HAS THE GREEK CRISIS AFFECTED THE RETURN-VOLATILITY RELATION IN THE STOCK MARKET?

by

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ABSTRACT

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This thesis is trying to research if the Greek Crisis affected the return-volatility relation in the stock market. Using a multiple regression between the stocks' returns, the market's return and the stocks' volatilities, this thesis investigates if there is any linear relation between the above variables. For such a reason, there were used the stock returns of the 24 biggest companies of the Athens Stock Exchange Market, which constitute the FTSE/Athex Large Cap index. The historic data cover a period of 22 years, beginning from January 1998 until August 2019. In order to conclude if the Greek Crisis affected the return-volatility relation in the stock market, the sample was processed in the whole period, as well as in two smaller periods with the emergence of the Greek Crisis to be the critical point. It is concluded that the values of the beta coefficients of the Market Return and the coefficient factors of Volatility are statistically significant, which means that indeed the Market is affected from both factors and specific conclusions can be made. It is also concluded that the Market is affected more from the beta coefficients of the Market Returns (β), than the coefficient factors of the Volatility (γ). Finally, from the assessment of the Chow tests, it is concluded that these variables in most of the stocks can be studied in the whole period, since the Greek Crisis, which is the breakpoint, does not divide the sample, as the return-volatility relation is not affected.

ACKNOWLEDGEMENTS

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Introduction

The current thesis researches if the Greek Crisis affected the return-volatility relation in the stock market. For such a reason, there were used the stock returns of the 24 biggest companies of the Athens Stock Exchange Market, which constitute the FTSE/Athex Large Cap index. The historic data cover a period of 22 years, beginning from January 1998 until August 2019. The main model that was used is:

Return of stock (i) = α + β (Market Return) + γ (Volatility of stock i)

The goal is to find the relation (γ) between return and volatility.

For each stock, there were calculated the daily returns. Using them, there were calculated the monthly volatilities, using the standard deviation as a measure of volatility. Therefore, it was created a monthly series of monthly stock returns (calculated from the beginning to the end of the month) and monthly volatilities (monthly standard deviations) for each stock i. As a market return is used the return of the Athens Stock Exchange, using two indices each time, the FTSE/Large Cap and the Composite Index.

Then, for each stock i, a multiple regression it was run, in order to estimate the parameters α, β, γ, from the main model. **The thesis is separated in two parts:**

I. In the first part, there were run three regressions according to the model, using the stock returns, the stock volatilities and the market return, using the FTSE/Large Cap, for three periods:
    a. The whole period between 1/1/1998 until 31/8/2019
    b. Separately for the period before the Greek Crisis and after the Greek Crisis
        i. Period between 1/1/1998 until 31/10/2009
        ii. Period between 1/11/2009 until 31/8/2009

Thereafter, the coefficients are being compared using the t-Statistic and the R-Squared. As a final step, two statistical tests are being made. It is used the Chow test, with breakpoint the beginning of the Greek Crisis (11/2009):
    • For all the coefficients (Market Return and Volatility)
    • For the coefficients of Volatility

II. In the second part, there were run three regressions according to the model, using the stock returns, the stock volatilities and the market return, using the Composite Index, for three periods:
    a. The whole period between 1/1/1998 until 31/8/2019
    b. Separately for the period before the Greek Crisis and after the Greek Crisis
        i. Period between 1/1/1998 until 31/10/2009
        ii. Period between 1/11/2009 until 31/8/2009

Thereafter, the coefficients are being compared using the t-Statistic and the R-Squared. As a final step, two statistical tests are being made. It is used the Chow test, with breakpoint the beginning of the Greek Crisis (11/2009):

- For all the coefficients (Market Return and Volatility)
- For the coefficients of Volatility

It is important to be noted, that the Composite Index represents the Market and the FTSE represents only the 25 biggest companies of the Athens Stock Exchange Market. The reason to use FTSE also as the Market is in order to compare the results with the Composite Index and define any deviations.

Finally, the coefficients are compared, concluding if the return-volatility relation in the stock market was affected or not from the Greek Crisis.

Chapter 1 - Theory

1.1 The Linear Regression

In statistical modeling, regression analysis is a set of statistical processes for estimating the relationships between a dependent variable and one or more independent variables. The most common form of regression analysis is linear regression, in which a researcher finds the line (or a more complex linear combination) that most closely fits the data according to a specific mathematical criterion. Regression analysis is primarily used for two conceptually distinct purposes. Firstly, is widely used for prediction and forecasting, where its use has substantial overlap with the field of machine learning. Secondly, in some situations, regression analysis can be used to infer causal relationships between the independent and dependent variables.

The case of one explanatory variable is called simple linear regression. For more than one explanatory variable, the process is called multiple linear regression. This term is distinct from multivariate linear regression, where multiple correlated dependent variables are predicted, rather than a single scalar variable.

In linear regression, the relationships are modeled using linear predictor functions whose unknown model parameters are estimated from the data. Such models are called linear models. Most commonly, the conditional mean of the response given the values of the explanatory variables is assumed to be an affine function of those values; less commonly, the conditional median or some other quantile is used. Like all forms of regression analysis, linear regression focuses on the conditional probability distribution of the response given the values of the predictors, rather than on the joint probability distribution of all of these variables, which is the domain of multivariate analysis.

Linear regression models are often fitted using the least squares approach

1.2 The Linear Least Squares

The Linear Least Squares (LLS) is the least squares approximation of linear functions to data. It is a set of formulations for solving statistical problems involved in linear regression, including variants for unweighted, weighted and correlated residuals. Numerical methods for linear least squares include inverting the matrix of the normal equations and orthogonal decomposition methods.

One of the main linear least squares formulations is Ordinary Least Squares (OLS), which is the most common estimator. OLS estimates are commonly used to analyze both experimental and observational data. The OLS method minimizes the sum of squared residuals, and leads to a closed-form expression for the estimated value of the unknown parameter vector β:

$$\hat{\beta} = (X^T X)^{-1} X^T y$$

where y is a vector whose $i\theta$ element is the observation of the $i\theta$ dependent variable, and X is a matrix whose ij element is the $i\theta$ observation of the $j\theta$ independent variable. (Note: is the Moore–Penrose inverse.) The estimator is unbiased and consistent if the errors have finite variance and are uncorrelated with the regressors:

$$E[x_i \varepsilon_i] = 0$$

where x_i is the transpose of row i of the matrix X.

It is also efficient under the assumption that the errors have finite variance and are homoscedastic, meaning that $E[\varepsilon_i^2|\mathbf{x}_i]$ does not depend on i. The condition that the errors are uncorrelated with the regressors will generally be satisfied in an experiment, but in the case of observational data, it is difficult to exclude the possibility of an omitted covariate z that is related to both the observed covariates and the response variable. The existence of such a covariate will generally lead to a correlation between the regressors and the response variable, and hence to an inconsistent estimator of β. The condition of homoscedasticity can fail with either experimental or observational data. If the goal is either inference or predictive modeling, the performance of OLS estimates can be poor if multicollinearity is present, unless the sample size is large.

1.3 The Standardized Regression Coefficients (Beta Coefficients)

The standardized regression coefficients or beta coefficients, are the estimates resulting from a regression analysis that have been standardized so that the variances of dependent and independent variables are 1. Therefore, the standardized coefficients refer to how many standard deviations a dependent variable will change, per standard deviation increase in the predictor variable. For a simple linear regression with orthogonal predictors, the standardized regression coefficient equals the correlation between the independent and dependent variables.

A beta coefficient will equal the correlation coefficient when there is a single predictor variable. β can be larger than +1 or smaller than -1 if there are multiple predictor variables and multicollinearity is present.

Standardization of the coefficient is usually done to answer the question of which of the independent variables have a greater effect on the dependent variable in a multiple regression analysis, when the variables are measured in different units of measurement.

A regression carried out on unstandardized variables produces unstandardized coefficients. A regression carried out on standardized variables produces standardized coefficients. Values for standardized and unstandardized coefficients can also be derived subsequent to either type of analysis.

1.4 The t-Statistic

The t-Statistic is the ratio of the departure of the estimated value of a parameter from its hypothesized value to its standard error. It is used in hypothesis testing via Student's t-test. The t-Statistic is used in a T test to determine if you should support or reject the null hypothesis. The t-Statistic is used when you either have a small sample size or if you don't know the population standard deviation. It is also used in estimating the population mean from a sampling distribution of sample means if the population standard deviation is unknown. It is also used along with p-value when running hypothesis test where the p-value tells us what the odds are of the results to have happened.

Let be an estimator of parameter β in some statistical model. Then a t-statistic for this parameter is any quantity of the form:

$$t_{\hat{\beta}} = \frac{\hat{\beta} - \beta_0}{s.e.(\hat{\beta})}$$

where β_0 is a non-random, known constant which may or may not match the actual unknown parameter value β, and is the standard error of the estimator for β.

By default, statistical packages report t-statistic with $\beta_0 = 0$. When t-statistic is needed to test the hypothesis of the form H_0: $\beta = \beta_0$, then a non-zero β_0 may be used.

If is an ordinary least squares estimator in the classical linear regression model (that is, with normally distributed and homoscedastic error terms), and if the true value of the parameter β is equal to β_0, then the sampling distribution of the t-statistic is the Student's t-distribution with $(n - k)$ degrees of freedom, where n is the number of observations, and k is the number of regressors (including the intercept).

In the majority of models, the estimator is consistent for β and is distributed asymptotically normally. If the true value of the parameter β is equal to β_0 and the quantity correctly estimates the asymptotic variance of this estimator, then the t-statistic will asymptotically have the standard normal distribution.

1.5 The Coefficient of Determination (R-Squared)

The coefficient of determination or R-Squared is a statistical measure that represents the proportion of the variance for a dependent variable that's explained by an independent variable or variables in a regression model. R-Squared explains to what extent the variance of one variable explains the variance of the second variable. So, if the R^2 of a model is 0.50, then approximately half of the observed variation can be explained by the model's inputs.

In a general form, R^2 can be seen to be related to the fraction of variance unexplained (FVU), since the second term compares the unexplained variance (variance of the model's errors) with the total variance (of the data):

$$R^2 = 1 - FVU = 1 - \frac{Unexplained\ Variation}{Total\ Variation}$$

R-squared values range from 0 to 1 and are commonly stated as percentages from 0% to 100%. An R-Squared of 100% means that all movements of a security (or another dependent variable) are completely explained by movements in the index (or the independent variables).

Chapter 2 - Data

The data used were downloaded from the global financial and macroeconomic platform, Datastream. Datastream has an embedded time series data retrieval service that provides historical data for a variety of securities markets worldwide, such as equities, stock market indices, currencies, company fundamentals, fixed income securities, bonds, derivatives, corporate financial data etc. This database is updated daily for over 100,00 equities in more than 175 countries worldwide.

The initial database that was downloaded had the daily stock prices from the beginning for the 24 bigger companies that constitute the FTSE/Large Cap of the Athens Stock Exchange Market. These companies (along with their sector) are:

1) Aegean Airlines (Transportation)
2) Alpha Bank (Financial Services)
3) Cenergy (Construction/Energy)
4) Coca Cola (Food)
5) Ellaktor (Construction/Energy)
6) Eurobank (Financial Services)
7) Fourlis (Retail)
8) GEK Terna (Construction/Energy)
9) Sarantis (Retail)
10) Hellenic Exchanges
11) Hellenic Petroleum (Energy)
12) Hellenic Telecom Organization (Telecommunications)
13) Independent Power Transmission Operator (Construction/Energy)
14) Jumbo (Retail)
15) Lamda Development (Construction)
16) Motor Oil (Energy)
17) Mytilineos (Conglomerate)
18) National Bank of Greece (Financial Services)
19) OPAP (Gambling)
20) Piraeus Port Authority (Property Management)
21) Public Power Corporation (Energy)
22) Terna Energy (Construction/Energy)
23) Titan Cement (Cement & Building Materials)
24) Viochalco (Metals & Manufacturing)

Using these data, there were created three tables:

- The daily stock returns for each company from 1/1/1998 until 30/9/2019.
- The monthly volatility for each stock, that was calculated by the daily stock returns (As a measure of volatility it is used the standard deviation) from 1/1/1998 until 30/9/2019.

- The monthly stock returns (calculated from the beginning to the end of each month) and monthly volatility (standard deviations for each stock i) from 1/1/1998 until 30/9/2019.

The final table was used in order to run two multiple regressions with the use of EViews. EViews is a statistical software, that provides specialized analysis for statistics and econometrics. The detailed methodology that was followed, is described in Chapter 3.

Chapter 3 - Methodology

For the aforementioned 24 companies, the relevant stock quotes were obtained from the DataStream database and then, using the Microsoft Office Excel software, the stock returns over time were found. So, for each share and at any given time, the yield was calculated as follows:

$$R_{i,t} = \frac{P_t - P_{t-1}}{P_{t-1}} \quad (1)$$

where,

$R_{i,t}$: Excess return for the share i at the time t

P_t: Price at the time t for the share i

P_{t-1}: Price at the time t-1 for the share i

At this point, it is important to mention that the return on equity is the sum of the goodwill and the dividend yield. Therefore, relation (1) is reconfigured to include the dividend yield D for each year t that it was distributed to investors:

$$R_{i,t} = \frac{P_t - P_{t-1} + D_t}{P_{t-1}} \quad (2)$$

Having calculated each stock's return, the next step is to define how the volatility is calculated. The volatility is measured by the standard deviation between the daily returns of each stock i with the market return, which is represented by the FTSE/Large Cap in the first part and by the Composite Index in the second part.

The next step is to interpret mathematically the relation of the variables, which is:

$$R_{i,t} = a + \beta(R_{M,t}) + \gamma(Volatility_{i,t}) \ (3)$$

where,

$R_{i,t}$: Is the stocks' return of every stock i at the time t

$R_{M,t}$: Is the market return

Volatility: Is the volatility for each stock i , at the time t

α: Is the constant term

β: Is the beta coefficient of the market's return

γ: Is the beta coefficient of the volatility

The goal is to calculate α, β, γ by using an OLS regression, in order to investigate how these terms are affecting first expression of the equation (3), which is the stock return. The mathematic equation of the beta β coefficient is:

$$Beta\ coefficient\ (\beta) = \frac{Covariance(R_i, R_M)}{Variance(R_M)}$$

Covariance explain how changes in a stock's returns are related to changes in the market's return and Variance explain how far the market's data points spread out from their average value.

The mathematic equation for the beta γ coefficient is the same as for the beta β coefficient, with the difference that instead of R_M it is the $Volatility_i$.

The betas α, β, γ are calculated using the OLS method in the multiple regression.

As a next step, it is used the t-Statistic and the Coefficient of Determination (R-Squared). t-Statistic is used as a measure that indicates if the FTSE/Large Cap or the Composite Index and the Volatility have statistical significance. R-Squared indicates the proportion of the variance for the stock return, which is a dependent variable, that is explained by the market return and the volatility, which are the independent variables of the equation (3).

In order to conclude if the stock's volatility can interpret the market, then:

➢ The volatility has to be statistically significant, which means that t-Statistic has to be bigger than t-critical (1.96, as the sample has more than 30 observations)

➢ The stock return has to be explained by the market return and the stock volatility, which means that R-Squared has to have big values.

The final step is to statistically test if the coefficients have changed during the Greek Crisis. The statistical test that is used is the Chow test and is applied between the two subperiods, using as breakpoint the beginning of the Greek Crisis (11/2009):

i. Period between 1/1/1998 until 31/10/2009
ii. Period between 1/11/2009 until 31/8/2009

For each subperiod there are applied two Chow tests:

- Chow test for all the coefficients (Market Return and Volatility)
- Chow test for the coefficients of Volatility

As it was referred in previous Chapters, the above methodology is applied in three different time durations, using different index for the market return each time (FTSE/Large Cap and Composite Index). The reason to do this is in order to investigate if the results are different in the whole period and the 2 periods separated by the Greek Crisis or not.

Therefore, the aforementioned measures will be compared in order to prove if these variables interpret the Market and the Crises occurred in it.

Chapter 4 – Results

4.1 Part I – FTSE/Large Cap as Market Return

In the first part, it is used the FTSE/Large Cap as the market return. The multiple regression was run between the monthly series of the stock returns and volatilities. The results are:

Table 1 -Beta Coefficients α (C), β (Market Return-FTSE) and γ (Volatility) along for the period 1/1998-8/2019. With green color are indicated the values that are statistically significant according to t-Statistic (Table 3). The orange column includes the R-Squared.

Stocks	Listed from	Period 1/1998 - 8/2019			
		FTSE	Volatility	c	R-squared
Aegean	Jul-07	0.325135	0.048151	-0.000666	0.180803
Alpha Bank	Jan-88	1.506152	0.045151	-0.001159	0.621277
Cenergy	Dec-16	0.040284	0.021237	-0.000097	0.016827
Coca Cola	Jul-91	0.516394	-0.004279	0.000542	0.329549
Ellaktor	Apr-94	0.038755	0.982156	-0.000327	0.433109
Eurobank	Jan-88	1.382041	0.019704	-0.000928	0.374159
Fourlis	Apr-88	1.083281	0.087122	-0.001245	0.366232
Gek Terna	Feb-88	-0.626633	0.195652	0.024597	0.054121
Sarantis	Jul-94	0.684528	-0.016567	0.000921	0.343108
ATHEX	Aug-00	0.791126	0.052507	-0.000853	0.390638
HELPE	Jul-98	0.557539	0.047045	-0.000580	0.270792
OTE	Apr-96	0.791363	0.036244	-0.000477	0.467765
IPTO	Jun-17	0.031798	0.008368	-0.000114	0.022190
Jumbo	Jun-97	0.630790	0.042090	0.000306	0.267729
Lamda	Nov-95	0.737013	0.114706	-0.001667	0.225148
Motor Oil	Aug-01	0.466077	0.005729	0.000268	0.289502
Mytilineos	Aug-95	1.000205	0.033654	2,00E-05	0.479285
NBG	Jan-88	1.604923	-0.036037	0.000585	0.510691
OPAP	Apr-01	0.481101	-0.012528	0.000603	0.275729
PPA	Aug-03	0.463737	0.039213	-0.000282	0.214555
PPC	Dec-01	0.671081	0.014170	-0.000019	0.268827
Terna Energy	Nov-07	0.566137	0.022084	-0.000159	0.284286
Titan	Jul-19	0.000802	0.001778	-0.000034	0.010401
Viochalco	Nov-13	0.196774	-0.014078	0.000381	0.066033

From table 1, it is observed that most of the beta coefficients are positive, which means that these stocks follow the market. According to beta coefficient of Market Return (β), most of these factors are near to 1, which means that the relevant stocks are much connected with the market. Only one stock has negative β factor, GEK Terna.

On the other hand, it is observed that the coefficient factor of volatility (γ), is very small (2nd decimal digit) for almost all the stocks, except Ellaktor, Lamda Development and GEK Terna, which means that these factors affect these stocks.

Finally, the stable term (α) shows where the regression's line is tangent with the axis y'y. In this analysis, it does not give any conclusion.

From table 3, it is observed that almost all the stocks, their returns and their volatilities are statistically significant and can contribute in the current analysis.

From table 5 it is observed that R-Squared is less during the second period, compared with the first one, in most cases.

Table 2 - Beta Coefficients α (C), β (Market Return-FTSE) and γ (Volatility) for the periods 1/1998-10/2009 and 11/2009-8/2019. With green color are indicated the values that are statistically significant according to t-Statistic (Table 4). The orange columns include the R-Squared for each period.

