting-financial figures for investors, who want to invest in national enterprises all around the world. Globally, it can contribute to the development of the investment activity and enhance the growth of national economies and, by extension, global economy.

Within this concept, the International Accounting Standard Committee (IASC) was founded in 1973, with the explicit scope to introduce and develop accounting standards for global use. The objective of the IASC was to develop and promote the use and application of International Accounting Standards, which would lead to transparent, comparable and high-quality information through accounting-financial statements and other

financial reports. For the period1973 - 2001the standards, which were issued by the Commission, were called International Accounting Standards. Since 2002, they were renamed to International Financial Reporting Standards and are issued by the IASB(International Accounting Standard Board)whose members are selected by the International Accounting Standards Committee.

In Greece, the implementation of IFRS started in January 2005after a directive of the European Union (EU) that established the adoption of IFRS as a mandatory set of accounting standards for EU member's states. The implementation of standards was mandatory for listed companies and optional for companies not listed in AE that have the right to continue applying GAS. Although conceptually many of the general principles are quite similar under IFRS and GAS, the application of IFRS may nevertheless differ. This fact may affect companies' financial ratios.

The importance of the application of IFRS by Greek companies motivated the conduct of this study, which aspires to contribute to the enrichment of both Greek and international literature that relates to the adoption and implementation of IFRS. The main key of our analysis is the examination of financial ratios that are widely used. Comparing financial ratios computed under GAS with those obtained under IFRS requires financial statements prepared under both sets of rules for the same period of time. Furthermore, the data derived from the annual financial statements (GAS) of one year and from the annual financial statements (IFRS) of the next year, include data of the previous, comparable year. The first financial year with comparable data is 2004.Hence,two samples of companies were used, one of which includes companies that were members of the AE before 2004, and the other one, another group of companies, that have been listed in the stock market since 2004.Using these samples we are trying to answer the questions a) are there any differences between GAS and IFRS and b) is there a different behavior between companies that are listed in AE before 2004 and those after this year? The distinction on the first question, is based on the assessment that the impact on financial ratios that is caused by the shift in regimes is not expected to be significant. The distinction, on the second question, is based on the assessment that companies which were listed in AE before 2004, were subject to intensive control and were obliged to provide accounting statements of a better quality and more efficient adoption and application of IFRS than other companies.

The structure of the paper is organized as follows. The second part reviews literature of the discussed subject. The third part describes the used methodology. The fourth part presents the research's results and finally, the last part (fifth part) the conclusions of the research conducted.

2. Literature review

Over the last years, several studies, which examine the quantitative and qualitative relationship between national accounting standards and International Financial Reporting Standards, have been elaborated. Since 2002, when the European Union's directive of the mandatory adoption of IFRS was disclosed to the member-states, the research of the relationship between the two types of accounting standards was intensified. Researchers conducted these studies using, either data from questionnaires (examination of qualitative characteristics), or data from published financial statements (examination of quantitative characteristics) and applied research methodologies using, either known econometric models or statistical analysis of financial data and financial variables.

Lantto&Sahlström (2007) conducted a survey using a sample of 125 companies seated in Finland. They concluded that the adoption of IFRS changed the magnitude of the basic financial ratios because of the change in book value and because of the imposition of more stringent requirements on some issues. The study indicated that the adoption of IFRS changes the magnitudes of the key accounting ratios by considerably increasing the profitability ratios and gearing ratio moderately, and considerably decreasing the P/E ratio and equity and quick ratios slightly. Hung & Subramanyam (2007), using a sample of German companies researched the impact of the adoption of IFRS during 1998through 2002. They concluded that the value of total assets, value of equity and variability of net earnings are significantly higher under IFRS compared to the German Accounting Standards. However, they could not support a respective change on financial ratios, which were examined. Callao Gastón& Ignacio Jarne(2010), in contrast to other individual surveys by country, conducted two studies comparing results in Spain and in the United Kingdom. The results of the research revealed that the quantitative impact on financial ratios is significant in both countries and further more, that it is higher in the United Kingdom. Blanchette,

Racicot & Girard (2011) in their research examined the impact of the adoption of IFRS on liquidity, leverage, coverage and profitability ratios in a sample of companies seated in Canada. Survey results showed differences in means, medians and volatility in most financial ratios of companies, but these differences were not statistically significant in most of the cases. Also, by specifically analyzing their results by groups of companies who adopted IFRS at different dates, they found no significant variation on their results.

In Greece, Athianos etc. (2008) based on the methodology of Hung etc. (2007) examined a sample of Greek companies, which adopted IFRS during 2003-2004.They claimed that the value of assets, book value of equity and variability of equity as well as variability of book value and net income are significantly higher under IFRS than GAS. Also, they claimed that there are no effects of IFRS on financial ratios except for return on assets ratio. Bellas, Toudas& Papadatos (2007) analyzed data and financial ratios of 83 companies for the 2004 administrative year under GAS and under IFRS. Their results show that tangible assets, fixed assets, and total liabilities record considerably higher prices under IFRS due to the transition from conservatism to fair value, but insignificant differences in financial ratios that were examined. Georgakopoulou, Spathis&Floropoulos (2010) surveyed 39 companies in the industrial sector of the AE which adopted IFRS in 2005. Their results indicate that differences exist in four out of ten ratios contained in their research. Pazarskis, Alexandrakis, Notopoulos, &Kydros (2011) examined the possible impact of the adoption of IFRS by Greek companies of the information technology sector that were listed in the AE using twenty financial ratios. The results of their research revealed that there was a statistically significant difference only at margin ratios E.B.I.T. (increase) and leverage ratio (decrease). Tsalavoutas, Andre & Evans (2010) examined the value relevance of accounting fundamentals before and after the mandatory transition to IFRS in Greece. Examined companies were divided according to their size and audit quality. Their results show that behavior of financial ratios is influenced by company size and type of audit company that was controlling the company during transition from GAS to IFRS.