Stocks	Listed from	Period 1/1998 - 10/2009				Period 11/2009-8/2019			
		FTSE	Volatility	c	R-squared	FTSE	Volatility	c	R-squared
Aegean	Jul-07	0.162408	-0.003910	-0.000201	0.116768	0.506591	0.061092	-0.000570	0.261729
Alpha Bank	Jan-88	1.176726	0,022780	-0,000343	0.818515	1.866063	0.075197	-0.002426	0.602429
Cenergy	Dec-16	0.000000	0.000000	0.000000	N/A	0.087761	0.011116	0.000312	0.024039
Coca Cola	Jul-91	0.709374	0.000381	0.000181	0.442443	0.307671	-0.023797	0.001112	0.215877
Ellaktor	Apr-94	0.793522	0.111574	-0.001772	0.307584	1.177717	-0.009990	0.001109	0.620538
Eurobank	Jan-88	0.805967	0.143972	-0.002296	0.312561	1.975399	0.036789	-0.002377	0.494497
Fourlis	Apr-88	0.987741	0.065810	-0.000548	0.268724	1.179859	0.109432	-0.002005	0.510449
Gek Terna	Feb-88	-0.437289	0.201804	0.023227	0.059104	-0.813243	0.218270	0.026065	0.056090
Sarantis	Jul-94	0.872189	-0.034390	0.000823	0.422583	0.492011	-0.020321	0.001410	0.273255
ATHEX	Aug-00	0.692228	0.049395	-0.000922	0.282430	0.901560	0.042637	-0.000372	0.540500
HELPE	Jul-98	0.567257	0.142575	-0.002469	0.279016	0.517088	-0.066724	0.002085	0.344354
OTE	Apr-96	0.636655	-0.009510	0.000061	0.486697	0.976948	0.051504	-0.000357	0.499044
IPTO	Jun-17	0.000000	0.000000	0.000000	N/A	0.069710	0.022098	-0.000333	0.049472
Jumbo	Jun-97	0.594696	0.072138	-0.000094	0.200017	0.650369	0.001307	0.000976	0.401545
Lamda	Nov-95	0.682358	0.204270	-0.003453	0.186212	0.759543	0.017120	0.000463	0.381572
Motor Oil	Aug-01	0.304353	-0.065245	0.001055	0.181392	0.646263	0.018473	0.000467	0.453284
Mytilineos	Aug-95	1.058936	0.047364	-0.000557	0.416729	0.939377	0.012583	0.000803	0.621464
NBG	Jan-88	1.336048	0.030325	-0.000257	0.912923	1.894346	-0.033532	0.000167	0.423791
OPAP	Apr-01	0.288232	0.024448	0.000022	0.144462	0.698761	-0.026119	0.001093	0.425017
PPA	Aug-03	0.284740	0.050083	-0.000488	0.100868	0.665169	0.034464	0.000024	0.374033
PPC	Dec-01	0.209778	-0.055460	0.000991	0.111888	1.174425	0.029594	0.000052	0.466001
Terna Energy	Nov-07	0.171679	-0.012340	0.000002	0.080430	1.002040	0.007073	0.000874	0.527948
Titan	Jul-19	0.000000	0.000000	0.000000	N/A	0.001840	0.004428	-0.000089	0.032632
Viochalco	Nov-13	0.000000	0.000000	0.000000	N/A	0.418305	-0.066602	0.002029	0.153028

From table 2, it is observed that many stocks had stronger relation with the market during the first period, while in the second it seems that this relation weakened. This is mostly observed in the banking sector, so it is concluded that the banking sector do not affect the market in the same way as before the crisis. Of course, this does not mean that the banking sector lost its previous status, but it does not have the same size as before.

From table 4, there is the same observation, as in table 3, but it is also observed that in the second period there are less volatilities that are significant, compared with the first period.

From table 5 it is observed that R-Squared is less during the second period, compared with the first one, in most cases.

Table 3 - t-Statistic for the period 1/1998-8/2019

Stocks	Listed from	Period 1/1998 - 8/2019		
		FTSE	Volatility	c
Aegean	Jul-07	7.464673	2.184403	-1.577440
Alpha Bank	Jan-88	20.526110	2.188482	-1.791188
Cenergy	Dec-16	1.650794	1.477096	-0.396958
Coca Cola	Jul-91	11.059690	-0.168730	0.999130
Ellaktor	Apr-94	14.010020	1.297426	-0.410266
Eurobank	Jan-88	12.391990	0.767809	-1.016922
Fourlis	Apr-88	12.150530	2.167748	-1.198166
Gek Terna	Feb-88	-3.780478	2.447271	36.988960
Sarantis	Jul-94	11.424120	-0.506217	1.227562
ATHEX	Aug-00	12.789710	1.759100	-1.233111
HELPE	Jul-98	9.768597	1.563236	-0.869971
OTE	Apr-96	14.996870	1.378970	-0.802648
IPTO	Jun-17	2.357009	0.877866	-0.792861
Jumbo	Jun-97	9.693362	1.386814	0.408616
Lamda	Nov-95	8.424360	2.842035	-1.637229
Motor Oil	Aug-01	10.061320	0.231237	0.530858
Mytilineos	Aug-95	15.334680	1.096389	0.025422
NBG	Jan-88	16.162700	-1.329852	0.672188
OPAP	Apr-01	9.678975	-0.507836	1.139753
PPA	Aug-03	8.377412	1.411143	-0.496678
PPC	Dec-01	9.646401	0.496234	-0.027322
Terna Energy	Nov-07	10.063590	0.909675	-0.318458
Titan	Jul-19	0.502464	1.622898	-2.074287
Viochalco	Nov-13	4.133346	-0.597666	0.851736

Table 4 - t-Statistic for the periods 1/1998-10/2009 and 11/2009-8/2019

Stocks	Listed from	Period 1/1998 - 10/2009			Period 11/2009-8/2019		
		FTSE	Volatility	c	FTSE	Volatility	c
Aegean	Jul-07	4.229500	-0.167354	-0.584161	6.372694	1.359789	-0.542632
Alpha Bank	Jan-88	25.017780	0.927350	-0.665712	13.153710	2.087803	-1.665154
Cenergy	Dec-16	N/A	N/A	N/A	1.675604	0.348217	0.467443
Coca Cola	Jul-91	10.416060	0.010653	0.245079	5.349460	-0.723632	1.519023
Ellaktor	Apr-94	7.612295	2.203068	-1.516963	13.533810	-0.272546	0.995184
Eurobank	Jan-88	7.340951	2.909790	-2.149378	10.560070	0.917430	-1.255004
Fourlis	Apr-88	7.143237	0.957382	-0.330638	10.840950	2.396746	-1.575517
Gek Terna	Feb-88	-2.282822	2.591950	28.879660	-2.329867	0.969632	23.457730
Sarantis	Jul-94	10.016890	-0.769990	0.817974	6.312386	-0.440684	1.311845
ATHEX	Aug-00	7.343057	0.940889	-0.864342	11.602890	1.189276	-0.395157
HELPE	Jul-98	6.798182	3.158495	-2.672449	7.040634	-1.695287	2.215070
OTE	Apr-96	11.430720	-0.267125	0.087979	10.670590	1.250906	-0.334518
IPTO	Jun-17	N/A	N/A	N/A	2.384835	1.029574	-0.889022
Jumbo	Jun-97	5.791055	1.621106	-0.086649	8.596598	0.033680	1.004433
Lamda	Nov-95	4.797589	3.141004	-2.169657	8.351335	0.403302	0.418897
Motor Oil	Aug-01	5.030502	-1.504835	1.481564	9.639582	0.541122	0.565881
Mytilineos	Aug-95	9.965442	0.925124	-0.436047	13.542410	0.395312	0.954079
NBG	Jan-88	38.173220	1.837795	-0.711142	9.137334	-0.652006	0.078669
OPAP	Apr-01	4.844258	0.558632	0.029600	8.987118	-0.749179	1.214988
PPA	Aug-03	3.876375	1.193662	-0.667009	8.231685	0.857524	0.025892
PPC	Dec-01	3.586390	-1.541375	1.578245	9.974173	0.597394	0.034769
Terna Energy	Nov-07	3.361767	-0.417157	0.004225	11.204420	0.176768	0.847114
Titan	Jul-19	N/A	N/A	N/A	0.533276	1.965176	-2.365877
Viochalco	Nov-13	N/A	N/A	N/A	4.255764	-1.272600	1.579727

4.2 Part 2 – Composite Index as Market Return

In the second part, it is used the Composite Index as the market return. The multiple regression was run between the monthly series of the stock returns and volatilities. The results are:

Table 5 - Beta Coefficients α (C), β (Market Return-Composite Index) and γ (Volatility) for the period 1/1998-8/2019. With green color are indicated the values that are statistically significant according to t-Statistic (Table 7). The orange column includes the R-Squared.

Stocks	Listed from	Period 1/1998 - 8/2019			
		CI	Volatility	c	R-squared
Aegean	Jul-07	0.369592	0.055989	-0.000786	0.193575
Alpha Bank	Jan-88	1.565262	0.042508	-0.001240	0.559281
Cenergy	Dec-16	0.050630	0.026534	-0.000149	0.022506
Coca Cola	Jul-91	0.581557	-0.010174	0.000586	0.350699
Ellaktor	Apr-94	1.151054	0.044483	-0.000559	0.495782
Eurobank	Jan-88	1.429287	0.017986	-0.001027	0.333486
Fourlis	Apr-88	1.249067	0.098878	-0.001589	0.405378
Gek Terna	Feb-88	-0.722414	0.214565	0.023925	0.057911
Sarantis	Jul-94	0.792262	-0.021248	0.000918	0.383807
ATHEX	Aug-00	0.907662	0.066635	-0.001201	0.423717
HELPE	Jul-98	0.664448	0.057278	-0.000810	0.319700
OTE	Apr-96	0.866796	0.042256	-0.000664	0.466637
IPTO	Jun-17	0.043355	0.012195	-0.000156	0.033822
Jumbo	Jun-97	0.749392	0.050675	0.000073	0.314625
Lamda	Nov-95	0.907271	0.128903	-0.001991	0.283862
Motor Oil	Aug-01	0.535271	0.009889	0.000142	0.316212
Mytilineos	Aug-95	1.169983	0.035751	-0.000130	0.546490
NBG	Jan-88	1.676441	-0.040926	0.000511	0.466352
OPAP	Apr-01	0.540535	-0.007372	0.000438	0.287416
PPA	Aug-03	0.549934	0.051352	-0.000519	0.249018
PPC	Dec-01	0.776622	0.022013	-0.000255	0.297935
Terna Energy	Nov-07	0.633350	0.027387	-0.000297	0.295034
Titan	Jul-19	0.000603	0.001695	-0.000030	0.006922
Viochalco	Nov-13	0.243724	-0.010188	0.000280	0.082446

From table 5, it is observed that most of the beta coefficients are positive, which means that these stocks follow the market. According to beta coefficient of Market Return (β), most of these factors are near to 1, which means that the relevant stocks are much connected with the market. Only one stock has negative β factor, GEK Terna.

On the other hand, it is observed that the coefficient factor of volatility (γ), is very small (2nd decimal digit) for almost all the stocks, except Lamda Development and GEK Terna, which means that these factors affect these stocks.

From the t-Statistic, it is observed that almost all the stocks, their returns and their volatilities are statistically significant and can contribute in the current analysis.

Also, the R-Squared is less during the second period, compared with the first one and vice versa.

Table 6 - Beta Coefficients α (C), β (Market Return-Composite Index) and γ (Volatility) for the periods 1/1998-10/2009 and 11/2009-8/2019. With green color are indicated the values that are statistically significant according to t-Statistic (Table 8). The orange columns include the R-Squared for each period.

Stocks	Listed from	Period 1/1998 - 10/2009				Period 11/2009-8/2019			
		CI	Volatility	c	R-squared	CI	Volatility	c	R-squared
Aegean	Jul-07	0.177338	-0.002047	-0.000232	0.118829	0.589222	0.081196	-0.001009	0.286518
Alpha Bank	Jan-88	1.223881	0.022482	-0.000356	0.758354	1.960621	0.079689	-0.002953	0.539707
Cenergy	Dec-16	0.000000	0.000000	0.000000	N/A	0.110191	0.022374	0.000116	0.032232
Coca Cola	Jul-91	0.793580	-0.001214	0.000176	0.475219	0.334823	-0.036765	0.001269	0.215910
Ellaktor	Apr-94	0.973104	0.109383	-0.001742	0.390237	1.342842	0.002888	0.000504	0.649487
Eurobank	Jan-88	0.855303	0.147102	-0.002323	0.302967	2.057998	0.042665	-0.003044	0.436026
Fourlis	Apr-88	1.169577	0.065097	-0.000573	0.322332	1.331521	0.135399	-0.002770	0.529782
Gek Terna	Feb-88	-0.522719	0.218292	0.022783	0.060915	-0.942377	0.230782	0.025158	0.065279
Sarantis	Jul-94	1.009779	-0.030964	0.000685	0.484759	0.546436	-0.033184	0.001548	0.279261
ATHEX	Aug-00	0.778433	0.060481	-0.001137	0.301285	1.055615	0.062152	-0.000956	0.595901
HELPE	Jul-98	0.647524	0.145111	-0.002475	0.305624	0.645356	-0.063210	0.001830	0.421259
OTE	Apr-96	0.652067	-0.007087	0.000002	0.437504	1.131546	0.070244	-0.000921	0.539815
IPTO	Jun-17	0.000000	0.000000	0.000000	N/A	0.099516	0.037278	-0.000524	0.079665
Jumbo	Jun-97	0.733707	0.072810	-0.000127	0.258144	0.746384	0.013983	0.000563	0.422887
Lamda	Nov-95	0.873262	0.205719	-0.003460	0.240648	0.906832	0.030386	0.000031	0.438176
Motor Oil	Aug-01	0.336411	-0.058637	0.000910	0.187581	0.761391	0.026981	0.000183	0.506439
Mytilineos	Aug-95	1.245582	0.045574	-0.000568	0.494182	1.082514	0.017366	0.000514	0.667372
NBG	Jan-88	1.390033	0.032435	-0.000318	0.845808	2.007121	-0.032868	-0.000303	0.386621
OPAP	Apr-01	0.331009	0.033500	-0.000121	0.161629	0.791437	-0.018681	0.000750	0.437589
PPA	Aug-03	0.336235	0.066477	-0.000726	0.120218	0.802877	0.046068	-0.000296	0.437937
PPC	Dec-01	0.230227	-0.052234	0.000905	0.114299	1.397095	0.045870	-0.000591	0.531859
Terna Energy	Nov-07	0.180448	-0.008104	-0.000062	0.075114	1.153455	0.014899	0.000503	0.564873
Titan	Jul-19	0.000000	0.000000	0.000000	N/A	0.001703	0.004830	-0.000087	0.025292
Viochalco	Nov-13	0.000000	0.000000	0.000000	N/A	0.530433	-0.053678	0.001575	0.189263

From table 6, it is observed that the most stocks had strong relation with the market during the first period and this relation got stronger during the second period (The bigger the stock returns are, the bigger is the risk that the investors will take in order to buy this asset). It is also noted that is better to emphasize in stocks that have more observations in the 2 periods (e.g., Aegean Airlines cannot be compared, as it started in 2007).

From the t-Statistic, it is observed that in the second period there are less volatilities that are significant, compared with the first period.

It is also observed that in some cases, the R-Squared is less during the second period, compared with the first one and vice versa.

Table 7 - t-Statistic for the period 1/1998-8/2019

Stocks	Listed from	Period 1/1998 - 8/2019		
		CI	Volatility	c
Aegean	Jul-07	7.785993	2.382450	-1.851704
Alpha Bank	Jan-88	18.053460	1.866381	-1.770312
Cenergy	Dec-16	1.896999	1.749609	-0.627915
Coca Cola	Jul-91	11.535680	-0.380406	1.073117
Ellaktor	Apr-94	15.895270	1.526739	-0.740327
Eurobank	Jan-88	11.336310	0.670319	-1.093658
Fourlis	Apr-88	13.195370	2.442297	-1.565130
Gek Terna	Feb-88	-3.934392	2.654390	37.103440
Sarantis	Jul-94	12.458890	-0.635615	1.247054
ATHEX	Aug-00	13.691780	2.156326	-1.741725
HELPE	Jul-98	10.988660	1.870178	-1.247258
OTE	Apr-96	14.967590	1.509269	-1.091658
IPTO	Jun-17	2.937259	1.123561	-1.051129
Jumbo	Jun-97	10.861540	1.681566	0.101760
Lamda	Nov-95	9.851019	3.224327	-2.039699
Motor Oil	Aug-01	10.697960	0.379287	0.280817
Mytilineos	Aug-95	17.538080	1.193748	-0.174331
NBG	Jan-88	14.755640	-1.416798	0.561764
OPAP	Apr-01	9.990674	-0.281165	0.815604
PPA	Aug-03	9.229870	1.762994	-0.916878
PPC	Dec-01	10.373600	0.753071	-0.373659
Terna Energy	Nov-07	10.332920	1.080787	-0.599374
Titan	Jul-19	0.342603	1.334448	-1.804017
Viochalco	Nov-13	4.713355	-0.420850	0.645233

Table 8 - t-Statistic for the periods 1/1998-10/2009 and 11/2009-8/2019

Stocks	Listed from	Period 1/1998 - 10/2009			Period 11/2009-8/2019		
		CI	Volatility	c	CI	Volatility	c
Aegean	Jul-07	4.254959	-0.084541	-0.682226	6.775027	1.650726	-0.935179
Alpha Bank	Jan-88	20.877770	0.772432	-0.595625	11.563030	2.005016	-1.873320
Cenergy	Dec-16	N/A	N/A	N/A	1.901405	0.690872	0.187345
Coca Cola	Jul-91	11.105460	-0.034449	0.247142	5.219823	-0.972185	1.618133
Ellaktor	Apr-94	9.211582	2.294184	-1.613747	14.423770	0.077724	0.462699
Eurobank	Jan-88	7.163481	2.899623	-2.163266	9.382102	0.993618	-1.524550
Fourlis	Apr-88	8.130439	0.979368	-0.363608	11.233610	2.846145	-2.185316
Gek Terna	Feb-88	-2.419530	2.684956	28.274290	-2.500732	1.054241	24.136500
Sarantis	Jul-94	11.362500	-0.729276	0.729807	6.316610	-0.636420	1.357794
ATHEX	Aug-00	7.665850	1.130563	-1.070264	12.998360	1.712748	-1.055228
HELPE	Jul-98	7.317266	3.261954	-2.781282	8.367728	-1.550600	1.996131
OTE	Apr-96	10.341130	-0.184889	0.003206	11.592290	1.656315	-0.881971
IPTO	Jun-17	N/A	N/A	N/A	3.081667	1.436983	-1.313250
Jumbo	Jun-97	6.869524	1.699501	-0.123464	9.006614	0.343235	0.583196
Lamda	Nov-95	5.885109	3.282327	-2.293551	9.413030	0.703213	0.028803
Motor Oil	Aug-01	5.118919	-1.296707	1.269603	10.715310	0.774534	0.230719
Mytilineos	Aug-95	11.652910	0.949444	-0.482092	14.946290	0.535436	0.629053
NBG	Jan-88	27.608300	1.440336	-0.657946	8.447979	-0.607856	-0.138714
OPAP	Apr-01	5.175204	0.730997	-0.161038	9.257336	-0.505475	0.828266
PPA	Aug-03	4.261523	1.558779	-1.008159	9.382092	1.099277	-0.320426
PPC	Dec-01	3.613886	-1.387285	1.423163	11.390980	0.947284	-0.416647
Terna Energy	Nov-07	3.238836	-0.264030	-0.141032	12.081020	0.364265	0.501797
Titan	Jul-19	N/A	N/A	N/A	0.438025	1.727448	-2.135013
Viochalco	Nov-13	N/A	N/A	N/A	4.967901	-1.046764	1.328496

4.3 Comparison of the Results between Parts I & II

By comparing the results between Part 1 and Part 2, it can be concluded that:

I. In the whole period, the beta coefficients of the Market Return (β) are in both cases positive, except one stock GEK Terna, in both cases too. Also, most betas are close to 1 in both cases and also the same stocks have similar values.

II. The coefficient factor of volatility (γ), is very small (2nd decimal digit) for almost all the stocks in both cases, except Lamda Development and GEK Terna in both cases, which means that these factors affect these stocks.

III. Almost all the stocks, their returns and their volatilities are statistically significant in both cases in the whole period.

IV. Almost all the stocks, their returns and their volatilities are statistically significant in both cases in the first period, while in the second period there are less volatilities that are significant, compared with the first period, in both cases too.

V. R-Squared follows the same pattern in both cases. The R-Squared that is reduced or increased in the second period, compared with the first one, in Part 1 (Market Return is the FTSE/Large Cap), has also the same behavior in Part 2 (Market Return is the Composite Index).

As a general comment, the results are similar in both cases. The Composite Index gives a better view of the Market, as it includes all the stocks, but of course it is logical that it is also being affected more from the bigger companies.

Using the above results, it can be concluded that:

➢ The values of the beta coefficients of the Market Return and the coefficient factors of Volatility are statistically significant, which means that indeed the Market is affected from these both factors and specific conclusions can be made for every company, considering its size and the industry.

➢ The Market is affected more from the beta coefficients of the Market Returns (β), than the coefficient factors of the Volatility (γ).

4.4 Chow test

Chow test is a test of whether the true coefficients in two linear regressions on different data sets are equal. It examines the stability of the parameters of a model over time. For a multiple linear model, Chow test hypotheses are [1]:

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[1] Syriopoulos K. and Filippas. D. ''Οικονομετρικά Υποδείγματα & Εφαρμογές στο Eviews'', Anikoula, Greece

➢ The regressions' errors (before and after the change) follow the normal distribution with constant variance and are distributed independently.
➢ The time point of the structural change is known.

For n multitude of observations, the sample is divided at the point of the structural change (11/2009) and two samples are created, one before the point with $(n_1 - k)$ observations and one after the point with $(n_2 - k)$ observations. Afterwards[2]:

1. The whole sample is estimated in its whole size n and it is also calculated the sum of the squares of the residuals (SSE) with $n_1 + n_2 - k$ degrees of freedom.
2. The regressions are estimated separately before and after the point of structural change and it is calculated the sum of the squares of the residuals, before SSE_1 and after SSE_2 with $(n_1 - k)$ and $(n_2 - k)$ degrees of freedom, respectively.
3. Since the samples are independent, the residuals are added $(SSE_1 + SSE_2)$ in order to get the total $SSE_{UR} = SSE_1 + SSE_2$ with (n_1+n_2-k) degrees of freedom.
4. Chow's idea is that, if the regressions' coefficients are the same before and after and there is no structural change, then the sum of the squares of the SSE residuals shall not differ statistically significantly from the sum of the residuals SSE_{UR}. Therefore, the Chow test statistic is the following:

$$F_{Chow} = \frac{(SSE - SSE_{UR})/k}{SSE_{UR}/(n_1 + n_2 - 2k)} \rightarrow F_{k,(n_1+n_2-2k)}$$

5. The Null Hypothesis of the parameters' stability cannot be rejected (there is no structural change), if the calculated value of F_{Chow} is less than the critical value of $F_{k,(n_1+n_2-2k)}$, at a given level of significance.

4.4.1 Chow test for Part I

The Chow test is applied for the first part of the thesis. Firstly, there are used all the coefficients, both for the Market Return (FTSE/Large Cap) and the Volatility.

1) Then the F-Critical value is determined from the F-table.
2) The F-Statistic value is being compared with the F-Critical. If the F-Statistic falls into the rejection region, then the Null Hypothesis is rejected.

The following table is the result:

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[2] Chow, G.C. (1960), "Tests of Equality between Sets of Coefficients in Two Linear Regressions," Econometrica, 28, 591-605.

Table 9 - Chow Test for all the coefficients of Part I

Null Hypothesis: No breaks at specified breakpoints						
Company	F-Statistic	Number of Observations			F-Critical	Result
		Period 1/1998-8/2019	Period 1/1998-10/2009	Period 11/2009-8/2019		
Aegean	6.632934	405	170	235	2.12999	NO BREAK
Alpha Bank	8.620694	519	284	235	2.12999	NO BREAK
Cenergy	2.215667	293	142	151	2.12999	NO BREAK
Coca Cola	7.011076	519	284	235	2.12999	NO BREAK
Ellaktor	4.181144	519	284	235	2.12999	NO BREAK
Eurobank	12.78167	519	284	235	2.12999	NO BREAK
Fourlis	0.537606	519	284	235	2.12999	BREAK
GEK Terna	2.115388	516	281	235	2.12999	BREAK
Sarantis	4.526041	519	284	235	2.12999	NO BREAK
ATHEX	1.169729	488	253	235	2.12999	BREAK
HELPE	4.017829	513	278	235	2.12999	NO BREAK
OTE	4.652742	519	284	235	2.12999	NO BREAK
IPTO	2.430187	287	142	145	2.12999	NO BREAK
Jumbo	0.837767	519	284	235	2.12999	BREAK
Lamda	2.052259	519	284	235	2.12999	BREAK
Motor Oil	6.428592	476	241	235	2.12999	NO BREAK
Mytilineos	0.608340	519	284	235	2.12999	BREAK
NBG	3.426562	519	284	235	2.12999	NO BREAK
OPAP	6.769882	480	245	235	2.12999	NO BREAK
PPA	4.378007	452	217	235	2.12999	NO BREAK
PPC	19.88339	472	237	235	2.12999	NO BREAK
Terna Energy	25.24934	401	166	235	2.12999	NO BREAK
Titan	2.730889	262	142	120	2.12999	NO BREAK
Viohalco	8.866580	330	142	188	2.12999	NO BREAK

Secondly, there are used only the coefficients of the volatility.

1) Then the F-Critical value is determined from the F-table.
2) The F-Statistic value is being compared with the F-Critical. If the F-Statistic falls into the rejection region, then the Null Hypothesis is rejected.

The following table is the result:

Table 10 - Chow Test only for the coefficients of Volatility of Part I

Null Hypothesis: No breaks at specified breakpoints						
Company	F-Statistic	Number of Observations			F-Critical	Result
		Period 1/1998-8/2019	Period 1/1998-10/2009	Period 11/2009-8/2019		
Aegean	0.009855	260	142	118	2.34734	BREAK
Alpha Bank	0.377620	260	142	118	2.34734	BREAK
Cenergy	0.133681	260	142	118	2.34734	BREAK
Coca Cola	1.849632	260	142	118	2.34734	BREAK
Ellaktor	16.66843	260	142	118	2.34734	NO BREAK
Eurobank	59.95373	260	142	118	2.34734	NO BREAK
Fourlis	3.162366	260	142	118	2.34734	NO BREAK
GEK Terna	0.625103	260	142	118	2.34734	BREAK
Sarantis	1.499957	260	142	118	2.34734	BREAK
ATHEX	12.12980	260	142	118	2.34734	NO BREAK
HELPE	6.726118	260	142	118	2.34734	NO BREAK
OTE	15.12011	260	142	118	2.34734	NO BREAK
IPTO	22.52509	260	142	118	2.34734	NO BREAK
Jumbo	0.898769	260	142	118	2.34734	BREAK
Lamda	1.520552	260	142	118	2.34734	BREAK
Motor Oil	29.26254	260	142	118	2.34734	NO BREAK
Mytilineos	1.043512	260	142	118	2.34734	BREAK
NBG	42.75474	260	142	118	2.34734	NO BREAK
OPAP	28.11089	260	142	118	2.34734	NO BREAK
PPA	16.56730	260	142	118	2.34734	NO BREAK
PPC	58.67920	260	142	118	2.34734	NO BREAK
Terna Energy	46.69885	260	142	118	2.34734	NO BREAK
Titan	12.62844	260	142	118	2.34734	NO BREAK
Viohalco	80.41214	260	142	118	2.34734	NO BREAK

4.4.2 Chow test for Part II

The Chow test is applied for the second part of the thesis. Firstly, there are used all the coefficients, both for the Market Return (FTSE/Large Cap) and the Volatility.

3) Then the F-Critical value is determined from the F-table.
4) The F-Statistic value is being compared with the F-Critical. If the F-Statistic falls into the rejection region, then the Null Hypothesis is rejected.

The following table is the result:

Table 11 - Chow Test for all the coefficients of Part II

Null Hypothesis: No breaks at specified breakpoints						
Company	**F-Statistic**	**Number of Observations**			**F-Critical**	**Result**
		Period 1/1998-8/2019	**Period 1/1998-10/2009**	**Period 11/2009-8/2019**		
Aegean	0.381978	405	170	235	2.12999	BREAK
Alpha Bank	7.327434	519	284	235	2.12999	NO BREAK
Cenergy	2.445102	293	142	151	2.12999	NO BREAK
Coca Cola	7.677959	519	284	235	2.12999	NO BREAK
Ellaktor	3.605573	519	284	235	2.12999	NO BREAK
Eurobank	11.10030	519	284	235	2.12999	NO BREAK
Fourlis	0.607921	519	284	235	2.12999	BREAK
GEK Terna	1.724580	516	281	235	2.12999	BREAK
Sarantis	5.432640	519	284	235	2.12999	NO BREAK
ATHEX	1.583028	488	253	235	2.12999	BREAK
HELPE	3.883415	513	278	235	2.12999	NO BREAK
OTE	6.813631	519	284	235	2.12999	NO BREAK
IPTO	4.217455	287	142	145	2.12999	NO BREAK
Jumbo	0.672028	519	284	235	2.12999	BREAK
Lamda	1.750123	519	284	235	2.12999	BREAK
Motor Oil	7.629065	476	241	235	2.12999	NO BREAK
Mytilineos	0.706721	519	284	235	2.12999	BREAK
NBG	3.451967	519	284	235	2.12999	NO BREAK
OPAP	7.231234	480	245	235	2.12999	NO BREAK
PPA	5.823187	452	217	235	2.12999	NO BREAK
PPC	26.08475	472	237	235	2.12999	NO BREAK
Terna Energy	29.61683	401	166	235	2.12999	NO BREAK
Titan	2.377752	262	142	120	2.12999	NO BREAK
Viohalco	11.32980	330	142	188	2.12999	NO BREAK

Secondly, there are used only the coefficients of the volatility.

1) Then the F-Critical value is determined from the F-table.
2) The F-Statistic value is being compared with the F-Critical. If the F-Statistic falls into the rejection region, then the Null Hypothesis is rejected.

The following table is the result:

Table 12 - Chow Test only for the coefficients of Volatility of Part II

Null Hypothesis: No breaks at specified breakpoints						
Company	F-Statistic	Number of Observations			F-Critical	Result
		Period 1/1998-8/2019	Period 1/1998-10/2009	Period 11/2009-8/2019		
Aegean	0.111940	260	142	118	2.34734	BREAK
Alpha Bank	0.144457	260	142	118	2.34734	BREAK
Cenergy	37.66167	260	142	118	2.34734	NO BREAK
Coca Cola	0.768070	260	142	118	2.34734	BREAK
Ellaktor	15.51807	260	142	118	2.34734	NO BREAK
Eurobank	60.49088	260	142	118	2.34734	NO BREAK
Fourlis	2.199807	260	142	118	2.34734	BREAK
GEK Terna	0.144141	260	142	118	2.34734	BREAK
Sarantis	0.810433	260	142	118	2.34734	BREAK
ATHEX	10.62675	260	142	118	2.34734	NO BREAK
HELPE	5.012737	260	142	118	2.34734	NO BREAK
OTE	13.32055	260	142	118	2.34734	NO BREAK
IPTO	17.92047	260	142	118	2.34734	NO BREAK
Jumbo	0.482021	260	142	118	2.34734	BREAK
Lamda	0.955164	260	142	118	2.34734	BREAK
Motor Oil	26.69574	260	142	118	2.34734	NO BREAK
Mytilineos	0.666588	260	142	118	2.34734	BREAK
NBG	42.70053	260	142	118	2.34734	NO BREAK
OPAP	26.98354	260	142	118	2.34734	NO BREAK
PPA	14.60994	260	142	118	2.34734	NO BREAK
PPC	58.90675	260	142	118	2.34734	NO BREAK
Terna Energy	46.92110	260	142	118	2.34734	NO BREAK
Titan	9.023338	260	142	118	2.34734	NO BREAK
Viohalco	72.11423	260	142	118	2.34734	NO BREAK

4.5 Conclusion

Finally, some conclusions can be drawn, using the results from the t-Statistic, the R-Squared and the Chow Test. These are:

I.   From the Chow tests, since most stock do not have structural change at the breakpoint, it is concluded that an investor/researcher shall include in the sample both periods, which means that the Greek Crisis did not affect the return-volatility relation during time.

II.   From the b coefficients of Market Return, it is observed that in more stocks they are increased in the 2nd period, meaning that the stocks have stronger relation with the Market Return and the Volatility (Effected more).

III. From the b coefficients of the Volatility, it is observed that they are decreased in the 2nd period, which means that they affect less the stock return

IV.   R-Squared is increased in the 2nd period, meaning that there is have better interpretation on the stock returns

V.   FTSE/Large Cap and Composite Index regressions have similar results.

VI.   There is no R^2 >0.6 (except Banks), so no other stocks that interpret or were interpreted by any index in very big percentage.

VII. Very few stocks were not significant in the Market Return, while in the volatility most of the stocks were not significant (t-Test)

Appendix A – Analysis of Crises

A.1 Introduction

In developing countries and at regular intervals, there have been observed from 1970 to 2007 about 124 crises[3]. This fact, makes many economists consider that it is a basic element of the main economic system today, capitalism.

It is basic to stress that crises are divided into categories based on the causes which occurred in each one[4]:

1. First generation crises: Those are the crises, whose causes identified in fiscal and monetary policy of the country, such as the crises in Latin American countries during the 1960s and 1970s.
2. Second generation crises: These are the crises occurred due to countercyclical policies in developed economies. To these belong the crisis of the European Monetary System in the early 1990s, and the self-fulfilling crises mainly due to rumors and panic developed in investor classes without actually problems in the real economy.
3. Third generation crises: Those are the crises occurred due to moral hazard, asymmetric information and in excessive growth of international lending and holdings of assets that can be described as "bubbles". Such were the crises in Mexico in 1994 and the crisis in Southeast Asia in 1997.

The understanding of the difference between the concepts crash, bubble and crisis is very important:[5]

- The term ''crisis'' means the involvement of standard operating mechanisms or adjustment of the economy. It is shown in an economic sector or touches an economic system. The economic sectors affected, or even the world economy, are unable to get out of this disadvantage without undergoing mutations.
- The term ''crash'' means a sharp collapse of stock values
- With the term ''bubble'' means the excessive increase in the value of securities listed on the stock markets, which necessarily leads to violent change "bubble burst"

These terms are mentioned in order to emphasize that there is a great difference in the crisis of 1970 and that of 2008, as based on the history, in 1970 was a crash that occurred in the

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[3] Laeven, L and Valencis, F. (2008) "Systemic Banking Crises: A New Database" International Monetary Fund Working Paper WP / 08/224, Washington, DC

[4] Kaminsky, GL and MC Reinhart (1999) "The twin crises: The Causes of Banking and Balance of Payments Problems", American economic Review Vol. 89 pp 473 - 500

[5] Bezbakh, P. and Gherardi, S. (2000) ''Under Dictionnaite de l economie'', Paris, Larousse - Le Monde

economy and today 2008 was a financial crisis. Besides, it is important to note that the great difference of the global Crisis of 2007 with any other crisis, is that this one started from the USA. This may be one of the causes that explains why this crisis spread so rapidly in the global economy.

This chapter will analyze what is a financial crisis, the causes and the time that they occurred, their characteristics, the causes that help to take place and the ways used in order to be faced, whether they were effective or not.

A.2 Definitions of ''Financial Crisis''

For the term financial crisis have been many different theories. Some of these are:

According to Frederic S. Mishkin financial crisis is a disruption in the financial markets where the wrong choices and financial risk problems increase as a result unable to channel their funds into productive investments in profitable sectors. A financial crisis can lead an economy away from equilibrium and to turn into a downward spiral of economic development indicators. Financial crises can have different effects across the banking panic.[6]

According to Nobel laureate Economy 1990 Professor William F. Sharpe, a crisis is the period where there is a large downward movement in the market. [7]

According to Joseph Schumpeter, a financial crisis is caused when the technological innovation is combined with operational action -in the context of free competition; always set in motion the economy and detaching from a standstill. [8]

A.3 The causes of the spread of financial crisis worldwide

Innovation, the new financial ideas and the limited raw materials were the main causes of the current financial crisis. Even if this would not have happened, something else would emerge in order to demonstrate the serious problems of the financial system.

The start was made with the bubble burst of the internet companies. In 1995 the enormous explosion of technology fueled the bubble that finally burst in 2001. But the problems did not end there, as the housing market had the more serious and bigger problems. The final blow came with the bubble of the oil.

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[6] Mishkin, S. F. (1991) ''NBER WORKING PAPERS SERIES, WORKING PAPER NO 73934''
[7]Sharpe, W.F. (1963) ''A simplified Model for Portfolio Analysis'', Management Science Vol. 9, No. 2, pp.277-293
[8] Schumpeter, J. (1910) ' *'On the Nature of Economic Crises,''* (pp. 324–5 [2005, p. 50]).

These three successive bubbles pushed all the economies worldwide to confront the – perhaps - worst financial crisis ever. A crisis for which have given billions € in order to become feasible to treat. But the crisis' consequences are enormous, so most of the economists are confident that the economy that the world was experiencing was utopian, and cannot return to the tremendously high levels that was before the crisis. The economy improved significantly, but has not managed to reach the levels before, yet.

A.3.1 The Bubble of the "Technology Companies"

Technology appeared at the early 90s and brought an innovative way of communication, quick and direct information, easy to trade and greater speed in all processes and leaded the stock exchanges to have the potential to increase tenfold. Technology created a new form of economy, ''Net Economy''. But besides all the positive things, it has brought also some serious problems. Entering the new millennium, the excessive optimism of many executives (speculators) of technology business was the start for the fatal outcome.

Speculators realized all these technological changes and were convinced that their companies will have to constantly adapt to new technologies, leading to invest heavily in IT equipment. Thus, new businesses appeared in technology sector, so-called business «start-up» trying to become giants, like Apple, Google etc.

The new economy that was born was profitable for both investors and banks, which both bid up continuously to finance such investments. It was very important the rise of the Stock - Options, companies that were able to buy shares at a specified time and price. The aim was to motivate managers to act in order to rise their shares. As a result, many managers in some cases made substantial profits from a very quick resale. The result was that new companies were trying to enter the stock market in order to succeed and to reap the profits, that had the colossal tech companies respectively that time.

In 2000, the bubble burst of the tech companies (dot-com). The bubble that burst, was allowed by the chairman of the Federal Reserve of the USA, Allan Greenspan. It is important to note that the value of «dot-com» companies from 2000 to 2002 had a fall about 78%.

There were two main factors that led to the bubble burst of the internet (dot-com)[9] :

1. The first problem was the ignorance of the cash flow of many businesses, that were directly related to the technology. Many economists were focused on the fact that many companies do not have to deal with their income; how it was produced or what was happening to their cash flow. For example, one theory is that the burst of the Internet bubble is due to the exponential increase, which had internet during

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[9] Ramonet, I. (2008) *"La crisis del siglo/The crisis of the century''*, Spain

this period. But beyond that, there was negligence in one of the most important aspects of the evaluation of Internet companies; the ability of companies to use the internet to create cash flows and as a result, to generate profit for the investors.