3. Methodology –Samples

The purpose of this paper is to provide empirical data of the adoption of IFRS. To analyze our samples we use financial ratios' categories: liquidity, leverage and activity. We calculate ratios based on figures obtained from financial statements that are constituted according to the two sets of accounting standards GAS and IFRS for the same year. Ratios, whose analysis is given in the Appendix (Table 1), include almost all of the common financial figures between the two comparable financial statements.

Initially, measures of descriptive statistics are calculated to describe the main features of the collection of data. The measures used to describe the data set are measures of central tendency and measures of dispersion. Measures of central tendency include the sampling mean ($\bar{x} = \frac{\sum_{i=1}^{n} xi}{n}$) and median, while measures of variability and dispersion include the minimum variables, maximum variables, the sampling standard deviation ($s = \sqrt{\frac{\sum_{i=1}^{n} (xi-\bar{x})2}{n-1}}$), skewness and kurtosis. Having estimated the skewness and kurtosis, the p-value of Jarque–Bera test of financial ratio's values under GAS and IFRS can be found. The Jarque-Bera test for normality sets of the null hypothesis:

- H_0 : normal distribution, skewness is zero and excess kurtosis is zero, against the alternative hypothesis,
  H_1 : non-normal distribution.

Then, in order to examine the significance of differences between the two standards we apply statistical tests. The survey examines the differences in measurement $sd_i = X_i - Y_i$ of two dependent-pairs variables. Because of the existence of financial ratios that follow normal distribution and others that do not follow normal distribution, we examine two cases. Also, as long as the samples' size is big enough (31 companies each), median estimators and related non-parametrical tests are not solely relied upon. Equality of means was tested even though there is recognition of limitation as distributions are not normal.

- Assuming that the sample of differences derives from population, which follows normal distribution, the appropriate test for detecting differences between the two populations is the *t*-test for dependent samples. Specifically, *t*-test sets the null hypothesis:
  H_0: two averages do not differ ($\mu_1 = \mu_2$) against the alternative hypothesis,

H_1: the two averages differ ($\mu_1 \neq \mu_2$).

- Otherwise, in case of non-normal distribution of differences, the appropriate test for detecting differences between the two populations is the Wilcoxon signed-rank test, the most common non-parametric test of all. Specifically, Wilcoxon test, sets the null hypothesis that:
  H_0: two averages do not differ ($\mu_1 = \mu_2$) against the alternative hypothesis,
  H_1: the two averages differ ($\mu_1 \neq \mu_2$).

Moreover, we examine the existence of significant differences in the behavior of two independent samples of companies. We use the percentage change for each paired data of each financial ratio, each sample ($\text{percentage change} = \frac{(\text{value in IFRS}) - (\text{value in GAS})}{\text{value in GAS}}$) and applied statistical tests on the two independent samples. As above, because of the samples' size, which is big enough (31 percentage changes each), median estimators and related non-parametrical tests are not solely relied upon, we apply one parametrical and one non-parametrical test.

- Assuming that the sample of differences derives from population, which follows normal distribution, the appropriate test for detecting differences between the two populations is the *t*-test for independent samples. Specifically, *t*-test sets the null hypothesis:
  H_0: two averages do not differ ($\mu_1 = \mu_2$) against the alternative hypothesis,
  H_1: the two averages differ ($\mu_1 \neq \mu_2$).
- Otherwise, in case of non-normal distribution of differences, the appropriate test for detecting differences between the two populations is the Mann-Whitney test, the most popular non-parametric tests of all. Specifically, Wilcoxon test, sets the null hypothesis that:
  H_0: two averages do not differ ($\mu_1 = \mu_2$) against the alternative hypothesis,
  H_1: the two averages differ ($\mu_1 \neq \mu_2$).

Then, we examine if the shape of the distributions differs under IFRS and GAS. Analysis is applied with the model of linear regression(simple and multiple). The model, as dependent variable, contains the values of ratios using IFRS and as independent variable the values of ratios using GAS.

$IFRS = \alpha_i + \beta_i GAS + e$, where

IFRS: is the mean of IFRS ratio
α: is the intercept
GAS: is the mean of GAS ratio
β: is the coefficient of two frames
e: is the error term
$_i$:refers to the 15 financial ratios of the sample

Thereafter, we examine if the shape of different distribution differs among companies that were listed in AE on different dates. Analysis is applied with the model of linear regression, as above, with an additional dummy variable.

$IFRS = \alpha_i + \beta_i GAS + c_i SHIFT + e$, where

SHIFT: is 0 for firms that listed in ASE before 2004 and 1 for firms that listed in AEin 2004 and onwards

This methodology is applied to the two samples each of which consists of 31 companies, which have adopted IFRS. To determine the second sample(companies admitted to the AEfrom2004 to2012) we use data from the Association of Listed Companies (study: Evolution of number of companies listed on the AE)and the AE. To determine the first sample, an equal number of companies per sector was used, with similar company size (per sector), controlled by similar auditing company type (on the one hand the «Big four»companies and on the other hand the other companies). Financial sector companies, whose financial statements have particular characteristics and companies with financial statements conducted for more or less than twelve months, which are not comparable (proportion of companies by sector is presented in detail in the appendix, Table 2) were excluded from the two samples. Table 3 presents the companies per sample and the year for which we both had data based on GAS and IFRS. Data collection included there cording of the same, nominally, published numerical sets as presented in the financial statements of each company. If two types of financial statements (consolidated and individual) were to be published, the consolidated financial statements would be preferred. Each analysisincludes15ratiosthat can be calculated based on the common financial figures.

4. Results

The first part presents the sampling means, the medians, the minimum variables, the maximum variables, the sampling standard deviations, the skewness and the kurtosis of financial ratio values under GAS and IFRS, in order to illustrate, as much as possible, the size and distribution of sampling remarks. Also, in the first part the p-value of Jarque–Beratest of financial ratio values under GAS and IFRS is presented. As shown in Table4 for the first sample and Table5 for the second sample Jarque–Bera test indicates that most of the sample data do not follow normal distribution (**, *, n.s.: null hypothesis rejected at the 1%, 5% level of confidence, null hypothesis not rejected, respectively) and measures of descriptive statistics indicate that the financial ratios' results between GAS and IFRS do not differ significantly.