2. Overvaluation of the shares. Apart from redundant measurements which became, the analysts used models that had very big multipliers and well-prepared formulas for the valuation of the Internet companies. These two actions led to an ''unrealistic'' situation with very high prices.

For example, an investor who used to buy a thousand shares, when one of the Internet companies was entering the stock market a year later, in 1999 would win a million dollars; these shares had a percentage increase of 85.6%. But such a rapid rise in prices was nothing more than a fallacy. Therefore, in March 2001 happened the bubble burst of the Internet. The Dow Jones index lost 38% of its value, while the index S&P lost 41%. This was the reason that almost three quarters of the ''Net-economy'' companies disappeared.

A.3.2 The Bubble in the Property Market

The second factor which is liable for the economy status today is the property market bubble. The house prices had skyrocketed and when that bubble burst, then the prices had a big fall. This resulted in many homeowners to lose their homes or not to be able to repay their loan installments.

As people wanted to buy their own house, shortly a new bank product appeared; the mortgage loans. The mortgage loans gave the opportunity to anyone, regardless of his income, to be able to buy a new property. The granting of these loans was made without any measure and there was no substantial mechanism to oversee the granting of these loans.

Apart from the irregularity in the administration and granting of these loans, it has to be noted that the interest rates were very low, which pushed borrowers to desire to obtain such a loan. But the low interest rates were a major incentive for the banks, as this product was unsafe; that means that the banks were confident that they would get back the money lent in any way. Either they would gradually be repaid by the borrowers and would gain the interest rates that were set, or - in the worst case – they would acquire an asset and some money obtained already from the borrower. Seemingly, in that moment it was obvious that the banks had serious motivation for such an action. But the situation was never so simple.

Three of the largest banks in the world bankrupt due to this reason (Lehman Brothers, Bear Stearns and Merrill Lynch). But the problems did not stop there and spread globally.

The property bubble was increased due to two factors:

1. low interest rates
2. weak regulations

But the reason that made these mortgages so desired, was that while the property prices were increasing rapidly, the owners pulled money from their own homes. The estimation of these money due to the revaluation of the properties and the refinancing mortgage - came to $975 billion - over 7% of USA GDP.

This leads to the conclusion that the economy was not working properly and that's why the two to three quarters of the economy (GDP) is directly correlated with the property market.

Another problem was that the banks had created complex financial products, based on the mortgage loans, which were a catastrophic factor for the banks, as they could not know if their debts to the depositors and the bondholders exceeded the value of their assets.

Therefore, a new problem created; the banks could not trust each other. Banks were giving loans to each other, so that they could generate greater profits and in cases that a bank created a deficit in its balance sheet, was receiving huge amounts of money, in order to manage to flee from this risk. But with the existence of all these toxic loans, the trust had completely lost and this led to the destruction of the economy, with a collapsed financial sector and the creation of a big financial crisis.

A.3.3 The Bubble of the Oil.

In 2003 began the Iraq War, with the invasion of Iraq by a United States-led coalition that overthrew the government of Saddam Hussein and caused a large increase in the price of oil. The United States had at that time to borrow hundreds of billions of dollars in order to be able to import the necessary amounts of oil.

The American economy was already in a very difficult situation, it had not managed to face the deficits that had brought the bursting of the tech bubble and had not been able to calm the situation in the property market. The American economy was under so much pressure that the situation had brought anxiety to the whole world. The money that was spent for the purchase of oil, were needed to stimulate the economy after the bursting of the property bubble.

In March of 2003. the oil price per barrel ranged at $32, while in July of 2008 it had reached the price of $173. That meant that the United States were spending about 1.4 billion for oil supply daily, while in 2003 they were spending about 292 million.

A.4 The characteristics of the Crisis.

In order to be able to study an economy under financial crisis, the causes that created the recession have to be known. The global financial crisis that had started from the United States and spread throughout the world had several causes, but also three major occasions.

Below are stated the factors that contributed to the creation of the financial crisis and the key market failures that were the pretext for the start of the Crisis of 2007.

A.4.1 Causing Factors of the financial Crisis of 2007

Some factors that caused the financial crisis in the United States were the following[10] :

1. The excessive greediness of the banks. The flexible regulatory framework for the financial sector was a main cause of this.
2. The banks were purchasing mortgage loans, were securitizing them and then were selling them to investors.
3. Incorrect and false advertising of the mortgage loans as risk management tools.
4. The Credit Rating Agencies approved the mortgages.
5. The Pension funds invested in mortgages, due to delusion.
6. The banks distributed their funds incorrectly.
7. Over-indebtedness with high transaction costs was encouraged.
8. The market was securitizing wrongly and misjudged the risk in mortgages scoring them with AAA.
9. The market had misinterpreted the danger that existed, which led to high leverage of banks.
10. The unsafe loans should normally have higher returns with lower risk.
11. The overall impression that the Ministry of Treasury and the Federal Reserve of the United States would save the banks in any case. It is important to note that Allan Greenspan (Director of the Federal Reserve) had repeatedly published that it was impossible to predict the bursting of the bubble in the real estate market, and that even if they could predict it, they could not prevent it. Many economists doubted it and one of them was Joseph E. Stiglitz, chief economist of the World Bank and winner of the Nobel Memorial Prize in Economics at 2001. He argued that the actions to face this should have been the following:
    a. To require payable biggest advances for property purchase.
    b. Alternatively, to impose higher margin requirements for payment transactions with shares.
    Instead of these two options, Allan Greenspan acted in a completely different way that led to the further deterioration of the situation. He allowed banks to invest in increasingly risky forms of borrowing, encouraging thus the investors to buy increasing amounts of mortgage floating rate loans with installments that any time was very easy to increase very much.
12. The financial system was in favor of deregulation. Financial markets in the US were using innovations with a view to avoid regulatory framework to the markets and

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[10] Stiglitz J.E. (2010) "*Freefall: America, Free Markets, and the Sinking of the World Economy* ‘', USA

13. avoid accounting standards that encourage the tax breaks. The expected result was that they created high risk products and information asymmetry.
14. The financial markets were not innovating in favor of an ordinary citizen. This could have been avoided, if an effective regulatory framework existed that would give proper orientation to the use and implementation of innovation.

One of the major problems was that the financial sector was obviously responsible for the situation, but refused the blame stating that both the Treasury and the CRAs, as well as several others, gave the right to do so, without trying to put any restriction.

Apart from that, the financial sector supported that for this situation the Federal Reserve was responsible, as it had left the interest rates at very low levels for a long time. They claimed that their earnings were low, due to low interest rates and moderate yields, because they had very low input costs, stating that Federal Reserve ''had made money too cheap" and that with a loose regulatory framework and without ''cheap money'', this bubble might had not been created. Allan Greenspan answered that the low interest rates is a result of the Asian countries, as well as the high liquidity caused by their excess savings.

A.5 Confrontation Measures

Many economists argue that some methods and measures, which were applied to stimulate the economy, were wrong. The actions taken, as well as the actions that should be done are stated hereunder.

A.5.1 Actions taken to stimulate the Economy

At the beginning of the Crisis of 2007, a series of events made the overall situation much worse. When the first negative news arose, many supported the perfection of the economic system, dismissing the case that what began to appear was a crisis, but a normal short recession, that was logical to happen. This was perhaps the biggest problem, as when a crisis occurs, then both the Ministry of Finance and the Government have to help the economy. The steps taken, as wrote Joseph E. Stiglitz, were:[11]

1. More liquidity in the Economy: The President of the Federal Reserve, in order to save the real economy moved huge amounts of money to the financial markets, thus appropriated the banks and not aided in fact the real economy.
2. Continuous refinancing of the banks: Banks have experienced tremendous deficits in their balance sheets and funded repeatedly by the Government, so as to allow the economy to operate at normal rates, but the banks did not make any retreat in order to regulate risks, so as to avoid the risk taking for years

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[11] Stiglitz J.E. (2010) "*Freefall: America, Free Markets, and the Sinking of the World Economy* '', USA

3. Tax breaks to the rich: While the economy was in recession the Ministry of Finance did not require extra taxes from the rich, and argued that they support the economy and that if subjected to taxation, this would increase the unemployment rate, which the Government was trying to hold on the lower levels.

4. Bank rescue operations: Banks were asking more money to manage to improve their situation. This repeated refinancing spent billions of dollars, which could have been invested by the Government to support the real economy.

United States like Europe, did not realize the damage was caused. Their efforts focused on the banking rescue and left aside the real economy.

A.5.2 A proper package of actions to stimulate the Economy

The seven principles that should require a stimulus package under Joseph E. Stiglitz:[12]

1. It must work fast and directly. In the case of the United States, the delay introduced by G. Bush was costly. Any economic policy needs several months to give full results. Therefore, it is necessary to put money into the economy very fast.

2. Must be effective. Effectiveness means that every dollar is utilized effectively. Every dollar spent should lead to an increase in employment and the national product.

3. Must face the long-term problems of the country. These may be the low level of national savings, the huge trade deficits, the long-term financial problems of social insurance etc.

4. Should focus on the investments. Each stimulus package increases the deficit of the country. But the debt only affects the liability side of the balance sheet. If the money from the stimulus package will be invested in assets, then in the long run there will be an increase in the area of the country's productivity, which means that the country will be better off than before.

5. It must be fair. Each stimulus package should be fair, which implies elimination of tax breaks for the rich.

6. It must face the short-term emergencies. When the Government has losses on the balance sheets, then it should make spending cuts. These cuts are both layoffs and payroll cuts. This will result the unemployed not to have the possibility of repayment of the property loan etc. So, a proper stimulus package must be able to deal with as many of these issues.

7. The economic stimulus package should target areas marked with job losses. The Government must retrain the workforce, in order to be able to find easier its future labor.

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[12] Stiglitz J.E. (2010) "*Freefall: America, Free Markets, and the Sinking of the World Economy* ‘', USA

A.5.3 Data Forecast of the Financial Crisis

The Crisis of 2007 stunned too many economists. Some argue that it could not be predicted, but others stated that by studying the following elements, it would be obvious what was going to happen in the economy. These elements are:

1. Existence of a deregulated market with liquidity and very low interest rates
2. A bubble in the global real estate market
3. Increase of non-reserve properties

Moreover, another factor was the huge fiscal and trade deficits of the United States and the accumulation of huge reserves in China.

A.6 The financial crisis in Greece

The case of Greece in the financial crisis which was experienced worldwide, is a different object to be studied as the causes and occasions for which the crisis appeared differ from any other country in Europe, but there are some similarities. This adverse situation is not something new for the Greek Government. The country was suffering from a fiscal debt, which burdened the Greek economy. At the Crisis of 2007, Greece was trying to repay older debts and faced with a collapsing economy. Therefore, Greece was forced to turn to the International Monetary Fund and the European Central Bank to manage this adverse situation.

Since 1827, Greece has been confronted with crises too many times. The crises took place as follows:[13]

1. Bankruptcy: 1827
2. Bankruptcy: 1843
3. Bankruptcy: 1893
4. Bankruptcy: 1932
5. Crisis of 2007

A.6.2 The current crisis in Greece.

Greece had not managed to be repay fiscal debt from older loans. The debts were increasing continuously, while was facing a new form of crisis, in the financial sector. The causes of the crisis and the factors that contributed to the creation of the present situation are many and have much complexity.

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[13] Totsikas A. (2012) ''Οικονομικές κρίσεις και χρεοκοπία (19ος – 20ος αιώνας)''
https://argolikivivliothiki.gr/2012/11/01/economic-crises/

A.6.2.1 Events occurring during the crisis.

The crisis became evident in the Greek area on October 20, 2009 where the Minister of Finance George Papakonstantinou announced to the ECOFIN the deficit for 2009 which would vary as a percentage of GDP, to 12.7%. On October 22th 2009, the Credit Rating Agency Fitch downgraded Greece from level A to A-. A few months later, Fitch downgrades Greece again to BBB +. The CRAs Standard and Poor's and Moody's downgraded Greece from A- to BBB + and from A1 to A2 respectively.

These demotions led Euro Member States to put pressure on the Prime Minister George Papandreou at the World Economic Forum held in Davos. This resulted in a few days later the Government under PASOK party to announce the first package of measures for the public sector. On March 3, 2010 announced the second package of measures.

The CRAs were continuously downgrading the ratings for the Greek State, while on April 23th, Greece referred to the support mechanism, which was composed of the IMF, the European Union and the European Central Bank. Therefore, on May 2, 2010 were announced the austerity measures that were imposed. In May 2010 there were signed the contracts between the countries of the European Union and the International Monetary Fund.

By the end of the year, the budget of Greece was not in the desired limits that creditors wanted, so all the Credit Rating Agencies were downgrading their rating for Greece. After changes that happened in the Government of PASOK on July 21, 2011, the EU summit reached a new Greek loan agreement amounting to 158 billion euros.

Because of the complicated situation in Greece and the decline in ratings from the CRAs, the general index of the Athens Exchange fell approximately 1,000 points. The situation in Greece every day was becoming worse, ministers resigned, new austerity measures imposed until the October 27, 2011, where the EU summit decided the debt haircut of 50%.

The crisis finally led PASOK government to resign and a transitional Government took over with Prime Minister Lucas Papademos and supported by PASOK, New Democracy and LAOS. Elections conducted on May 6, 2012, but a new government failed to be formed, so a transitional government was formed under Panagiotis Pikramenos, who undertook to lead the country to new elections. The result was that the general index of the Athens Stock Exchange closed down from 500 points.

In the elections conducted on June 17, 2012 it was formed a new government under New Democracy, PASOK and DIMAR, with Prime Minister Antonis Samaras.

After two plans of law were approved and the failure of election of the new President of the Republic, elections were proclaimed and conducted on January 25, 2015 where the

winning party was the one of the main oppositions, SYRIZA and Prime Minister Alexis Tsipras.

On June 26, 2015 Prime Minister announced that will be conducted a referendum. The Greek people found it confusing and moved en masse to the banks (particularly at ATMs) and made huge amounts of withdrawals. This resulted in the imposition of Capital Controls and closure of the banks.

Prime Minister Alexis Tsipras made a referendum on July 5, 2015 for the administration of the 3rd Memorandum in Greece, where the winner was the ''No'' party with a percentage of 62%. On August 20, 2015 Prime Minister announced early elections. On September 20, 2015 SYRIZA was elected again and formed a government with the party of ANEL.

A.6.2.2 The causes of the Greek crisis

There are several factors that contributed to the crisis in Greece. The US financial crisis and its causes had a key role in the crisis in Greece:

1. Greece had incurred fiscal debt both from the loans of the past and from the loans, which it continued to receive to repay its debts. Also, a financial debt was being created continuously.
2. The political choices made in order to manage money and wealth. The Greek State had undertaken major public projects and finally paid more money than Greece could afford.
3. High pensions and excessive salaries in the public sector.

These three factors were the main reason why the Greek State was experiencing a primary deficit in the state budget every year, so that the country was unable to repay the loans it received and in addition was in need of refinancing.

A.6.2.3 The Property Bubble in Greece

One of the factors which are responsible for the present situation, and is a key element in the economy status is the property market. Greece was one of the countries where the crisis had affected sharply the real estate market. The property market is a measure of the wealth of a country, i.e., the higher the price of real estate, the richer can be considered an economy.

The property sector in Greece began to develop from the 1950s. Until recently, Greece was a country where the property ownership predominated.

The desire of the Greeks to have their own property was the beginning for the creation of a very strong market which was increasing, and this led to fuel the property bubble.

The property bubble was a global problem that also appeared in Greece. Property prices in the period 1993 - 2007 had an increase about 308% while the objective property values had an increase about 400%. According to the Organization for Economic Co-operation and Development (OECD) the properties in Greece raised on average about 283.4%. The increase was the result of three factors[14]:

1. The positive performance of the economy
2. The fall in interest rates and the orientation of the banking system to lending individuals.
3. The effect of administered objective value system, which contributed to the self-supply of higher prices and expectations for further growth.

Real estate prices in Greece had occupied the second position in rising prices among the EU countries.

A.6.3 The Greek Economy stimulus packages

Many EU members had a strong need to borrow money, when the Crisis of 2007 emerged, in order to carry out their obligations. Countries such as Spain, Italy, Greece, Portugal and others were found with primary deficits.

The Eurozone regulations state that when a country - member of the European Union need to borrow money, then the other countries must help to lend. But when this became risky, many lender countries started to worry about whether they would get their money back so they invoked the imposition of measures for upcoming debt.

In January 2010 the Prime Minister George A. Papandreou received extensive pressure from the lenders for action at the World Economic Forum. The Greek economy was at a disadvantage, borrowing was necessary, so it was announced on February 9, 2010 the imposition of austerity measures.

A.6.3.1 The 1st Austerity Package

During the conducting of the World Economic Forum, the Members of the European Union urged George A. Papandreou to take measures for the Greek Economy. Therefore, at February 9, 2010 the first austerity package was announced and the measures for the upcoming debt of Greece were initially reported in two sectors; in the public sector, which

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[14] Day-long newspaper ''Ημερησία''
http://www.imerisia.gr/article.asp?catid=27198&subid=2&pubid=113357478

included a wage freeze and cuts in the sector, as well as cuts in benefits by 10%, cuts in overtime and cuts in travel.

A.6.3.2 The 2nd Austerity Package

The 1st Austerity Package did not bring the waiting results, so in March 3, 2010 it was followed by the 2nd Austerity Package. The measures were the following:[15]

- 30% reduction on Christmas, Easter and Holiday extra payrolls.
- 12% reduction on all government benefits.
- 7% reduction in staff of public sector agencies, municipalities, private entities.
- VAT increase from 4.5 to 5%, from 9 to 10% and from 19 to 21%.
- 15% increase in the gasoline tax.
- Imposing additional 10% to 30% in the (existing) import taxes on the value of most imported cars.
- Reset living evidence for every car.
- Extending living evidence in each property.

A.6.3.3 The 1st Memorandum of Understanding and the 3rd Austerity Package

After two Austerity Packages imposed on Greece in 2010, the Greek economy failed to recover. Therefore, in May 2, 2010 it was signed the 1st support package from the IMF, EU and European Central Bank. The 1st Memorandum of Understanding (MoU) with Greece, provided the following measures for the economy:

- Replacement of the 13th and 14th salary in the public sector with an allowance of 500 euros to all who were paid up to 3,000 euros and complete abolition of the two salaries for higher wages.
- Replacement of the 13th and 14th salary with a pension allowance of 800 euros for pensions until 2500 Euros.
- Further 8% cut in benefit allowance of civil servants and 3% to the employees of public enterprises.
- Increasing the high VAT rate from 21% to 23%, from 10% to 11% (from July 1, 2010) and from 11% to 13% (from January 1 2011) and correspondingly the low one at 6.5% (from January 1, 2011).
- Increase in excise duties on fuel, cigarettes and drinks by 10%

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[15] Hellenic Parliament (2010) ''Σύμβαση Δανειακής Διευκόλυνσης 8/5/2010''
http://drupal.antibaro.gr/sites/default/files/mnhmonio2010-gre.pdf

- Increase in objective values of real estate
- Add an additional 10% in import taxes on the value of the imported cars.

This MoU, which had signed George. Papandreou did not achieve its objectives and the deficit to GDP ratio of Greece on December 31, 2010 had shaped a debt of EUR 340.27 billion, i.e., about 147% of GDP. On May 30, 2010 was on EUR 336.8; it increased about EUR 42 billion in one year. [16]

A.6.3.4 The 2nd Memorandum of Understanding of Greece

The 2nd MoU was voted with 199/300 votes on February 12, 2012. The PASOK government resigned all the MPs who voted against the 2nd MoU and the same happened with the President of LAOS. The main measures of this new MoU were:

Fiscal measures:

1. Elimination of tax exemptions
2. United property tax
3. Abolition of reduced rates of VAT on the Aegean islands
4. Increase in VAT rates on food, drugs, health care, electricity, water, transport tickets, gas etc.

Labor measures:

5. Reduction by 22% of the minimum salary.
6. Reduction by 15% of the pensions to Public Power Corporation, OTE and the Banks
7. 7% reduction in the main NAT pensions
8. Reduction by 15% the auxiliary pensions above a threshold
9. Removes the permanence in SOEs and banks
10. Reduction to three from six months of the end aftereffect of the contracts.
11. Reduction by 3% the contributions to IKA from 1.1.2013

Other measures:

12. Release of all the professions
13. Redundancy and dismissals in the public sector of 15,000 employees by the end of 2012
14. Close of specific public organizations

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[16] Day-long newspaper ''Taxheaven'' article (2011) available in the website
http://www.taxheaven.gr/news/news/view/id/7187

A.6.3.5 The 3rd Memorandum of Understanding of Greece

The political situation in Greece had changed enough and Prime Minister Alexis Tsipras of SYRIZA signed a new MoU. The austerity measures of the 3rd MoU were[17] :

1. Tightening the definition of a farmer.
2. Increase the tonnage tax on shipping.
3. Changes in property tax at 2015.
4. Correction in recovery measures recently adopted.
5. Return of the prescription in medicines.
6. Reduction of medicine prices.
7. Remove privileges in oil used by farmers.
8. Better targeting of heating oil in 2016.
9. Full evaluation of the social protection system, aiming at annual savings of 0.5% of GDP.
10. Restructure of public administration.
11. Addressing the failures in tax revenue.
12. Remove the ceiling of 25% of seizures wages and pensions.
13. Reduction of all limits on seizures at EUR 1,500.
14. Change in interest rate the setting of 100 installments and exception from that of bad debtors.
15. Transportation services and personal tax audits on Financial Crime Agency.
16. Commitment that there will not be other arrangements for tax and social security debts.
17. Clarifying the conditions for eligibility to pay the guaranteed minimum pension after 67 years.
18. Circulars version for the full implementation of the 2010 Law on insurance.
19. Freeze the monthly limits of the guaranteed contributory pensions.
20. Progressive elimination of exceptions to early retirement.
21. Clarification of the VAT system in the islands, with discounts to be abolished by the end of 2016.
22. Integrated Plan for recapitalization, liquidity support to the banks and address the "red" loans.
23. Remove the aftereffect law on employment contracts adopted on July 2, 2015.
24. Application of all the OECD projections from the Toolbox I recommendations (excluding non-prescription medicines) and all of the Toolbox II recommendations concerning non-alcoholic beverages and mineral oils.
25. Open professions, such as engineers, notaries etc.
26. Limitation of taxes on third parties.

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[17] Day-long newspaper ''Newsbomb'' article (2015) available in the website
http://www.newsbomb.gr/oikonomia/news/story/614595/symfonia-ta-35-metra-poy-perilamvanei-to-neo-mnimonio#ixzz44c7DP02D

27. Reduction of the bureaucracy and speeding up licensing for low-risk investments.
28. Reform in energy market, especially natural gas market that will result in full liberalization in 2018.
29. Approval of the privatization program, which has already taken the Hellenic Republic Asset Development Fund (HRADF).
30. To define the dates of the competitions for Piraeus Port Authority (PPA) and Thessaloniki Port Authority (THPA) which should not be later than the end of October 2015, while the privatization of the Railway Company (TRAINOSE) had proceeded without change any condition.
31. Advancing the privatization of regional airports with existing conditions and preferred investors.
32. Configuration of a list of pending privatizations.
33. Adoption of best practices in the EU for non-wage costs (allowances, travel costs etc.) with effect from January 1, 2016.
34. Law to restructure the Public Transport Organization (OASA).
35. Proposals for measures to reduce delays in judicial decisions.

Appendix B – The Banking System

B.1 Introduction

The banking sector was the top sectors that contributed to the creation of the Crisis of 2007. In this chapter is presented in general the collapse of the largest banks in the world, the Greek Banks and their funding

B.2 The Collapse of the two Largest Banks in the World.

The Lehman Brothers[18], the largest US bank, which was founded in 1850, went bankrupt on September 15, 2008 with losses of about $ 60 billion. For many economists, this bankruptcy is considered as the beginning of the Crisis. No one had publicly mentioned that Lehman Brothers was on the brink of destruction and the reason was that there was a general impression that banks had managed to become "too big to allow to fail." That is because banks were constantly growing and both assets and their liabilities was very difficult for someone to think that the Treasury and the Federal Reserve would allow to bankrupt; but that was wrong.

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[18] Nikitas, S. (2013) ''Όταν άρχισε η κρίση: Η κατάρρευση της Lehman Brothers''
http://news247.gr/eidiseis/afieromata/otan-arxise-h-krish-h-katarreysh-ths-lehman-brothers.2409495.html

The reasons that led Lehman Brothers to go bankrupt were the "accounting gimmicks" to cover losses that had experienced in the balance sheets, an amount around $ 50 billion. The global financial crisis after the collapse of Lehman Brothers was the spark for the start of the sovereign debt crisis, whose most subtle link was Greece, followed by Ireland and Portugal.

Before the collapse of Lehman Brothers, the fourth largest investment bank in the world, preceded the bankruptcy of Bear Stearns. In an article in New York Times[19](Andrew Ross Sorein "Form whispers to coup de grace", International Herald Tribune, May 19, 2008) pointed out that speculators, who called them a "gang of Wall Street," consisted of very powerful people on Wall Street and Washington, organized the collapse of Bear Stearns, which became in just three days. In the same article stressed that the Bear Stearns had to choose between two options, either go bankrupt or will be taken over at a low price by JPMorgan Chase & Co. But for all this to happen, a rumor barrage had previously been highlighted by Bear Stearns' lack of liquidity. As a result, in less than three days, Bear Stearns' share price dropped from $70 to just $2. This was also the final blow for Bear Stearns; Alan Schwartz, Bear Stearns president tried to disprove these rumors but failed, so the bankruptcy of Bear Stearns was an inevitable choice.

B.3 Greek Banks

The banks operating in the Greek area is the Piraeus Bank, the Alpha Bank, the Eurobank, the Attica Bank and the National Bank of Greece. Apart from those, before 2013 there were more banks, such as Emporiki Bank and the Hellenic Postbank, but the emergence of the Crisis of 2007, they were combined with the aforementioned banks. Hereunder, there are details for the banks that participate in the current study.

B.3.1 Piraeus Bank

Piraeus Bank[20] is a Greek multinational financial services company with its headquarters in Athens, Greece. Piraeus Bank's stocks are listed on the Athens Stock Exchange (ATHEX) since January 1918, as mentioned in the company's corporate profile.

Around 2015, Piraeus Bank was either the first or second bank in Greece by amount of outstanding loans and deposits, as mentioned in the European Commission's (2015-11-29) "Amendment of the restructuring plan approved in 2014 and granting of new aid to Piraeus Bank''.

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[19] Sorein, A.R. (2008) "Form whispers to coup de grace", International Herald Tribune, May 19, 2008
[20] Piraeus Bank website http://www.piraeusbankgroup.com/el/group-profile/brief-profile

Piraeus Bank has thousands of small shareholders. As of June 2019, the Hellenic Financial Stability Fund holds 26% of outstanding common shares, as mentioned in the "Interim Statement of Financial Position'' of the Hellenic Financial Stability Fund, while the remaining 74% is held by the private sector (legal entities and individuals). Additionally, HFSF holds perpetual convertible bonds fort €2 billion at face value, which are convertible in Piraeus Bank shares in 2022 or upon a trigger event.

A group of shipowners in Piraeus founded Banque du Pirée (Piraeus Bank; BP) in 1916 to finance trade. The bank started trading on the Athens Exchange in 1918. The Greek government bought the bank in 1975 and transformed it into a universal bank. The new headquarters designed by Sir Basil Spence were built on Stadiou Street in Athens. In December 1991 the government privatised the bank, which has grown in size and scope since then.

Expansion and consolidation

In 1995 the Group established Piraeus Bank Romania with 160 branches and one year later Tirana Bank, the first privately owned banking institution in Albania with 56 branches. In 1999 with its acquisition of Xiosbank, PB took over Xios's branch in Sofia, Bulgaria; it has now some 83 branches in the country. PB also acquired the small New York-based Marathon National Bank and Interbank N.Y; it merged Interbank into Marathon Bank.

In 1998 the bank absorbed the Greek branch networks of Chase Manhattan Bank, Crédit Lyonnais, and acquired a controlling interest in Macedonia-Thrace Bank. A year later it added in the activities of National Westminster Bank and acquired Xiosbank (Bank of Chios) which it totally absorbed along with Macedonia-Thrace Bank. In 2002 Piraeus Bank signed a strategic alliance with ING Group (bancassurance). In 2005 it acquired the Bulgarian Eurobank, Atlas Bank in Serbia, Egyptian Commercial Bank in Egypt. In 2007 it expanded in Ukraine by acquiring the International Commerce Bank (renamed as Piraeus Bank ICB) and established Piraeus Bank Cyprus with the acquisition of Arab Bank Cyprus.

In 2002 the bank absorbed 58% of ETBA Bank (Hellenic Industrial Development Bank). PB also started a strategic alliance with ING Group, which took a 5% stake in the Piraeus Bank. In 2006 the PB sold back to ING its stake in a jointly owned mutual funds company. Cooperation continues via the bank-assurance company ING-PIRAEUS.

In 2005 Piraeus Bank acquired the Belgrade-based Atlas banka in Serbia (today Piraeus Bank Beograd with 42 branches), and the Egyptian Commercial Bank (today Piraeus Bank Egypt with 43).

In 2007 PB purchased the Cyprus arm of Arab Bank and renamed it Piraeus Bank (Cyprus). On 13 September 2007 Piraeus Bank completed its acquisition of 99.6% of the share capital of International Commercial Bank in Ukraine, today named Piraeus ICB.

Within the European debt crisis, Piraeus Bank has been subject to the Greek austerity packages: the Hellenic Financial Stability Fund became its main stock holder since 2012 and remained such as of 2020.

In 2011, according to reports in July 2012, the bank obscured its real access to capital by providing circular loans to finance purchase of its own stock through undeclared offshore companies.

In 2012, Piraeus Bank took part in the restructuring of the Greek banks, gaining a leading position in the Greek banking sector.

In June 2012 Piraeus Bank sold its shares in Marathon Banking Corporation (New York City) to Investors Bancorp. The capital was used to finance the takeover of the Greek banks Geniki Bank and healthy parts of ATE bank.

In 2012 it acquired the so-called 'good' part of Agricultural Bank.

In December 2012 it acquired Société Générale's Geniki Bank.

In 2013, Piraeus Bank was considered as having sufficient capital and was included in the group of 4 systemic banks which would be coordinated by the Hellenic Financial Stability Fund to absorb undercapitalized banks. It would reach an international presence consisting of 370 branches focusing in Southeastern Europe and the Eastern Mediterranean as of 2014.

In March 2013 it took over the Greek branches of Bank of Cyprus, Hellenic Bank and CPB Bank.

In June 2013 it took over Millennium Bank (Greece).

In April 2015 it also absorbed the 'good' parts of small Greek Cooperative bank Panellinia.

In May 2015 it sold its subsidiary in Egypt to Al Ahli Bank of Kuwait.

After a probe by the European Commission over government bailouts following the Greek government-debt crisis, in July 2014 restructuring plans for the bank were approved. In November 2015 the European Commission approved amended restructuring plans for Alpha Bank and Eurobank and then for Piraeus Bank on 29 November 2015, allowing a new injection of €2.72 billion of public funds via the Hellenic Financial Stability Fund.

In the following years, Piraeus Bank proceeded to divest abroad.

In March 2017, it sold Piraeus Bank Cyprus to an investment group led by Lebanese businessman Maurice Sehnaoui, which renamed it Astra Bank.

In September 2017, it sold its Serbian banking and leasing operations of Piraeus Bank Beograd, to Direktna Banka A.D.

In December 2017, it sold Piraeus Bank Romania to J.C. Flowers & Co.

In April 2018, it sold Piraeus Bank Beograd to Direktna Banka A.D.

B.3.2 Alpha bank

Alpha Bank[21] is the second largest Greek bank by total assets, and the largest by market capitalization of €2.13 billion (as of December 4, 2018). It has a subsidiary and branch in London, England and subsidiaries in Albania, Cyprus and Romania. Founded in 1879, it has been controlled by the Costopoulos family since its inception. Currently Ioannis Costopoulos, grandson of original founder John F. Costopoulos, and nephew of Stavros Costopoulos, foreign minister in the government of Georgios Papandreou, is the honorary chairman. On January 16, 2015, Alpha Bank requested Emergency Liquidity Assistance (ELA) from the Bank of Greece.

In 1879, John F. Costopoulos established a small commercial firm in the city of Kalamata. The banking department of the "J.F. Costopoulos" firm changed its name to Bank of Kalamata in 1918. The bank moved its headquarters to Athens and changed its name to Banque de Credit Commercial Hellenique in 1924, and on November 2, 1925, the bank was listed on the Athens Exchange.

The bank changed its name to the Commercial Credit Bank (CCB) in 1947, and this name was changed to Credit Bank (Trapeza Pisteos) in 1972, and to Alpha Credit Bank (ACB) in 1994.

In 1999, ACB acquired 51% of the shares of the Ionian Popular Bank, and absorbed it in 2000. It also changed its name to name to Alpha Bank. An attempted merger between Alpha Bank and the National Bank of Greece fell through in 2002.

In 2012, Alpha Bank called off its merger with Eurobank Ergasias, which had been announced the previous year. The same year, Alpha Bank acquired the Greek department of Emporiki Bank from Credit Agricole for €1. The legal merger was completed on June 28, 2013. On May 31, 2013, the bank proceeded in a successful recapitalization with an over-subscription of the required private-sector participation in the Rights Issue, which resulted in the preservation of Alpha Bank's private character. Alpha Bank also took over the deposits of Cooperative Bank of Dodecanese, Cooperative Bank of Western Macedonia, and Cooperative Bank of Evia in 2013, and acquired the entire share capital of Emporiki Bank.

On March 31, 2014, Alpha Bank successfully completed its €1.2 billion capital increase. The Bank redeemed the total amount of the Hellenic Republic's Preference Shares on April 17, 2014. On October 26, 2014, Alpha Bank announced the successful completion of the European Central Bank's (ECB) Comprehensive Assessment in the Static Adverse Scenario with CET1 8.07% and Capital Surplus of Euro 1.3 billion. Based on the dynamic adverse assumptions, CET1 stands at 8.45% with Capital Surplus of Euro 1.8 billion. Also in 2014, Alpha Bank took over Citibank's Greek retail banking operations.

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[21] Website of Alpha Banking http://www.alpha.gr/page/default.asp?la=1&id=30

Alpha Bank requested Emergency Liquidity Assistance (ELA) from the Bank of Greece on January 16, 2015. Its total funding from the ECB (ELA and non-ELA) was €29.9 bn as of September 30, 2015. On July 17, 2015, it sold its Bulgarian branches to Postbank (Bulgaria), the subsidiary of fellow Greek bank Eurobank Ergasias.

Alpha Bank's 2015 end year results are: Risk Weighted Assets: €52.6bn. Total loans: €62 bn (€52.5 bn in Greek loans, €9.5bn in loans abroad). 51.3% are non-performing exposures using the European Banking Authority definition, with a 50% Provision coverage and €31.4 bn in deposits (€26.3 bn in Greek deposits). Loan to deposit ratio=147%. Cost to income ratio=50%.

In 2019, Alpha Bank was among the Greek organizations raided by authorities as part of an investigation on anti-competitive practices, horizontal agreements or exclusionary practices in the provision of payment services.

International Expansion

In 1960, the Commercial Credit Bank established a subsidiary in Cyprus that it may later have closed or sold.

The bank started on a program of international expansion, especially in Southeastern Europe, in the early 1990. In 1994, Credit Bank and the European Bank for Reconstruction and Development (EBRD) established Banca Bucureşti in Romania, which commenced operations the following year. Credit Bank owned about 50% of the bank. The ACB also acquired the Commercial Bank of London from the Commercial Bank of Greece (Emporiki Bank) in 1994, and renamed it Alpha Credit Bank London.

In 1998 ACB established a branch in Tirana, Albania, and followed that with three more branches. In the same year it acquired 82.5% of Lombard NatWest Bank in Cyprus and renamed it Alpha Bank Cyprus Ltd. In 1999 ACB acquired 65% of Kreditna Banka, Skopje, in North Macedonia.

Banca Bucureşti changed its name to Alpha Bank Romania (ABR) in 2000. Banca Monte dei Paschi di Siena took a 5% share in the bank, and Alpha Bank's share became 63%. ABR itself acquired a 12.5% stake in Victoria Bank (est. 1989), the largest private bank in Moldova. In 2002 ACB acquired the minority stake and became the sole shareholder in Alpha Bank Skopje, accounting for 100% of its share capital. Alpha Bank acquired 88.64% stake in Serbian Jubanka and changed its name to Alpha Bank Beograd, and then to Alpha Bank Srbija in early 2005.

Alpha Bank also has an extensive branch network in Bulgaria, the foundation of which it inherited from Ionian and Popular Bank, which entered in 1994 with a representative office in Sofia.

In August 2007, the Turkish Banking Regulatory and Supervisory Agency blocked Alpha Bank's move to buy a 50% share in Alternatifbank (Abank) citing Alpha Bank not meeting the terms of Article 8 of Turkey's banking law. The article covers the financial strength,

track record and personal history of a bank's board of directors. On March 27, 2008, Alpha Bank reached a deal to buy a majority stake in newly established OJSC Astra Bank in Ukraine as part of plans to expand in the region. Alpha Bank agreed to buy 90% of Astra Bank for €9 million. Astra Bank became insolvent in March 2015, and in July 2015 it was acquired 100% by Agro Holdings (Ukraine) Limited (a company owned by the US-based NCH Capital).

Alpha Bank has a branch in London and a finance company, and ran Alpha Finance US, in New York, which no longer exists.

B.3.3 Eurobank

Eurobank EFG Bank[22] is a financial organization that operates in 6 countries Greece, Cyprus, Luxembourg, Serbia, Bulgaria and UK. The Eurobank Group counts (data as of at 31.12.2018), €58.0 billion in assets, 653 customer service locations in Greece and abroad and 13,162 employees.

In 1990 the "Euromerchant Bank SA" literally Euroinvestment bank) was founded. With taking over 75% of EFG Private Bank (Luxembourg) S.A. this part was integrated in 1994. Acquisitions in Greece included Interbank Greece S.A. in 1996-97 and the branch network of Credit Lyonnais Greece S.A., 99.8% of Cretabank in 1998, Bank of Athens in 1999 and 50.1% of Ergobank.

In 1997 the "Euromerchant Bank" changed its name into "EFG Eurobank S.A." and in 2000 "EFG Eurobank Ergasias S.A." after taking over the renowned Ergasias Bank. The financial products subsidiary was found in 2007 (49.9% owned by employees). In 2012 the bank sold 70% of the Polish branches called Polbank to Raiffeisen Bank International.

After the Greek financial crisis and bailouts of Greek banks in 2012 Swiss-Luxembourg based EFG Group, the then owner of Eurobank, was told to separate the Greek bank from the rest of its business. In July that year Eurobank was deconsolidated from the group and the shares sold to the Greek Latsis family and was renamed Eurobank Ergasias.

In January 2013 the National Bank of Greece made an offer, which ultimately did not go through, to take over Eurobank Ergasias; 64,000 Eurobank shareholders and the Greek capital market commission agreed. A few weeks after the buyout proposal NBG presented plans to reduce the staff of the new banking group, especially by means of encouraging early retirement.

In 2014 the bank was the third largest in Greece by total assets, by total loans and total deposits and the fourth by market capitalizations, as at December 2014.