TABLE 4

Ratio (sample < 2004)		Accounting Standards	Mean	Median	Max	Min	SD	Skew	Kurt	J-B	
LIQUIDITY											
	Current Ratio	GAS	1.77	1.53	6.96	0.50	1.186	2.810	12.891	0.000	**
		IFRS	1.72	1.49	4.70	0.53	0.957	1.326	4.779	0.001	**
	Quick Ratio	GAS	1.41	1.21	6.96	0.28	1.249	2.979	13.708	0.000	**
		IFRS	1.36	1.16	4.68	0.31	0.977	1.637	5.812	0.000	**
LEVERAGE											
	Debt Ratio	GAS	0.49	0.51	0.90	0.07	0.199	-0.045	2.468	0.828	n.s.
		IFRS	0.52	0.57	0.95	0.05	0.198	-0.305	2.944	0.785	n.s.
	Equity Ratio	GAS	0.49	0.47	0.92	0.10	0.201	0.095	2.561	0.862	n.s.
		IFRS	0.48	0.43	0.95	0.05	0.198	0.303	2.940	0.787	n.s.
	Equity to Debt	GAS	1.67	0.96	12.58	0.11	2.294	3.675	17.773	0.000	**
		IFRS	1.78	0.76	20.12	0.05	3.550	4.670	24.588	0.000	**
ACTIVITY											
	Asset Turnover	GAS	0.84	0.69	2.24	0.14	0.516	1.362	4.515	0.002	**
		IFRS	0.76	0.67	2.15	0.06	0.484	1.367	4.761	0.001	**
	Fixed Assets Turnover	GAS	3.63	2.35	19.01	0.22	4.338	2.484	8.887	0.000	**
		IFRS	2.34	1.71	17.37	0.07	3.046	4.016	20.446	0.000	**
	Return on Asset	GAS	0.06	0.05	0.25	-0.09	0.067	0.460	3.870	0.355	n.s.
		IFRS	0.06	0.05	0.27	-0.10	0.073	0.470	4.027	0.286	n.s.
	Return on Equity	GAS	0.12	0.10	0.87	-0.89	0.260	-1.064	10.405	0.000	**
		IFRS	0.07	0.09	0.56	-1.64	0.355	-3.657	18.743	0.000	**
	EBIT to Invested Capital	GAS	0.07	0.08	0.19	-0.03	0.061	0.303	2.086	0.460	n.s.
		IFRS	0.07	0.06	0.22	-0.07	0.066	0.329	3.102	0.751	n.s.
	EBITDA Margin	GAS	0.18	0.15	0.62	0.00	0.145	1.734	5.668	0.000	**
		IFRS	0.28	0.13	3.84	-0.07	0.678	4.897	26.230	0.000	**
	Net Profit Margin	GAS	0.11	0.08	0.69	-0.11	0.168	2.566	9.537	0.000	**
		IFRS	0.20	0.08	3.15	-0.17	0.574	4.624	24.186	0.000	**
	Gross Profit Margin	GAS	0.30	0.22	0.90	0.05	0.200	1.432	4.271	0.002	**
		IFRS	0.31	0.23	0.90	0.08	0.196	1.431	4.427	0.001	**
	Operating Expenses Ratio	GAS	0.19	0.15	0.75	0.03	0.162	1.945	6.676	0.000	**
		IFRS	0.20	0.14	0.78	0.03	0.159	1.890	7.032	0.000	**
	Owner's Equity Turnover Ratio	GAS	2.57	1.37	13.35	0.17	3.173	2.440	8.113	0.000	**
		IFRS	2.43	1.60	17.33	0.14	3.408	3.214	13.536	0.000	**

Note: ''Max'' is maximum, ''Min'' is minimum, "SD" is standard deviation, "Skew" is skewness, "Kurt" is kurtosis, "J-B" is p-value of the Jarque-Berra test
Null hypothesis: differences follow a normal distribution.
** null hypothesis rejected at the 1% level of confidence.
*null hypothesis rejected at the 5% level of confidence.
n.s.: null hypothesis not rejected significantly.

TABLE 5

Ratio (sample ≥2004)	Accounting Standards	Mean	Median	Maxi	Min	SD	Skew	Kurt	J-B	
LIQUIDITY										
Current Ratio	GAS	1.58	1.39	4.44	0.05	0.985	1.080	4.366	0.015	*
	IFRS	1.85	1.46	13.10	0.02	2.208	4.434	23.265	0.000	**
Quick Ratio	GAS	1.34	1.02	4.44	0.03	0.994	1.573	5.401	0.000	**
	IFRS	1.64	1.17	13.10	0.02	2.241	4.489	23.525	0.000	**
LEVERAGE										
Debt Ratio	GAS	0.53	0.55	0.87	0.08	0.191	-0.502	3.049	0.521	n.s.
	IFRS	0.56	0.60	0.99	0.02	0.206	-0.407	3.429	0.578	n.s.
Equity Ratio	GAS	0.46	0.43	1.19	0.12	0.218	1.232	5.389	0.000	**
	IFRS	0.45	0.41	0.98	0.11	0.186	0.643	3.775	0.233	n.s.
Equity to Debt	GAS	1.58	0.80	14.95	0.13	2.813	3.900	18.204	0.000	**
	IFRS	2.98	0.66	64.23	0.13	11.391	5.258	28.782	0.000	**
ACTIVITY										
Asset Turnover	GAS	1.13	0.72	7.01	0.03	1.420	2.863	11.466	0.000	**
	IFRS	1.07	0.62	7.15	0.02	1.437	2.963	12.028	0.000	**
Fixed Assets Turnover	GAS	7.01	3.57	41.54	0.03	9.515	1.974	6.899	0.000	**
	IFRS	5.39	1.44	46.41	0.02	9.754	3.000	12.055	0.000	**
Return on Asset	GAS	0.12	0.08	0.51	0.01	0.098	2.297	9.333	0.000	**
	IFRS	0.12	0.10	0.38	0.01	0.082	1.340	4.601	0.002	**
Return on Equity	GAS	0.28	0.19	1.29	0.02	0.248	2.415	9.814	0.000	**
	IFRS	0.31	0.23	0.95	0.02	0.228	1.142	3.681	0.025	*
EBIT to Invested Capital	GAS	0.11	0.10	0.24	-0.01	0.060	0.381	2.820	0.673	n.s.
	IFRS	0.13	0.11	0.37	0.02	0.078	1.456	4.840	0.000	**
EBITDA Margin	GAS	0.53	0.18	8.22	0.02	1.445	5.105	27.722	0.000	**
	IFRS	0.49	0.25	5.14	0.02	0.930	4.256	21.548	0.000	**
Net Profit Margin	GAS	0.33	0.12	4.36	0.01	0.770	4.875	26.065	0.000	**
	IFRS	0.47	0.19	6.75	0.01	1.205	4.810	25.532	0.000	**
Gross Profit Margin	GAS	0.39	0.37	0.89	0.06	0.187	0.591	3.224	0.392	n.s.
	IFRS	0.46	0.40	1.28	0.06	0.284	1.186	4.063	0.013	*
Operating Expenses Ratio	GAS	0.23	0.21	0.77	0.02	0.166	1.334	5.119	0.001	**
	IFRS	0.22	0.20	0.76	0.02	0.159	1.430	5.613	0.000	**
Owner's Equity Turnover Ratio	GAS	2.98	1.71	14.54	0.06	3.503	1.829	5.757	0.000	**
	IFRS	2.72	1.65	14.32	0.03	3.188	2.210	7.651	0.000	**