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[22] Website of Eurobank https://www.eurobank.gr/online/home/

Since 1 February 2015 the chairman and non-executive director of Eurobank Ergasias S.A. is Nikolaos Karamouzis; also since the same day its CEO and executive director is Fokion Karavias. Canadian fund Fairfax Financial are major shareholders.

In the end of year 2015 results, total net loans were Euro 39.9 bn (non performing 43.8%, of which provisions were at 53.3%) customer deposits Euro 31.4 bn and central bank funding Euro 24.3bn.

Major Acquisitions

In 1998, 78.23% of Bulgarian Postbank was taken over.

In 2000 Acquisition of a 19.25% participation in Bancpost in Romania, which was later increased

In 2002 EFG Eurobank Ergasias – Telesis Investment Bank merger. Acquisition of 50% in Alico / CEH Balkan Holdings leading to a 43% participation in Postbank Bulgaria

In 2003 Merger through absorption of "Ergoinvest S.A.". Merger by absorption of "Investment Development Fund S.A.". Establishment of Euroline Retail Services (Romania) - 80% Eurobank Cards and 19.961% Bancpost. Establishment of Eurocredit Retail Services (Cyprus) as a 100% subsidiary of Eurobank Cards.

In 2004 Establishment of Euroline Retail Services AD (Serbia) - 100% subsidiary of Eurobank Cards

In 2006 Acquisition of 100% of Nacionalna štedionica–banka in Serbia and forming Eurobank a.d.

In 2006 Acquisition of 70% of Tekfenbank in Turkey, 99.3% of Universal Bank in Ukraine and 74.3% of Bulgarian Postbank in Bulgaria

On 23 December 2012, Eurobank sells all its shares (70%) of the Tekfenbank to Kuwait's Burgan Bank.

On 16 January 2015, Eurobank asks Greek Central Bank for Emergency Liquidity Assistance (ELA)

On 17 July 2015 the subsidiary Postbank (Bulgaria) buys the Bulgarian branches of fellow Greek lender Alpha Bank.

In April 2018, its Romanian subsidiary, Bancpost, was sold to Banca Transilvania, the largest Romanian bank.

B.3.4 National Bank of Greece

The National Bank [23] (NBG) is a global banking and financial services company with its headquarters in Athens, Greece.

The group offers financial products and services for corporate and institutional clients along with private and business customers. Services include banking services, brokerage, insurance, asset management, shipping finance, leasing and factoring markets. The group is the largest Greek bank by total assets and the third largest by market capitalization of 1.06 billion Euro as at 4 December 2018. It is the second largest by deposits in Greece after Piraeus Bank. It is fourth largest by Greek loan assets trailing Piraeus Bank, Alpha Bank and Eurobank Ergasias.

The Swiss bankers Jean-Gabriel Eynard and Georgios Stavros founded NBG in 1841 as a commercial bank. Stavros was also elected as the first director of the Bank until his death in 1869. From NBG's inception until the establishment of the Bank of Greece in 1928, NBG enjoyed the right to issue banknotes. When the Athens Stock Exchange was founded in 1880, NBG immediately listed on the exchange, a listing it has retained to the present.

The bank is currently listed on the Athens Exchange (Athex: ETE, ISIN GRS003003019); it is a constituent of the FTSE/Athex Large Cap index. From 1999 to 2015 it was listed on the New York Stock Exchange (NYSE:NBG, ADR, ISIN US6336437057).

In 1953 the NBG took over the Bank of Athens, which was at that time the second largest Bank in Greece. Both banks cooperated before in their foreign branches in Middle East which were operated as Banque Nationale de Grèce et d'Athènes. The NBG took over also the affiliated South African Bank of Athens (est. 1947), which NBG still owns. The former headquarters of the Bank of Athens are also still used until today. In 1960 Egypt nationalized all banks in Egypt, including Banque Nationale de Grèce et d'Athènes, which it merged into National Bank of Egypt.

In 1965 NBG acquired the Greek Professional Credit Bank. The next year bank governor Georgios Mavros founded the National Bank of Greece Cultural Foundation. In 1978 the Greek government permitted the formation of Arab Hellenic Bank with 49% Arab ownership, as an exception to its prohibition on foreign banks owning more than 40% of the equity of a Greek bank. NBG held 51% and provided most of the bank staff. The Libyan Arab-Foreign Bank and Kuwaiti Investment Organization held 40% between them while other Arab investors held 9%. That same year NBG opened again a branch in Cairo. In 1994 NBG incorporated its branches in Cyprus into a subsidiary: National Bank of Greece (Cyprus). The next year the Greek government dissolved the insolvent Arab Hellenic Bank at a cost to Greece's Deposit Guarantee Fund of Euro 1.5m in payments to depositors. In 1998 the Swiss architect Mario Botta won the competition for the new wing of the headquarters; the building was completed in 2001. In 1998 NBG merged with the National Mortgage Bank of Greece, itself the result of the merger of the National Mortgage Bank

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[23] Website of the National Bank of Greece https://www.nbg.gr/el/i-bank/retail/internet-banking

and the National Housing Bank of Greece. In 1999 NBG started trading on the New York Stock Exchange.

After the end of communism in Eastern Europe, NBG took advantage of the opportunity to expand to Southeast Europe. In April, 2000, in a joint deal with the European Bank for Reconstruction and Development (EBRD) and IFC, NBG acquired a majority stake in Stopanska Banka (Skopje, Republic of Macedonia). In July, National Bank of Greece acquired 89.9% of the United Bulgarian Bank (UBB).

In 2002 NBG merged with ETEBA (National Investment Bank for Industrial Development), but NBG's attempted merger with Alpha Bank fell through. The next year, NBG bought Banca Romaneasca, a Romanian bank, and currently holds 88.7% of all outstanding shares. Banca Romaneasca has 90 branches.

However, while it was expanding to Southeast Europe, NBG was retreating in North America and other places serving the Greek diaspora. The first move occurred in 2005 when NBG sold all its operations in Canada to Bank of Nova Scotia. The next year NBG sold its US arm, Atlantic Bank of New York, to New York Community Bancorp for US$400 million (€331 million) in cash. It then used proceeds from the sale to help finance further acquisitions in southeast Europe. In 2004 the Institute for Corporate Culture Affairs was founded by NBG and Deutsche Bank as not-for-profit institute based in Frankfurt.

In 2006 NBG acquired 46% of the shares of Finansbank in Turkey, a share that it increased in 2007 to 80%. Hüsnü Özyeğin reported in the initial press conference when NBG announced its 46% share purchase that he would have "loved to have been offered National Bank of Greece shares instead of cash, however there were no shares available" (outside of the current shares floated in the free market). Still in 2006, NBG acquired 99.44% of Serbia's Vojvođanska banka for €385 mn.

At home, in 2005, as part of the NBG Group's ongoing effort to improve its portfolio structure and effectively respond to changes in the domestic and international markets, the Boards of Directors of National Bank of Greece S.A. and National Investment Company S.A. decided to merge the two companies through absorption of the latter by the Bank. Two years later, NBG merged with National Management & Organization Co. (the issuer of "Ethnokarta"). At the time, NBG already held 100% of National Management & Organization Co. shares. Also in 2007, NBG concluded the acquisition of P&K Investment Services SA. The acquisition created the largest provider of brokerage and investment services in Greece. NBG plans to expand this business to all countries where NBG has a presence.

The bank suffered following the Greek government debt crisis holding part of the debt. The bank wrote off more than $19 billion; 10 billion euros ($12.7 billion) of them in the restructuring of the debt.

On 18 February 2011 NBG made an offer to buy Alpha Bank for 2.8 billion Euros and another offer to buy Emporiki Bank, both offers were not successful, Emporiki Bank was then bought by Alpha Bank.

In January 2013 NBG made an offer to take over the Eurobank Ergasias this was not completed. The 64,000 Eurobank shareholders and the Greek capital market commission agreed. Some weeks after the proposed buyout that fell through, NBG presented the plans to reduce the staff of the new banking group, many of them by taking early retirement. The merger was criticized, as some said that the new bank would be too big if it had to be sold, but one of the bankers said that much bigger banks have been sold. The NBG absorbed the healthy assets and liabilities of the Greek FBBank in 2013. The European Commission in July 2014 approved restructuring plans for NBG after finding that state aid was not hampering competition.

On 28 November 2015, the New York Stock Exchange announced that American depositary receipts ("ADRs") of National Bank of Greece S.A. were in the process of being delisted following a 14% value decline on Friday 27 November 2015 and a year-to-date slump of 91%. While the year-to-date plunge of 91% was a major factor, the exchange stated that the National Bank of Greece is no longer suitable for listing based on "abnormally low" prices of the ADRs, pursuant to Section 802.01D of the NYSE Listed Company Manual. Also, the bank failed to meet the trading standards and also failed to cross the $1.00 mark since mid-July, resulting in the NYSE's determination to delist the bank's ADRs.

On 4 December 2015, the European Commission approved state aid amounting to 2.71 billion euros.

In December 2015, the bank announced it would sell Turkish subsidiary Finansbank to the Qatari QNB Group, in order to pay down its expensive central bank debt. Including €910m of subordinate debt, a sum of €2.75bn in cash was agreed upon. It has also been announced that NBGI Private Equity will be sold in 2016.

B.3.5 Attica Bank

The Attica Bank [24] is the fifth largest Greek bank but smaller than the top four "systemic" banks. Its market capitalization was 116 million euro on October 6, 2017. Its headquarters are in Athens and its 55 branches are spread nationwide.

Attica Bank participates in the companies of Attica Bancassurance Agency S.A., Attica Finance, Attica Funds plc, Attica Bank Properties, Attica Ventures, and Attica Wealth Management, as mentioned in the Financial Statements of the bank.

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[24] Website of Attica Bank http://www.atticabank.gr/el/

B.4 Funding of Greek Banks before the Crisis[25]

The Greek banks showed in the early stages of the crisis that will not be affected so much, as it finally happened. The reasons for this hypothesis, Giorgos Michalopoulos states, were:

1. Negligible exposure of Greek banks to toxic products.
2. Minimum funding than the other banks in the European Union.

But things were not conducted as could be predicted and the banks entered a long period of exclusion from international capital markets.

The period before the financial Crisis of 2007 was a period of growth for the Greek banks, as almost all Greek banks had entered into foreign markets, especially in the Balkan region, as Giorgos Michalopoulos mentioned.

Since 1999, the first program of issuance of medium-term bonds in the European market has been established (EMTN). Medium-term liquidity opportunities were strengthened year after year as foreign markets became increasingly familiar with Greek credit risk. Debt recycling in the markets for the entire Greek banking system reached about €16 billion, representing 5% of their liabilities on an annual basis.
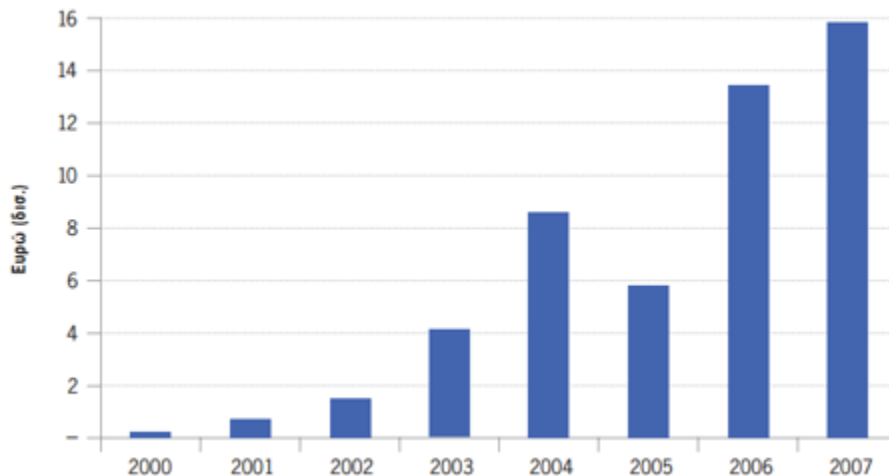
Giorgos Michalopoulos notes that in 2007 there was a lot of movement, as this new European capital market needed new issuers with high margins, as were the Greek banks. The diagram below highlights the wholesale funding of European banks.

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[25] Michalopoulos G., http://www.hba.gr/5Ekdosis/UplPDFs/syllogikostomos/12-c%20Michalopoulos%20229-246.pdf
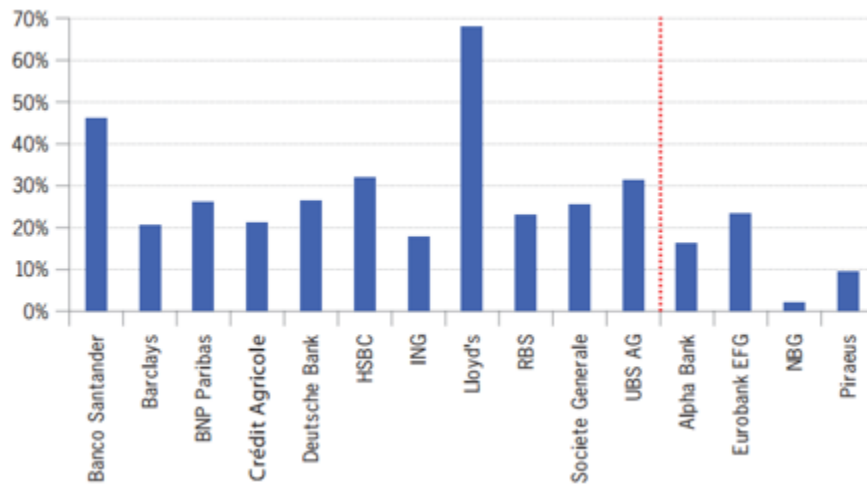
It can be observed that Alpha Bank is third from the end in financing to total assets, with a percentage almost 12%, which is much smaller than the average total assets financing of the other European banks, which is almost 28%. This large difference indicates the moderate dependence of the Greek banks in connection with financing from abroad.

At 2007 one of the greatest shrinkages happened, by approaching the Euribor reference rate, between 10 to 30 basis units for a period of 2-5 years. The risk premium required to be paid for the extension of funding above one year was negligible (Figure 8), which shows the confidence that the Greek banks had before the outbreak of the crisis.
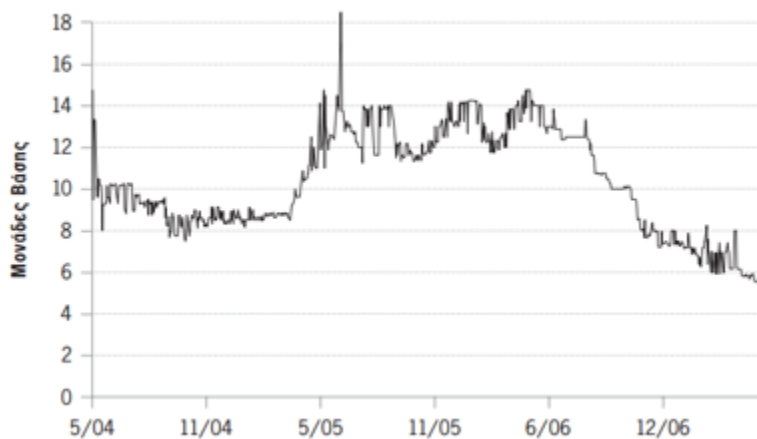
	1 έτος	2 έτη	3 έτη	5 έτη	7 έτη	8-10 έτη
2000	45	60	65	80		
2001	30	45	50	75		
2002	30	40	40	90		
2003	10	25	35	65		
2004	10	30	45	60		
2005	10	15	25	35		
2006	15	18	21	27	30	32
2007	8	12	15	25	30	32

Due to a strong growth in international markets, the Greek banks were considered trustworthy to strengthen their presence by taking longer-term issues and handled changes in these issuances (in the form of payments, interest rates, etc.). This was an attempt by the Greek banks to approach investors, such as mutual funds, insurance companies, private banking clients etc.

The expectations for improvement of the credit ratings which existed for lending to the Greek banks in conjunction with the other competition, but also with the effective management of borrowing costs, resulted in the selection of short-term loans that were very limited.

The Greek banks had limited potential for long-term loans (over five years), even at periods with low cost. The main causes that long-term loans were difficult to get, according to Giorgos Michalopoulos, were:

1. The country of origin
2. The size and weight of the Greek capital market

Besides the advantages of the Greek financial system there were some disadvantages, which were:

1. The relatively small size of the private placements.
2. The excessive supply of securities in the market, which over time had a direct impact on demand.

The financing of Greek banks was consolidated in easy, fast and cheap lending by all the other banks at a percentage of 60% and by investors in central-northern Europe at 70% of

their wholesale financing. The repeated success of this investing audience led them to own investors with these characteristics (Figures 10 & 11)
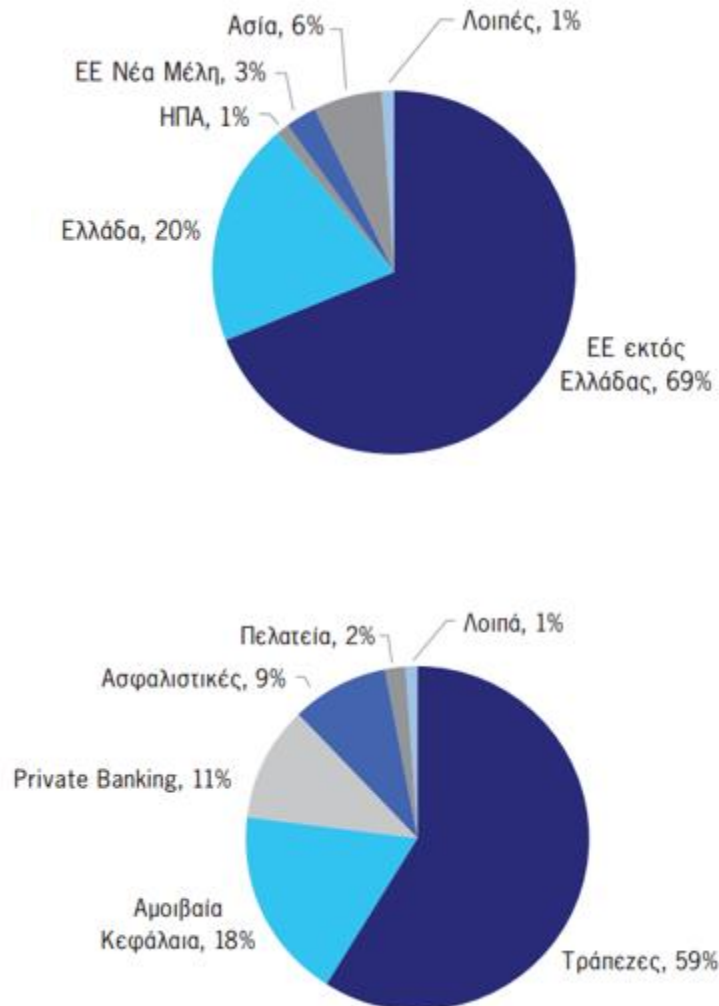
B.6 The course of the Greek Banks in the Stock Market[26]

As Gikas Hardouvelis mentions, an investor investing 100 euros in Greek bank portfolio on 30.9.2004 doubled his money by October 2007. The corresponding investments in European markets had also high, but lower yields. After October 2007, the international crisis lowered the stock prices. The fall continued until the March 2009. The banking indices in Greece and Europe had dropped to 50 euros, meaning that the portfolios in March 2009 had half the value that they had in September 2004. The non-banking european shares

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[26] Hardouvelis, G. (2016) ''The Greek Banking System in the Crisis years''

were kept at 100 euros, which suggests that the international crisis was mainly a financial crisis.

Since April 2009, along with the end of the international crisis, it is observed that stock markets are recovering, but for the banks this recover stops in October 2009, as Gikas Hardouvelis mentions. Then begins the Greek crisis with the revelation of the high Greek fiscal deficits. The decline is so big that the value of the Greek banks' portfolio in March 2012, after Private Sector Involvement (PSI) is 3 or 4 euros! The corresponding value of the European banks has fallen back to 50 euros, while not European bank shares are at 150 euros. And then, after PSI, the banking shares in Greece are completely zeroed, ie all 3 or 4 euros lost in March 2012[27].

Appendix C – The Athens Stock Exchange Market and the FTSE Companies

C.1 Athens Stock Exchange

The Athens Stock Exchange is the stock exchange of Greece, based in the capital city of Athens. Founded in 1876, there are currently five markets operating in ATHEX: regulated securities market, regulated derivatives market, Alternative market, carbon market and off-exchange market. In the regulated securities market investors can trade in stocks, bonds, exchange-traded funds and other related securities.

ATHEX has over 30 indices. The six main indices are:

- Composite Index (*GD*)
- FTSE/Athex Large Cap (*FTSE*)
- FTSE/Athex Mid Cap Index (*FTSEM*)
- FTSE/Athex Market Index (*FTSEA*)
- FTSE/ATHEX Global Traders Index Plus (*FTSEGTI*) and
- FTSE/ATHEX Factor-Weighted Index (*FTSEMSFW*).

The Athens Composite index started trading in 1980, its High 6355.04 set on 17 September 1999. The Athens stock exchange was closed on 27 June 2015 because of the Greek government-debt crisis. It reopened on 3 August 2015 and lost more than 16% in the day's trading with certain bank stocks plummeting 30%, the daily change limit.

Companies listed on the exchange are regulated by the *Hellenic Capital Market Commission*. As of November 2017, on the Athens Exchange 209 companies are

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[27] Hardouvelis, G. (2016) ''The Greek Banking System in the Crisis years''

represented with 217 stocks. The *Securities Market* has 205 stocks (from 197 companies) and the *Alternative Market* has 12 stocks (12 companies).

Categories of stocks

The stocks of the Securities Market are divided into five categories:

- *Main Market* (129 stocks from 127 companies)
- *Low Dispersion* (10 stocks/companies)
- *Surveillance* (30 stocks from 27 companies)
- *Under Suspension* (28 stocks from 27 companies)
- *Under Deletion* (8 stocks from 6 companies).

C.2 FTSE/Athex Large Cap

The FTSE/Athex Large Cap is the stock index of the twenty-five largest companies on the Athens Stock Exchange.

As of today, this index is consisted of the following stocks:

- Viohalco,
- Coca-Cola HBC AG,
- EYDAP,
- Terna Energy,
- Lamda Development S.A.,
- Hellenic Petroleum,
- Gr. Sarantis S.A,
- GEK Terna,
- Titan Cement,
- ADMIE
- Public Power Corporation,
- Mytilineos Holdings,
- OTE,
- OPAP,
- Motor Oil Hellas,
- Jumbo S.A.,
- Piraeus Port Authority,
- Eurobank Ergasias,
- Alpha Bank,
- National Bank of Greece,
- Piraeus Bank,
- Folli Follie,
- Hellenic Exchanges Group,

- Grivalia Properties R.E.I.C.,
- Aegean Airlines.

The Athens Exchange uses the symbol *FTSE* for this index. The index was launched on 23 September 1997 (22 years ago); it was created by FTSE International Ltd. Until December 3, 2012 this index consisted of 20 companies and it was called *FTSE/Athex 20*. From 3 December 2012 to 19 June 2017, it consisted of 25 stocks. From 19 June 2017 to 18 December 2018, it consisted of 26 members. Since 18 December 2018 it consists once again of 25 members.

Hereunder are stated some basic information about the Companies that consist the FTSE/Athex Large Cap:

Company	Industry	Est.	HQ	Revenue	Operating Income	Net Income	Total Assets
AEGEAN	Transportation	1987	Kifissia Greece	1.187 billion (2018)	98.6 million (2018)	67.9 million (2018)	725.9 million (2018)
COCA COLA	Food	1969	Zug Switzerland	7.026 billion (2019)	715.3 million (2019)	488 million (2019)	9.201 billion (2019)
ELLAKTOR	Construction Energy	1999	Kifissia Greece	1.857 billion (2018)	41.649 million (2018)	25.76 million (2018)	3.225 billion (2018)
GEK TERNA	Construction Energy	1969	Athens Greece	1.923 billion (2014)	203.97 million (2014)	129.06 million (2014)	3.38 billion (2014)
HELPE	Energy	1958	Athens Greece	7.994 billion (2017)	661.78 million (2017)	383.92 million (2017)	7.16 billion (2017)
JUMBO	Retail	1986	Moschato Greece	753.3 million (2018)	260.29 million (2018)	151.1 million (2018)	1.362 billion (2018)
MOTOR OIL	Energy	1970	Marousi Greece	7.843 billion (2017)	899.5 million (2017)	313.55 million (2017)	2.895 billion (2017)
MYTILINEOS	Conglomerate	1990	Marousi Greece	1.526 billion (2017)	232.12 million (2017)	158 million (2017)	5.218 billion (2017)
OPAP	Gambling	1958	Athens Greece	1.455 billion (2017)	482.57 million (2017)	131.62 million (2017)	1.796 billion (2017)
OTE	Telecom	1949	Marousi Greece	3.857 billion (2017)	385.6 million (2017)	174.5 million (2017)	7.102 billion (2017)
PUBLIC POWER	Energy	1950	Athens Greece	4.741 billion (2018)	216.5 million (2018)	542 million (2018)	14.112 billion (2018)
GEK TERNA	Construction Energy	1997	Athens Greece	158.3 million (2014)	89.92 million (2014)	25.85 million (2014)	1.34 billion (2014)

C.2.1 Coca-Cola HBC AG

Coca-Cola HBC A.G. also known as Coca-Cola Hellenic Bottling Company or just Coca-Cola Hellenic is the world's third-largest Coca-Cola anchor bottler in terms of volume with sales of more than 2 billion cases. Coca-Cola HBC's shares are listed on the London Stock Exchange with a secondary listing on the Athens Stock Exchange. The company is a constituent of the FTSE 100 Index. Coca-Cola HBC has been named the industry leader among beverage companies in the 2014 Dow Jones Sustainability Index (DJSI) and is also included in the FTSE4Good Index.

Hellenic Bottling Company S.A. was incorporated under the laws of Greece in 1969, with headquarters in Athens. The Coca-Cola Company granted to the company its bottling rights in the country in 1969. In August 2000 Hellenic Bottling Company S.A. acquired Coca-Cola Beverages Ltd, the former European operations of Coca-Cola Amatil, and formed *Coca-Cola Hellenic Bottling Company S.A.*

In October 2012, the company announced that it was moving its operational headquarters to Switzerland and would switch its main market listing to London. This was a major blow to the Athens stock market, as Coca-Cola Hellenic was its largest listed company by value. Reasons for the move included better access to financing and a move away from crisis ridden Greece, which had prompted ratings agencies to downgrade its credit over the summer to three notches above "junk" level.

On 29 April 2013 Coca-Cola HBC AG ("CCHBC AG"), the new Swiss holding company, was admitted to the London Stock Exchange's main market.

On 11 September 2013 Coca-Cola HBC AG announced its inclusion into the FTSE 100 and FTSE All-Share indices. Coca-Cola HBC was named the industry leader among beverage companies in the 2014 Dow Jones Sustainability Index.

On 24 July 2014 Coca-Cola HBC AG announced its delisting of its American depositary receipts (ADRs) from the New York Stock Exchange, the termination of its ADR programme, and the deregistration and termination of its reporting obligations under the U.S. Securities Exchange Act of 1934.

In October 2017 the company's CEO, Dimitris Lois, died after a period of illness. On 7 December 2017, Zoran Bogdanovic was appointed as new CEO by the Board of Directors.

On 18 February 2019, the company announced a deal valued at €260 million to acquire Serbian food company Bambi from Mid Europa Partners.

C.2.2 Aegean Airlines

Aegean Airlines S.A. is the flag carrier airline of Greece and the largest Greek airline by total number of passengers carried, by number of destinations served and by fleet size. A Star Alliance member since June 2010, it operates scheduled and charter services from Athens and Thessaloniki to other major Greek destinations as well as to a number of European and Middle Eastern destinations. Its main hubs are Athens International Airport in Athens, Macedonia International Airport in Thessaloniki and Larnaca International Airport in Cyprus. It also uses other Greek airports as bases, some of which are seasonal. It has its head office in Kifissia, a suburb of Athens.

On 21 October 2012, Aegean Airlines announced that it had struck a deal to acquire Olympic Air, and the buyout was approved by the European Commission a year later, on 9 October 2013. Both carriers continue to operate under separate brands. In addition, Aegean Airlines participated in the final stages of the tender for the privatization of Cyprus Airways, the national carrier of Cyprus. Following the bankruptcy of Cyprus Airways, Aegean Airlines established a hub at Larnaca Airport, thus initiating scheduled flights to and from the island to various destinations and filling the service gap created by the services termination of Cyprus Airways.

C.2.3 Ellaktor

ELLAKTOR Group is the largest infrastructure group in Greece and one of the leading in Southeastern Europe, with an international presence and a diversified portfolio of activities, focusing on construction, concessions, environment, renewable energy and real estate development. With operations in 30 countries and nearly 6,000 direct employees, the company generates €1.85 billion in revenues (2018) and is ranked 83rd among the top 100 global manufacturing groups (Global Powers of Construction 2018, Deloitte).

AKTOR: The construction arm of ELLAKTOR and its biggest subsidiary is established as a leading international infrastructure company, providing a wide range of highly diversified services in the fields of Construction, Solar Power, Quarrying, Facility and Project management. With a turnover of €1.5 billion and operations in 26 countries, its emblematic construction projects include the Gold Line Metro of Doha in Qatar, the new Acropolis Museum, the Rion-Antirrion Bridge etc.

AKTOR CONCESSIONS: The largest concessions company in Greece and the first to enter into concessions agreements already since the 1990s. With vast experience in all aspects of concessions, its portfolio includes the major motorways of Greece, as AKTOR CONCESSIONS holds a majority stake in Attiki Odos (65.8%) and the Moreas Motorway (71.67%), while retaining significant percentages (17-23%) in Olympia Odos, Rio-Antirrio Bridge and the Aegean Motorway.

HELECTOR: A leading company in Southeast Europe with expertise in the field of waste management. With vertically integrated operation, the company is active in the whole

spectrum of Design, Construction and Operation of modern waste treatment plants, in alternative fuel production and in biomass exploitation. HELECTOR's portfolio includes the 1st PPP for waste management in Greece, as well as the largest Waste Treatment Plant in Europe in Sofia, Bulgaria.

ELLAKTOR / Renewable Energy Sources Division: The parent company of the Group, following the merger by absorption of its subsidiary EL.TECH. ANEMOS, is the central arm of ELLAKTOR Group in the field of Renewable Energy Sources and the 2nd largest wind energy producer in Greece. Today, it has 296 MW of total installed capacity in operation, while completing 5 new wind farms with a total capacity of 196MW in the regions of Epirus, West Macedonia and Thrace, Greece.

REDS: One of Greece's leading real estate development companies. REDS undertake medium and large-scale Retail and Entertainment, Office, Mixed Use, Exhibition and Conference and Residential projects. Among others, REDS has developed and is operating Smart Park, the biggest Retail Park in Greece, with 5 million visitors in 2018, while the company is currently developing the emblematic Cambas Project.

C.2.4 Fourlis

The Group dates back to 1950 with the founding of A. Fourlis & CO. O.E. by Anastasios Fourlis, with whom the other three Foulis brothers, Stelios, Yannis and Ilias, began a close cooperation shortly after.

Initially the company imports and sells electrical appliances from Germany, having secured the exclusive representation of leading postwar branded products, such as Junker & Ruh stoves, fan heaters and Kitchen exhaust fans, Linde electric refrigerators and Erres radios.

In 1965 the company becomes the exclusive distributor of all American-made kitchen exhaust fans. In April 1967 it undertakes to import, assemble and distribute RCA and Westinghouse television sets as well as to assemble TV sets for third parties at the company's plant on Piraeus Street.

 At the same time, it undertakes the distribution of Philco washing-machines.

In 1968, the company is renamed FOURLIS BROS. AEBE and joins the ranks of manufacturers with the introduction of an exhaust fan line which establishes it as a market leader, a position the company maintains to date.

In 1973, FOURLIS BROS. moves from central Athens to new company-owned facilities located near the 17 km mark on the Athens- Lamia highway. A year later, the company's manufacturing plant is relocated to a neighboring property, where the assembly of TV sets and production of exhaust fans continues unabated.

1975 is yet another milestone year in the company's history marked by an exclusive representation agreement with General Electric regarding home appliances.

Three years later, in 1978, the company contracted to assemble and distribute Telefunken TV sets.

During its fourth decade, FOURLIS BROS. becomes a thriving concern, ranking among the 10 most profitable companies in Greece.

In 1982, the company introduces the NEFF line of home appliances, quickly gaining a leading position in the built-in appliances market. During the same year, due to intense Far-Eastern competition, the assembly of TV sets is discontinued.

In April 1988, anticipating the rapid growth of the Greek stock market, the company's management successfully lists the company on the Athens Stock Exchange.

The company's fifth decade is a period of rapid expansion into new market sectors. In January 1993, anticipating the growing strength of the retail market and capitalizing on its potential, the company acquires 51% of P. Kotsovolos AEBE, the leading chain of home appliance stores in Greece.

In 1996, favorable political reforms in Eastern Europe facilitate the company's foreign expansion strategy and lead to the establishment of two wholesale appliance subsidiaries, Genco Romania SRL and Genco Bulgaria. In 1997, the company launches One Way Technostores AEBE, a retail computer and mobile telephony store chain. In March 1998, TLF Electroline Ltd. is founded in Cyprus and soon becomes the island's leading wholesale and retail home-appliance company. In May 1998, FOURLIS BROS. completes the acquisition of Radio Athine AEBETE, the third largest electric appliance chain in Greece, while in August it penetrates the Czech market by acquiring Europe Technic SPOL SRO, the country's second largest retail appliance outlet chain, and by founding Genco Czech Ltd., a wholesale subsidiary.

Intarget S.A. is founded at the end of 1998, focusing on Internet-based business solutions

At the end of 1999, the FOURLIS Group concludes a franchise agreement with Swedish IKEA, regarding home furnishings and appliances for the Greek market.

At the same time, the company undertakes the exclusive representation in Greece of Intersport, the world's largest sporting goods chain. Another milestone was reached with the decision to spin off the company's commercial and industrial operations (incorporating them into the newly formed FOURLIS TRADE), converting, as of 1/1/2000, the parent enterprise into a holding company able to further develop operational synergies between Group members.

In 2000 FOURLIS Group completed 50 years of creative activity. In the 2000 the final company's structure is formed and the parent company FOURLIS HOLDINGS SA controls a significant number of subsidiaries.

The GROUP's basic activity is to develop wholesale and retail network of selling consumer goods. Among these goods are electrical household appliances, electronic products, telecommunications equipment, clothing, furniture and other household accessories.

The new activities in the fields of household equipment represented by IKEA and that of athletic goods represented by INTERPSORT are also of great importance to the Group. In 2001 the first IKEA store in Thessaloniki opened its doors to Greek consumers. In April 2004, the first IKEA store opened in Athens in the retail park of the Athens International Airport. The subsidiary company INTERSPORT ATHLETICS S.A. completed the first phase of commercial development plan with 14 stores while at the end of 2005 24 stores in Greece and Romania are operating.

FOURLIS TRADE SA and EUROELECTRONICS SA, the subsidiaries in the field of electric and electronic products also had a very positive course and the brands they represent such as Samsung, General Electric, Ariston, Korting etc. continue to improve their market share.

In July 2004 negotiations with the DIXONS Group were concluded for the sale of the company P. Kotsovolos S.A. (Kotsovolos)

For the first time at the end of 2005, retail sales accounted for more than 50% of Group sales. This tendency will continue due to the rapid growth of IKEA and Intersport.

The Group proceeded with the restructuring of Fourlis Holdings S.A. in 2007, with the purpose of achieving more effective operation and rationalizing corporate governance. The result was to separate the position of Executive Chairman from that of Managing Director, in line with the practice currently followed by most international companies.

In 2007, the inauguration of the first IKEA store in Nicosia took place while the second IKEA store in Athens and fourth in total was opened on 26 March 2008. In October 2009 the new IKEA store in Larissa opened its doors and by the end of the decade in 2010, FOURLIS Group added a new IKEA store in Ioannina (Greece).

The development of the store network of INTERSPORT stores continued and by the end of the decade 55 stores operated in total (33 in Greece, 16 in Romania, 4 in Bulgaria and 2 in Cyprus).

This is the period where the consequences of the financial crisis are escalating and the impact to consumer spending is immediate. Despite the escalation of the recession, FOURLIS Group with the effective management of operating expenses and assurement of the financial resources for targeted investments funding not only in Greece but also in foreign countries is confronting the adverse consequences.

In September 2011, the operation of the first IKEA store in Sofia, Bulgaria began while in 2012 the first pick-up point opened in Rhodes.

In 2013 and 2014, four new IKEA Pick Up Points added in the Greek network (Patras, Chania, Heraklion and Komotini) and 19 new Intersport stores opened. The Group

proceeded to an agreement for obtaining the franchise rights for developing a store network of "The Athlete's Foot" in Greece and Turkey.

Finally, during 2014 the divestment from the wholesale was concluded.

Today, the retail network of the Group consists from seven IKEA stores, 5 of them in Greece, one in Cyprus and one in Sofia, Bulgaria. Also, nine IKEA Pick-Up Points are operating (Rhodes, Patras, Chania, Heraklion, Komotini and Kalamata) and from July 2015, one in Varna, Bulgaria, one in Burgas that opened in October 2016 one in Plovdiv that opened in December 2018 and one in Limassol that started its operation in May 2019. Finally, the IKEA e-commerce stores are fully operational in all three countries (Greece, Cyprus, Bulgaria).

Furthermore, 119 Intersport stores are operating (50 in Greece, 31 in Romania, 23 in Turkey, 9 in Bulgaria and 6 in Cyprus) and 16 The Athlete's Foot stores are operating (13 in Greece and 3 in Turkey). Today the e-commerce sites of INTERSPORT are operational in Greece, Romania, Bulgaria and Cyprus within 2019 the new e-commerce store of Turkey is going to be fully operational.

C.2.5 GEK Terna

GEK Terna Holding Real Estate Construction is a large Greek conglomerate which is listed on the Athens Exchange. Its construction branch Terna is one of the leading enterprises of its sector in Greece.

GEK Terna's electric utilities branch Terna Energy lately focused on the production and transmission of renewable energy. Through its subsidiary Heron S.A., it is as well involved in the construction and operation of thermoelectric power generation fueled with natural gas. Terna Energy is listed separately on the Athens Exchange (Athex: TENERGY).

The company was formed when former competitors GEK and TERNA merged in 1999. Until 2008, GEK was the name of the holding with TERNA being its operational branch. The Athens-based company has been listed at the Athens Exchange since 1969 and belongs to the 25 companies forming the FTSE/Athex Large Cap index. In 2013, U.S. investment firm York Capital Management bought a 10% share of the company.

Rail privatization bid

Following the Greek government-debt crisis, GEK Terna showed interest in the planned privatization of Greek state-owned railway carrier TrainOSE. Together with the state-owned railway companies of Russia and France, RZD and SNCF, and Romanian private railway carrier Grup Feroviar Roman, it placed a joint bid for TrainOSE and the Hellenic Company for Rolling Stock Maintenance (Rosco), currently held by the Hellenic Republic

Asset Development Fund. Following the January 2015 legislative election, the new SYRIZA-led administration however put the decision under review.