Note: "Max" is maximum, "Min" is minimum, "SD" is standard deviation, "Skew" is skewness, "Kurt" is kurtosis, "J-B" is p-value of the Jarque-Berra test
Null hypothesis: differences follow a normal distribution.
** null hypothesis rejected at the 1% level of confidence.
* null hypothesis rejected at the 5% level of confidence.
n.s.: null hypothesis not rejected significantly.

Then, in Table 6 *t*-test (parametrical test) and Wilcoxon test (non-parametrical test) are applied to the two dependent samples. The first two columns present the means of the two samples (from Tables4 and 5). The next four columns show the probability (p) that the variable *t* of *t*-test obtains a value as large as the critical value t_{cr}. The p-value is greater than 0,05(p> 0,05) in the majority of the ratios' means and therefore $H_0$is not rejected in both of the two samples (First sample: listed companiessince2004, Second sample: listed companies after 2004-new listed companies).

TABLE 6		**t-test**						**Wilcoxon test**					
		Means		**p-value**				**Medians**		**p-value**			
RATIO	**AS**	**<2004**	**≥2004**	**<2004**		**≥2004**		**<2004**	**≥2004**	**<2004**		**≥2004**	
LIQUIDITY													
Current Ratio	GAS	1.77	1.58	0,746	n.s	0,479	n.s	1.53	1.39	0,975	n.s	1,000	n.s
	IFRS	1.72	1.85					1.49	1.46				
Quick Ratio	GAS	1.41	1.34	0,786	n.s	0,432	n.s	1.21	1.02	0,378	n.s	0,697	n.s
	IFRS	1.36	1.64					1.16	1.17				
LEVERAGE													
Debt Ratio	GAS	0.49	0.53	0.014	*	0,181	n.s	0.51	0.55	0,012	*	0,218	n.s.
	IFRS	0.52	0.56					0.57	0.60				
Equity Ratio	GAS	0.49	0.46	0,584	n.s	0,497	n.s	0.47	0.43	0,298	n.s.	0,588	n.s.
	IFRS	0.48	0.45					0.43	0.41				
Equity to Debt	GAS	1.67	1.58	0,691	n.s	0,388	n.s	0.96	0.80	0,088	n.s.	0,617	n.s.
	IFRS	1.78	2.98					0.76	0.66				
ACTIVITY													
Asset Turnover	GAS	0.84	1.13	0,002	**	0,134	n.s.	0.69	0.72	0,002	**	0,043	*
	IFRS	0.76	1.07					0.67	0.62				
Fixed Assets Turnover	GAS	3.63	7.01	0,029	*	0,028	*	2.35	3.57	0,000	**	0,004	**
	IFRS	2.34	5.39					1.71	1.44				
Return on Asset	GAS	0.06	0.12	0,774	n.s	0,726	n.s	0.05	0.08	0,587	n.s.	0,241	n.s.
	IFRS	0.06	0.12					0.05	0.10				
Return on Equit	GAS	0.12	0.28	0,129	n.s	0,534	n.s	0.10	0.19	0,465	n.s.	0,431	n.s.
	IFRS	0.07	0.31					0.09	0.23				

	y													
	EBIT to Invested Capital	GAS	0.07	0.11	0,441	n.s	0,203	n.s	0.08	0.10	0,702	n.s.	0,226	n.s.
		IFRS	0.07	0.13					0.06	0.11				
	EBITDA Margin	GAS	0.18	0.53	0,411	n.s.	0,769	n.s.	0.15	0.18	0,297	n.s.	0,211	n.s.
		IFRS	0.28	0.49					0.13	0.25				
	Net Profit Margin	GAS	0.11	0.33	0,348	n.s.	0,091	n.s.	0.08	0.12	0,500	n.s.	0,007	**
		IFRS	0.20	0.47					0.08	0.19				
	Gross Profit Margin	GAS	0.30	0.39	0,299	n.s.	0,046	*	0.22	0.37	0,090	n.s.	0,034	*
		IFRS	0.31	0.46					0.23	0.40				
	Operating Expenses Ratio	GAS	0.19	0.23	0,257	n.s.	0,241	n.s.	0.15	0.21	0,304	n.s.	0,087	n.s.
		IFRS	0.20	0.22					0.14	0.20				
	Owner's Equity Turnover Ratio	GAS	2.57	2.98	0,717	n.s.	0,147	n.s.	1.37	1.71	0,123	n.s.	0,088	n.s.
		IFRS	2.43	2.72					1.60	1.65				

Note: "AS" is Accounting Standards

Null hypothesis: means/medians are equal.

** null hypothesis rejected at the 1% level of confidence.

* null hypothesis rejected at the 5% level of confidence.

n.s.: null hypothesis not rejected significantly.

No significant differences were found for the majority of ratios with the exception of:

1. Debt Ratio (Leverage) at the 5% confidence level
2. Asset Turnover (Activity) at the 1% confidence level
3. Fixed Assets Turnover (Activity) at the 5% confidence level

For the first sample and for the second sample,

1. Fixed Assets Turnover (Activity) at the 5% confidence level
2. Gross Profit Margin(Activity) at the 5% confidence level

In the next columns the results of the Wilcoxon test are presented. The first two columns of the test present the values of the medians. The following columns show the probability (p) of getting a result as extreme as the sample variable Z of Wilcoxon if hull hypothesis is true. The p-value is greater than0,05 (p> 0,05)in the majority of ratio medians and thus H_0 is not rejected(Wilcoxon, 1945).No significant differences were found for the majority of the ratios with the exception of:

1. Debt Ratio (Leverage, at the 5% confidence level)
2. Asset Turnover (Activity, at the 1% confidence level)
3. Fixed Assets Turnover (Activity, at the 1% confidence level)

For the first sample and

1. Asset Turnover (Activity, at the 5% confidence level)
2. Fixed Assets Turnover (Activity, at the 1% confidence level)
3. Net Profit Margin(Activity, at the 1% confidence level)
4. Gross Profit Margin(Activity, at the 5% confidence level)

For the second sample

The results of the non-parametrical test are almost the same with the parametrical test and suggest that the change from GAS to IFRS is not statistically significant regarding financial ratio in both samples.

Next, we verify the existence of a significant difference in the behavior of two independent samples of companies. In Table 7,*t*-test (parametrical test) and Mann-Whitney U test (non-parametrical test) are implemented for the two independent samples. The first column presents the means of percentage change ($\text{percentage change} = \frac{(\text{mean in IFRS}) - (\text{mean in GAS})}{\text{mean in GAS}}$) of ratios in the two samples. The next two columns display the probability (p) of getting a result as extreme as the sample variable *t* of *t*-test if hull hypothesis is true. The p-value is greater than 0,05 (p> 0,05) in all of the ratios' means and therefore H_0 is not rejected. No significant differences were found for all ratios.

In the Mann-Whitney U test and in the first column, we present the values of percentage change of the medians ($\text{percentage change} = \frac{(\text{median in IFRS}) - (\text{median in GAS})}{\text{median in GAS}}$).The following columns of the test include the probability(p)of getting a result as extreme as the sample variable Z of Wilcoxon if hull hypothesis is true_r. The p-value is greater than0,05 (p> 0,05)in all of ratio medians and thereforeH_0 is not rejected (Mann & Whitney, 1947).No significant differences were found for all ratios.

The results of the non-parametrical test are exactly the same with the parametrical test and suggest that there is not statistically significant differentiation between the financial ratios of the two companies' samples.

TABLE 7		***t*-test**			**Mann-Whitney test**		
RATIO	**Samples**	**Means**	**p-value**		**Medians**	**p-value**	
LIQUIDITY							
Current Ratio	1st	0,01	0,250	n.s.	-0,01	0,972	n.s.
	2nd	0,54			0,00		
Quick Ratio	1st	0,04	0,256	n.s.	0,03	0,508	n.s.
	2nd	0,56			0,01		
LEVERAGE							
Debt Ratio	1st	0,08	0,888	n.s.	0,06	0,406	n.s.
	2nd	0,07			0,02		
Equity Ratio	1st	0,01	0,911	n.s.	-0,05	0,805	n.s.
	2nd	0,02			0,00		
Equity to Debt	1st	-0,01	0,412	n.s.	-0,13	0,647	n.s.
	2nd	0,12			-0,04		
ACTIVITY							
Asset Turnover	1st	-0,24	0,250	n.s.	-0,33	0,978	n.s.
	2nd	0,07			-0,38		
Fixed Assets Turnover	1st	-0,21	0,899	n.s.	-0,24	0,383	n.s.
	2nd	-0,20			-0,31		
Return on Asset	1st	0,01	0,656	n.s.	0,00	0,573	n.s.
	2nd	0,25			0,01		
Return on Equity	1st	-0,12	0,568	n.s.	-0,02	0,642	n.s.
	2nd	0,28			0,03		
EBIT to Invested Capital	1st	0,31	0,846	n.s.	0,02	0,994	n.s.
	2nd	0,23			0,04		
EBITDA Margin	1st	0,08	0,840	n.s.	-0,01	0,161	n.s.
	2nd	0,21			0,04		
Net Profit Margin	1st	0,78	0,645	n.s.	0,03	0,324	n.s.
	2nd	0,42			0,10		
Gross Profit Margin	1st	0,07	0,338	n.s.	0,03	0,679	n.s.
	2nd	0,15			0,00		
Operating Expenses Ratio	1st	0,13	0,822	n.s.	-0,01	0,363	n.s.
	2nd	0,19			-0,01		
Owner's Equity Turnover Ratio	1st	-0,01	0,719	n.s.	-0,06	0,778	n.s.
	2nd	0,04			-0,05		

Note: Null hypothesis: means/medians are equal.
** null hypothesis rejected at the 1% level of confidence.
* null hypothesis rejected at the 5% level of confidence.
n.s.: null hypothesis not rejected significantly.

In this part of our analysis we use linear regressions to examine if the IFRS ratios can be explained by the corresponding GAS ratios and to examine the degree of linear correlation between the variables. Here follows the regression model:

$IFRS = \alpha_i + \beta_i GAS + e$

Table 8 shows, by financial ratio, the regression coefficients (intercept, coefficient β GAS), *t* values, significance tests on the regression coefficients (**, *, n.s.: coefficient significant at the 1%, 5% level of confidence, coefficient not significant, respectively), adjusted coefficient of determination (Adj. R2) and the value of Durbin-Watson test.

TABLE 8		**1st SAMPLE**				**2nd SAMPLE**			
Depended variables IFRS		**Intercept**	**β GAS**	**Adj R^2**	**DW**	**Intercept**	**β GAS**	**Adj R^2**	**DW**
LIQUIDITY									
Current Ratio	Coef.	0,863	0,481	0,333	2,217	0,706	0,724	0,073	2,098
	t-stat	3,379**	3,998**			0,968	1,838		
Quick Ratio	Coef.	0,665	0,493	0,377	2,272	0,549	0,815	0,101	2,084
	t-stat	3,161**	4,376**			0,846	2,089*		
LEVERAGE									
Debt Ratio	Coef.	0,064	0,936	0,872	1,874	0,096	0,876	0,649	2,603
	t-stat	1,877	14,361**			1,460	7,515**		
Equity Ratio	Coef.	0,034	0,915	0,849	1,885	0,107	0,741	0,751	2,265
	t-stat	0,914	13,011**			2,708*	9,570**		
Equity to Debt	Coef.	-0,702	1,485	0,918	1,914	-2,789	3,658	0,810	1,993
	t-stat	-3,094**	18,373**			-2,715*	11,347**		
ACTIVITY									
Asset Turnover	Coef.	-0,003	0,909	0,938	1,382	-0,056	1,003	0,981	1,883
	t-stat	-0,062	21,272**			-1,227	39,631**		
Fixed Assets Turnover	Coef.	0,577	0,486	0,461	2,094	-1,207	0,937	0,831	2,441
	t-stat	1,094	5,163**			-1,344	12,204**		
Return on Assets	Coef.	0,001	0,954	0,736	1,991	0,044	0,652	0,604	2,167
	t-stat	0,097	9,209**			3,076**	6,839**		
Return on Equity	Coef.	-0,074	1,213	0,782	1,850	0,174	0,481	0,270	1,805
	t-stat	-2,247*	10,411**			3,345**	3,481**		
EBIT to Invested Capital	Coef.	0,004	0,879	0,641	1,718	0,056	0,652	0,232	1,804
	t-stat	0,315	7,387**			2,119*	3,170**		
EBITDA Margin	Coef.	0,042	1,309	0,046	2,028	0,167	0,621	0,929	2,162

	t-stat	0,222	1,566			3,518**	19,789**		
Net Profit Margin	Coef.	0,072	1,190	0,092	1,977	-0,035	1,547	0,977	1,955
	t-stat	0,616	2,008*			-0,999	35,913**		
Gross Profit Margin	Coef.	0,022	0,954	0,954	1,904	-0,028	1,232	0,644	1,829
	t-stat	1,582	24,870**			-0,383	7,428**		
Operating Expenses Ratio	Coef.	0,022	0,937	0,909	1,692	0,009	0,911	0,908	1,742
	t-stat	1,643	17,385**			0,640	17,245**		
Owner's Equity Turnover Ratio	Coef.	0,248	0,849	0,612	1,984	0,111	0,877	0,926	2,037
	t-stat	0,502	6,946**			0,541	19,426**		

Note: "Adj R2" is adjusted R2, "DW" is Durbin-Watson value (providing a rough check for consistency of regression results, a DW-value close to 0 combined with a high R2 is a symptom of spurious regression).
** coefficient significant at the 1% level of confidence.
* coefficient significant at the 5% level of confidence.
n.s.: coefficient not significant.

The results of the first regression in sample 1 present a strong relationship for all liquidity and leverage ratios, and a strong relationship for the majority of activity ratios (with adjusted-R^2 value bigger than 50% in most of them),except for EBITDA margin ratio (weak model with adjusted-R^2 value lower than 5%).

The results of the second regression in sample 2 present a strong relationship for all liquidity, leverage and activity ratios (with adjusted-R^2 value bigger than 50% in most of them).

Most of the intercepts, in both samples, are not significant and in some cases, in which they are significant, the regression model is not representative enough (adjusted R^2<50%).

Coefficient β GAS for liquidity ratios has a price under one in both samples. Hence, we have to expect lower values for IFRS ratios compared with GAS ratios. For leverage ratios coefficient β GAS ratios have a price under one in both samples in most of the ratios, therefore, we have to expect lower values for IFRS ratios compared with GAS ratios apart from Equity to Debt ratio. Also, for activity ratios, coefficientβGAS ratios have a price under one in both samples in most of the ratios. Thus we have to expect lower values for IFRS ratios compared with GAS ratios in both samples except for Return on Equity, EBITDA margin, Net profit margin ratio in sample 1 and Net profit margin and Gross profit margin ratio in sample 2where we expect higher values for IFRS ratios compared with GAS ratios.

In the next part we use linear regressions to examine if the impact of transition from GAS to IFRS ratios is the same in our two independent samples. A dummy variable(SHIFT)was introduced into the regression model to draw a distinction between the two groups. The regression model follows:

$IFRS = \alpha_i + \beta_i GAS + c_i SHIFT + e$

Table 9 shows, by financial ratio, the regression coefficients (intercept, coefficient β GAS, c SHIFT), *t*- stat, significance tests on the regression coefficients (**, *, n.s.: coefficient significant at the 1%, 5% level of confidence, coefficient not significant, respectively), adjusted coefficient of determination (Adj. R^2) and the value of Durbin-Watson test.

TABLE 9

Depended variables IFRS		Intercepts	β GAS	c SHIFT	Adj R^2	DW
LIQUIDITY						
Current Ratio	Coef.	0,687	0,580	0,247	0,110	2,168
	t-stat	1,561	3,076**	0,607		
Quick Ratio	Coef.	0,489	0,618	0,325	0,140	2,183
	t-stat	1,271	3,387**	0,802		
LEVERAGE						
Debt Ratio	Coef.	0,078	0,907	0,001	0,759	2,406
	t-stat	2,143*	13,825**	0,044		
Equity Ratio	Coef.	0,080	0,820	-0,010	0,795	2,188
	t-stat	2,641*	15,404**	-0,452		
Equity to Debt	Coef.	-2,882	2,790	1,462	0,713	2,023
	t-stat	-3,232**	12,335**	1,280		
ACTIVITY						
Asset Turnover	Coef.	-0,072	0,992	0,029	0,976	1,744
	t-stat	-2,121*	49,715**	0,679		
Fixed Assets Turnover	Coef.	-0,780	0,859	0,117	0,777	2,228
	t-stat	-1,184	14,245**	0,130		
Return on Assets	Coef.	0,014	0,747	0,020	0,688	2,188
	t-stat	1,467	10,505**	1,578		
Return on Equity	Coef.	-0,032	0,864	0,096	0,604	1,974
	t-stat	-0,843	8,540**	1,807		
EBIT to Invested Capital	Coef.	0,012	0,765	0,031	0,487	1,773
	t-stat	0,903	6,425**	2,095*		
EBITDA Margin	Coef.	0,164	0,628	-0,001	0,622	2,076
	t-stat	1,813	9,968**	-0,005		
Net Profit Margin	Coef.	0,036	1,531	-0,066	0,815	1,942
	t-stat	0,483	16,264**	-0,625		
Gross Profit Margin	Coef.	-0,017	1,083	0,048	0,756	1,756
	t-stat	-0,496	12,965**	1,462		
Operating Expenses Ratio	Coef.	0,025	0,924	-0,018	0,909	1,833
	t-stat	2,203*	24,669**	-1,479		
Owner's Equity Turnover Ratio	Coef.	0,208	0,864	-0,058	0,759	2,019
	t-stat	0,629	13,909**	-0,142		

Note: "Adj R^2" is adjusted R^2, "DW" is Durbin-Watson value (providing a rough check for consistency of regression results, a DW-value close to 0 combined with a high R^2 is a symptom of spurious regression).
** coefficient significant at the 1% level of confidence.
*coefficient significant at the 5% level of confidence.
n.s.: coefficient not significant.

The results of multiple regression present no significant impact on the dummy variable "SHIFT" for liquidity, leverage and activity ratios(with adjusted-R^2 value bigger than 50% in most of them), except for EBIT to invested capital (at the 5% level of confidence).

The value of coefficient indicates that there is a significant difference (increase) of EBIT to invested capitalratiosby0,031unitsfrom the first sample to the second sample.

5. Conclusions

According to the results of these tests, it appears that the ratios of the two groups of companies of the two samples behaved in a similar way during the transition from GAS to IFRS. There is no significant effect from the adoption and implementation of IFRS in Greece on the calculation of the financial ratios.

Specifically, to determine more accurately the relationship between the financial ratios of the two accounting standards we applied statistical analysis in all fifteen examined ratios per sample. The results in their majority do not differ significantly. Exceptions for the first sample are the Leverage ratios: Debt Ratio and the Activity ratios: Asset Turnover, Fixed Assets Turnover, Net Profit Margin and Gross Profit Margin. Furthermore, based on regression analysis we demonstrated a strong linear relationship between the ratios of the two different accounting standards in the majority of the two samples, apart from EBITDA margin ratio in the first sample.

As far as the comparison of the two samples of listed and new listed companies, it can be argued that there is not a significant difference in the results found, as well as the application of statistical tests to all ratios that were calculated, did not display any significant difference in its percent age of diversification. Comparable out comes were reached by the application of multiple regression analysis, which displayed that the temporal point of the introduction of a company in AE did not have any significant effect on the diversification of ratios from the transition to IFRS, except for EBIT to invested capital.

We conclude that the particular characteristics of each group of companies were not able to significantly affect the differences in the financial statements of companies after the implementation of IFRS.

References

Ballas, A. (1994) "Accounting in Greece" European Accounting Review, (1): 107 - 121

Ballas, A., Hevas, D. & Neil, D. (1998) "The state of accounting and the state of the state" Journal of Management and Governance, (2): 267-285.

Baralexis, S. (2004) "Creative accounting in small countries: the Greek case"

Bellas, A. Toudas, K. Papadatos, K. (2007) "The consequences of applying International Accounting Standards (IAS) to the financial statements of Greek companies" Lisbon: *European accounting Association*

Blanchette, M. Racicot, F.-E. Girard, J.-Y. (2011)'' The effects of IFRS in Financial Ratio: early evidence in Canada'' *Certified General Accountants Association of Canada*

Callao, S. Ignacio Jarne J. (2010) "Have IFRS Affected Earnings Management in the European Union?" Zaragoza: *Accounting and Finance Department Managerial Auditing Journal*, (19 (3)): 440-461.

Field, A. (2009) Third Edition "Discovering Statistics Using SPSS" *SAGE Publications*

Georgakopoulou, E. Spathis, C. Floropoulos, I. (2007) "The transition phase from Greek GAAP to IFRS: Evidence from the Greek Industrial Sector" Grant Thornton(2006)«IFRS Implementation in Athens Stock Exchange"

Hung, M. Subramanyam, K. (2007) "Financial statement effects of adopting international accounting standards: *the case of Germany" Review of Accounting Studies*

Kontoyannis, D. (2005) "The market sees 'windows' (of opportunities even) in the IFRS", *Eleutherotypia*, 23 April: 26

Lantto, A. Sahlström, P. (2007) "Impact of International Financial Reporting Standard adoption on key financial ratios" *Accounting and Finance* 49 (2009) 341-361

Leuz, C. Nanda, D.J. &Wysocki, P.D. (2003) "Earnings management and investor protection: an international comparison" *Journal of Financial Economics*, (69): 505-527.

Maggina, A. Tsaklanganos, A. (2011) "Market Reaction to IAS / IFRS Evidence from the Athens Stock Exhange" *International Journal of Accounting and Financial Reporting*

Mann, H. Whitney, D. (1947) "On a Test of Whether one of Two Random Variables is Stochastically Larger than the other" *Annals of Mathematical Statistics*

Papas, A. (1993) Group accounting in Greece, in S.J. Gray, A. Coenenberg and P. Gordon, *International group accounting: Issues in European harmonization*, Second Edition, Routledge publications, London, pp. 121-134.

Pazarskis, M. Alexandrakis, A. Notopoulos, P. Kydros, D. (2011) "IFRS Adoption Effects in Greece: Evidence from the IT Sector" *Management of International Business and Economics Systems*

Spathis, C. (2002) "Detecting false financial statements using published data: some evidence from Greece" *Managerial Auditing Journal*

The Association of Chartered Certified Accountants (2012) "Financial Report"

Tsalavoutas, I. Andre, P. Evans, L. (2010) "Transition to IFRS and value relevance in a small but developed market: A look at Greek evidence"

Tsalavoutas, I. Evans, L. (2010)'' Transition to IFRS in Greece: financial statement effects and auditor size'' *Managerial Auditing Journal*

Wilcoxon, F. (1945)'' Individual comparison by ranking methods'' *American Cyanamid Co*.

Appendix

Table 1	
Ratio Analysis	
Liquidity	
Current Ratio	Currents assets / Current liabilities
Quick Ratio	(Currents assets-Inventories) / Current liabilities
Leverage	
Debt Ratio	Total liabilities / Total assets
Equity Ratio	Shareholders' equity / Total assets
Equity to Debt	Shareholders' equity / Total liabilities
Activity	
Asset Turnover	Net sales / Total assets
Fixed Assets Turnover	Net sales / Fixed assets
Return on Asset	Net profit / Total assets
Return on Equity	Net profit / Equity
EBIT to Invested Capital	EBIT / (Total liabilities + Equity)
EBITDA Margin	EBITDA / Net sales
Net Profit Margin	Net profit / Net sales
Gross Profit Margin	Gross profit / Net sales
Operating Expenses Ratio	Operating expenses / Net sales
Owner's Equity Turnover Ratio	Net sales / Equity

Table 2		
Sectors	**Firm's number**	**Firm's number %**
Retail	4	12,90%
Basic Resources	3	9,68%
Technology	6	19,35%
Oil & Gas	1	3,23%
Construction & Materials	2	6,45%
Real Estate	4	12,90%
Health Care	3	9,68%
Media	1	3,23%
Travel & Leisure	1	3,23%
Personal & Household Goods	1	3,23%
Utilities	1	3,23%
Food & Beverage	2	6,45%
Industrial Goods & Services	2	6,45%
Sum	**31**	**100,00%**

TABLE 3	Listed year	Companies
1st Sample: Listed Companies since 2004	<2004	EUROMEDICA S.A.
	<2004	ATLANTIC SUPER MARKET S.A.
	<2004	SFAKIANAKIS S.A.
	<2004	LOGISMOS INFORMATION SYSTEMS S.A.
	<2004	MEDICON HELLAS S.A
	<2004	MEVACO S.A.
	<2004	ATHENA S.A.
	<2004	KORDELLOS CH. BROS S.A.
	<2004	GALAXIDI FISH FARMING S.A.
	<2004	IKONA - IHOS S.A.
	<2004	THESSALONIKI WATER AND SEWAGE COMPANY SA
	<2004	FORTHNET S.A.
	<2004	ALTEC HOLDINGS S.A. IT AND COMMUNICATION SYSTEMS
	<2004	INTERTECH S.A. INTER. TECHNOLOGIES
	<2004	BYTE COMPUTER S.A.
	<2004	M. J. MAILLIS S.A.
	<2004	LAMDA DEVELOPMENT S.A.
	<2004	MARAC ELECTRONICS
	<2004	GEKE S.A.
	<2004	ELVIEMEK LAND DEVELOPMENT - LOGISTICS PARKS - ENERGY - RECYCLING S.A.
	<2004	MOTOR OIL (HELLAS) CORINTH REFINERIES SA
	<2004	IASO S.A.
	<2004	BABIS VOVOS INTERNATIONAL TECHNICAL S.A.
	<2004	FLOUR MILLS KEPENOS S.A.
	<2004	ALPHA ASTIKA AKINITA S.A.
	<2004	RILKEN S.A.
	<2004	SHELMAN SWISSHELLENIC WOOD PROD. MANUF. S.A.
	<2004	SIDENOR S.A.
	<2004	AS COMPANY S.A.
	<2004	PIPE WORKS L. GIRAKIAN PROFIL S.A
	<2004	X. K. TEGOPOULOS EDITIONS SA
2nd Sample: New Listed Companies	2004	SPRIDER STORES S.A
	2004	MERMEREN KOMBINAT A.D. PRILEP
	2004	ALPHA GRISSIN S.A.
	2004	DELTA PROJECT SA
	2004	ELINOIL S.A
	2004	I. KLOUKINAS - I. LAPPAS S.A.CONSTR. AND COM.COMP.
	2004	ILYDA SA
	2004	REVOIL S.A.
	2005	TRASTOR REAL ESTATE INVESTMENT COMPANY
	2005	EBIK SA
	2005	CARS MOTORCYCLES AND MARINE ENGINE TRADE AND IMPORT COMPANY S.A
	2005	AUDIO VISUAL ENTERPRISES S.A.
	2005	SIDMA S.A. STEEL PRODUCTS
	2006	EUROBANK PROPERTIES REIC
	2007	TERNA ENERGY S.A.
	2007	AEGEAN AIRLINES S.A.
	2007	KORRES NATURAL PRODUCTS
	2008	PASAL REAL ESTATE DEVELOPMENT S.A.
	2008	ENVITEC S.A. - TECHNICAL & ENVIRONMENTAL PROJECTS

	2008	ENTERSOFT S.A.
	2008	MEDITERRA S.A.
	2008	EPSILON NET S.A.
	2009	KRITON ARTOS S.A.
	2008	DOPPLER S.A.
	2009	MIG REAL ESTATE R.E.I.C.
	2008	PERFORMANCE TECHNOLOGIES A.E.
	2009	BIOMEDICAL AND ROBOTICS TECHNOLOGY S.A.
	2009	FOODLINK S.A.
	2008	OPTRONICS TECHNOLOGIES S.A.
	2010	VIDAVO S.A
	2010	DIVERSA S.A.