C.2.6 Helpe

Hellenic Petroleum S.A. is one of the largest oil companies in the Balkans and with its roots dating to 1958 with the establishment of the first oil refinery in Greece (Aspropyrgos).

It adopted its current name in 1998, changing from the Public Petroleum Corporation S.A, as the result of a corporate reorganization. It is a consortium of 6 subsidiaries and a number of additional companies of which it has varying degrees of management control.

Refineries and gas stations

Hellenic Petroleum operates three refineries in Greece, in Thessaloniki, Eleusine and Aspropyrgos, which account for 57% of the refining capacity of the country (the remaining 43% belongs to Motor Oil Hellas). Also owns OKTA facilities in Skopje, Republic of North Macedonia for transportation and marketing of petroleum products. Crude oil for the refineries is supplied from Saudi Arabia, Iraq, Iran, Libya and Russia. The company also operates over 1700 gas stations in Greece and about 300 gas stations in Serbia, Bulgaria, Cyprus, Montenegro and the Republic of North Macedonia. It also has a network which sells LPG, jet fuel, naval fuels and lubricants.

Petrochemicals

Being the most important company that produces petrochemicals in Greece, Hellenic Petroleum has a very significant (over 50% in most cases) share of the market. Their basic products are plastics, PVC and polypropylene, aliphatic solvents and inorganic chemicals, such as chlorine and sodium hydroxide. The petrochemicals department is a part of the Thessaloniki refinery.

Electricity

Hellenic Petroleum operates a 390 MW natural gas power station in Thessaloniki. It opened in 2005 and it is operated through a subsidiary, T-Power. The fixed investment for this plant amounted to 250 million Euros.

Oil exploration

The Group has established partnerships with leading companies in the sector, been awarded exploration and production rights for hydrocarbons in a portfolio of areas in Western Greece, both offshore and onshore in various development steps.

Other

Hellenic Petroleum subsidiaries include the engineering company Asprofos and the polypropylene film production company, DIAXON, whose factory is situated in the industrial area of Komotini. The company also controls two shipping companies and has 35% shares in DEPA, the Greek natural gas company, and VPI, which produces PET resin.

C.2.7 Jumbo

Jumbo Anonymi Etairia is a Greek company. The Company's main operation is retail sale of toys, baby items, seasonal items, decoration items, books and stationery. The Company was incorporated in 1986.

JUMBO operates 80 stores, 52 of which are located in Greece, 5 in Cyprus, 9 in Bulgaria and 14 in Romania.

The Group has also a presence through partnerships in 5 countries with stores that operate under JUMBO brand name (Albania, Kosovo, Serbia, North Macedonia and Bosnia).

The Company has been listed on the Athens Exchange since 19.7.1997, and since June 2010 it has participated in FTSE/Athex 20 index.

C.2.8 Lamda

LAMDA Development S.A., listed on the main market of the Athens Exchange, is a holding company specializing in the development, investment and management of real estate.

The company is the leader in the Retail Real Estate sector in Greece with successful diversification in the office and residential sectors.

The company's development portfolio includes: three commercial and leisure centers, The Mall Athens and Golden Hall in Athens and Mediterranean Cosmos in Thessaloniki (total GLA 156.500 sqm.), office buildings, innovative residential complexes and Flisvos Marina in Faliro.

In 2014, LAMDA signed the contract with the Greek state for the acquisition of the shares of the "Hellinikon SA". The project includes all the land area of the old Athens airport and the coast front, totaling 6,2 mil sq. m. and will be the largest urban regeneration investment ever in Greece.

The company has a top reputation as member of the Latsis Group.

C.2.9 Motor Oil

Motor Oil (Hellas), Corinth Refineries S.A. is a petroleum company based in Greece focusing on petroleum refining and trading. It is a leading force in its sector in Southern Europe and the Mediterranean.

Refinery, facilities and gas stations

The company operates the second-largest refiner (Corinth Refinery) in Europe based in Corinth, Greece, and the Cairo-based oil and gas exploration and production facilities in Egypt. It also owns the Avin, Shell and Cyclon chain of fuel stations in Greece which are more than 2,000 along with a host of other gas and energy-related businesses.

Subsidiaries - affiliates

Motor Oil Hellas has numerous subsidiares such as Avin Oil S.A, Coral Gas, Coral Gas A.E.B.E.Y., OFC Aviation Fuel Services S.A., Korinthos Power S.A, Cyclon Hellas S.A, Shell & MOH Aviation Fuels A.E., Athens Airport Fuel Pipeline Company.

Ownership

Motor Oil's majority shareholder is Motor Oil Holdings S.A. (47.4%), a holding company that belongs to the prominent Greek family of Vardinogiannis, the rest of its shares are available to the public through a float on the Athens Stock Exchange and the London Stock Exchange.

C.2.10 Mytilineos

Mytilineos S.A is a Greek-based industrial conglomerate whose companies are active in the sectors of metallurgy, energy and EPC. The firm, which was founded in 1990 as a metallurgical company of international trade and participations, is an evolution of an old metallurgical family business which began its activity in 1908. In 2011, the Group's consolidated turnover stood at €1.57 billion, its EBITDA at €208.7 million and net profit at €42.6 million.

Group companies

•   Aluminium of Greece

•   Protergia

•   Metka (50.0%)

•   M&M Gas

•   Delphi Distomon

- EP-AL-ME

C.2.11 OPAP

OPAP – Greek Organization of Football Prognostics S.A. is a Greek company organizing and conducting games of chance. It is headquartered in Athens and for many years OPAP was a state-owned gambling monopoly. The company holds the exclusive rights to organize and manage numerical lotteries and sports betting games in Greece. In 2013 the privatization of the company was completed through the sale of the State's remaining 33% stake to the Emma Delta investment scheme.

Subsidiaries

OPAP has five subsidiaries: OPAP Cyprus Ltd, that operates lottery agencies in Cyprus; OPAP SPORTS Ltd that operates sports betting agencies in Cyprus; OPAP International Ltd, OPAP Investment Ltd and OPAP Services S.A.

C.2.12 OTE

Hellenic Telecommunications Organization S.A., OTE Group is the largest technology company in Greece. It is one of the three largest companies listed in the Athens Stock Exchange, according to market capitalization.

OTE Group offers fixed-line and mobile telephony, broadband services, pay television and integrated Information and Communications Technology (ICT). At the same time, the Group is involved in a range of activities, notably satellite communications, real-estate and professional training. Formerly a state-owned monopoly, OTE's privatization started in 1996 and is now listed on the Athens and London Stock Exchanges.

Today, OTE Group employs about 13,000 people in Greece and approximately 20,000 in total. Since July 2009 Deutsche Telekom is the largest shareholder of the company.

Shareholding structure

Starting in 1996, the Greek State gradually decreased its participation in OTE's share capital. Following an agreement between the Greek State and Deutsche Telekom, as of 5 November 2008 each party held 25% plus one share of OTE's share capital. Following a further sale of shares and voting rights, as of 11 July 2011 Deutsche Telekom's stake in OTE has risen to 40% while that of the Greek State amounts to 10%. Hellenic Republic Asset Development Fund (HDRAF) announced on February 13, 2018 the opening of a tender procedure for the acquisition of 5% by the Greek state. The competition ended on Friday, March 16, 2018, with no interested parties. On the same day, HDRAF sent a letter

to Deutsche Telekom with a proposal to buy back the shares for €284 million, with a 30-day deadline. Deutsche Telekom exercised its right of first refusal and the acquisition was completed in May 2018 through the Stock Exchange. Deutsche Telekom currently holds 45% of the company's shares and the Greek State owns 5%.

Subsidiaries

Greece

•   COSMOTE (100%): Mobile telecommunications services provider.

•   OTEGlobe (100%): International carrier with presence in SE Europe and a subsidiary of OTE Group. The company provides voice and data services to telecommunication providers and organizations in Greece and abroad.

•   OTESat-Maritel (94.1%): Satellite services for maritime communications. It is one of the four major providers of Inmarsat maritime satellite communication services in the world.

•   CosmoOne (61.7%): B2B (Business to business) electronic commerce applications and services – the largest provider in Greece.

•   OTEAcademy (100%): Education and advanced vocational training.

•   OTE Estate (100%): management of OTE Group's real estate assets.

•   OTE Insurance Agency S.A. OTE Insurance Company, a solely owned subsidiary of OTE since 1997, specialized in private insurance. It provides its services to OTE Group, its Human Resources, as well as to the general public.

•   COSMOTE e-value (100%): Contact Center services.

•   GERMANOS (100%): technology products and telecommunications services.

•   Also owns 11888 and its own telephone directory.

International subsidiaries

Telekom Romania: OTE owns 54% of the share capital of Telekom Romania, the main telecommunications operator in Romania, providing integrated fixed-line services (voice, broadband, data and leased lines) and satellite TV services to the local market.

C.2.13 Piraeus Port Authority

Piraeus Port is the largest port in Greece, extending over a coastline of more than twenty-four kilometers long and having a total area of more than five million square meters. The geographical location of its port Piraeus makes it a vital carrier, commercial, logistics, and tourism a communication node that connects them Greek islands with the mainland as well

and an international marine tourism center and transportation of goods. The location of the port favors its operation as a commercial one and the country's tourist portal as well as a transit trade hub for the Balkan and Black countries of the sea. The port of Piraeus is located at junction of the sea routes which link the Mediterranean with northern Europe and because of its geographical location (south of 38th parallel) allows large ships without access significant deviation from commercial streets of the Far East. The main activities of the Company are the provision ship anchoring services, o cargo handling and services loading and unloading as well as storage of goods and the movement of cars. In addition, the Company is responsible for the maintenance of its facilities Piraeus Port, for the provision of ports services (water supply, electricity supply power, telephone connection etc.), for the service of passenger traffic (coastal and cruise ships) and the allocation of sites to third parties' exchange.

In 2002 PPA and the Greek government signed a concession agreement. The Greek government leased the port zone lands, buildings and facilities of Piraeus Port to PPA for 40 years. In 2008 the duration of the concession agreement was modified from 40 to 50 years. With this modification the lease is ending in 2052. Since the Greek government-debt crisis started in late 2009 the Greek government planned to privatize several state-owned assets. These assets are believed to be worth around 50 billion euros. One of these assets is the port of Piraeus. The Port is a major employer in the region.

Under COSCO ownership

In October 2009 Greece leased docks 2 and 3 from PPA to the China Ocean Shipping (Group) Company (in short: COSCO) for a 35-year-period. For its presence at the port COSCO is paying 100 million euros every year. Terminal 1 is operated by PPA S.A. and has a capacity of nearly 1 million TEUs. Terminal 2's capacity is 3 million TEUs and is run by Piraeus Container Terminal PCT S.A., a subsidiary of COSCO. In 2013, PCT finished the construction of Terminal 3 with a capacity of roughly 2.7 million TEU. The total port capacity is 6.7 m TEUs. COSCO's involvement was accompanied by protest. According to trade unionists of PPA, the arrival of COSCO led to reductions in salary and social benefits, exclusion of union members and increased pressures on time and performance. According to an interview in 2012 with Harilaos N. Psaraftis, a professor of maritime transport in Athens, in some cases the salaries of workers were $181,000 a year with overtime. Due to union rules a team of nine people was required to work a gantry crane. COSCO pays around $23,300 and only requires four people at a crane.

Economic performance of container handling has greatly improved since 2009. Before COSCO took over, the port's container handling record was at 1.5 million TEUs. These figures rose to 3.692 million containers in 2017. As a result, revenue and profits soared. In 2017 the Athens stock exchange listed company (OLP) almost doubled its pre-tax profits from 11 to 21.2 million euros. As of 10 August 2016, COSCO owns a share of 51%, the Hellenic Republic Asset Development Fund 23,14 % and other investors 25,86 % of Piraeus Port Authority.

Statistics

With about 18.6 million passengers Piraeus was the busiest passenger port in Europe in 2014. Since its privatization in 2009 the port's container handling is growing rapidly. Piraeus handled 3.67 million TEUs in 2016 (2015: about 3.32 million). According to Lloyd's list for top 100 container ports in 2015 Piraeus ranked 8th in Europe and 3rd the Mediterranean Sea. The port of Piraeus is expected to become the busiest port of the Mediterranean in terms of container traffic by 2019. Piraeus handled 4.9 million TEUs in 2018, an increase of 19,4% compared with 2017 climbing to the number two position of all Mediterranean ports. As of April 2016, the port ranks 39th globally in terms of container capacity. In 2007 the Port of Piraeus handled 20,121,916 tons of cargo and 1,373,138 TEU's making it the busiest cargo port in Greece and the largest container port in the country and the East Mediterranean Sea Basin.

C.2.14 Public Power Corporation

The Public Power Corporation S.A. is the biggest electric power company in Greece. It is controlled by the Greek government, which owns a majority of the issued shares (51,12%).

In the past five years there has been no change in the share capital of the Company. The Company's shares are traded in the «Large Cap» category of the Athens Stock Exchange (ATHEX), while in the London Stock Exchange they are traded in the form of global depository receipts (GDRs).

Economy

In 2001, PPC carried out a share flotation on the Athens Stock Exchange and consequently is no longer wholly owned by the government, although it is still controlled by it with a 51.1% stake.

In June 2011, the Greek government announced it would sell 17% of its share of PPC to meet conditions of EU/ECB/IMF loan package. The workers of PPC responded by limited power cuts to selected towns across Greece. However, this plan is now is jeopardy as the incoming Tsipras Government has decided to suspend the privatization of PPC as one of its first anti-austerity measures.

Renewable energy

In 1982, PPC developed the first Wind Farm in the world, combined with a Photo-voltaic Station to supply electricity to the isolated power system of the island of Kythnos.

The PPC has committed to buying renewable-source energy from independent producers at five times its selling rate until 2034.

Legislation before Parliament in 2013-14 included making the PPC responsible for collection of the real estate tax, part of the EU/IMF/ECB requirements for the financial support of the economy.

Power plants

The 34 major thermal and hydroelectric power plants and the 3 wind farms of the interconnected power grid of the mainland, as well as the 60 autonomous power plants located on Crete, Rhodes and other Greek islands (33 thermal, 2 hydroelectric, 18 wind energy and 5 photovoltaic parks) form PPC's industrial assets and constitute the energy basis of all financial activities of the country.

The total installed capacity of the 97 PPC's power plants is currently 12,760 MW with a net generation of 53.9 TWh in 2007.

Mining areas

PPC has mining areas adjacent to many of its power plants. Some of these power plants produce electricity and power from lignite, while other plants use coal. The largest mining areas are located between Kozani and Ptolemaida, around Amyntaio in the Florina prefecture and around Megalopolis.

C.2.15 Sarantis

SARANTIS GROUP, one of the leading consumer product companies, was founded in Constantinople in 1930. In 1956, the Group's headquarters moved to Athens, Greece.

Throughout our history, SARANTIS GROUP has been offering high quality everyday products at competitive prices, always taking into consideration consumers' needs and environmental impact. This is the way that our Group evolves and grows, offering added value to consumers, clients, suppliers, shareholders and employees.

From Fragrances & Cosmetics to Personal Care, Health & Care as well as everyday Household Products, SARANTIS GROUP offers a wide range of products with high brand awareness. In fact, in most categories, our products top the list of consumers' preferences.

Operating subsidiaries in nine European countries – Poland, Romania, Bulgaria, Serbia, Czech Republic, Hungary, F.Y.R.O.M., Bosnia and Portugal – the Group maintains a powerful international presence and a distribution network that exports to more than 35 countries.

GR. SARANTIS S.A., the parent company of SARANTIS GROUP, has been listed in the Athens Stock Exchange since 1994. In addition, the parent company has established a joint venture with the ESTEE LAUDER COMPANIES for the exclusive distribution of ESTEE LAUDER products in Greece, Romania, Bulgaria and Cyprus.

C.2.16 TERNA Energy

Terna Energy is a Greek renewable energy company that is listed on the Athens Exchange.

The company is a subsidiary of Greek conglomerate GEK Terna, which through its subsidiary Heron S.A. is as well involved in the construction and operation of thermoelectric power generation fueled with natural gas. Terna Energy however exclusively produces energy from renewable energy sources, including wind farms and small hydroelectric plants. It also constructs renewable energy plants and integrated process units for the overall management and energy utilization of wastes and biomass.

The company was incorporated in 1997 as a subsidiary of Terna, which in 1999 merged with GEK to form Greece's largest conglomerate. The Athens-based company has been listed at the Athens Exchange since 2009 and belongs to the 25 companies forming the FTSE/Athex Large Cap index. In 2013, U.S. investment firm York Capital Management bought a 10% share of parent company GEK Terna and another 3% share of Terna Energy.

Appendix D – EViews Stocks-Market Regression of Part I: Results for the Period 1/1998 – 8/2019

Aegean Airlines

Dependent Variable: AEGEAN_AIRLINES_CR
Method: Least Squares
Date: 03/31/20   Time: 02:40
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.325135	0.043557	7.464673	0.0000
AEGEAN_AIRLINES_CR _VOLAT	0.048151	0.022043	2.184403	0.0298
C	-0.000666	0.000422	-1.577440	0.1159

R-squared	0.180803	Mean dependent var		0.000138
Adjusted R-squared	0.174428	S.D. dependent var		0.003501
S.E. of regression	0.003181	Akaike info criterion		-8.651811
Sum squared resid	0.002600	Schwarz criterion		-8.610726

Log likelihood	1127.735	Hannan-Quinn criter.	-8.635294
F-statistic	28.36089	Durbin-Watson stat	1.897899
Prob(F-statistic)	0.000000		

Alpha Bank

Dependent Variable: ALPHA_BANK
Method: Least Squares
Date: 03/31/20   Time: 02:53
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.506152	0.073377	20.52611	0.0000
ALPHA_BANK_VOL ATILITY	0.045151	0.020631	2.188482	0.0295
C	-0.001159	0.000647	-1.791188	0.0744

R-squared	0.621277	Mean dependent var	-2.53E-06
Adjusted R-squared	0.618330	S.D. dependent var	0.008759
S.E. of regression	0.005411	Akaike info criterion	-7.589243
Sum squared resid	0.007525	Schwarz criterion	-7.548158
Log likelihood	989.6016	Hannan-Quinn criter.	-7.572726
F-statistic	210.7985	Durbin-Watson stat	2.104729
Prob(F-statistic)	0.000000		

Cenergy

Dependent Variable: CENERGY_HOLDINGS
Method: Least Squares
Date: 03/31/20   Time: 02:57
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic
FTSE_20	0.040284	0.024403	1.650794
CENERGY_HOLDINGS_V OLATIL	0.021237	0.014378	1.477096
C	-9.66E-05	0.000243	-0.396958

R-squared	0.016827	Mean dependent var	
Adjusted R-squared	0.009176	S.D. dependent var	
S.E. of regression	0.001793	Akaike info criterion	
Sum squared resid	0.000826	Schwarz criterion	
Log likelihood	1276.759	Hannan-Quinn criter.	
F-statistic	2.199334	Durbin-Watson stat	
Prob(F-statistic)	0.112960		

Coca Cola

Dependent Variable: COCA_COLA_HBC__ATH_
Method: Least Squares
Date: 03/31/20   Time: 03:01
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.516394	0.046692	11.05969	0.0000
COCA_COLA_HBC__ATH__VOLA	-0.004279	0.025358	-0.168730	0.8661
C	0.000542	0.000542	0.999130	0.3187

R-squared	0.329549	Mean dependent var	0.000439
Adjusted R-squared	0.324331	S.D. dependent var	0.004146
S.E. of regression	0.003408	Akaike info criterion	-8.513782
Sum squared resid	0.002985	Schwarz criterion	-8.472697
Log likelihood	1109.792	Hannan-Quinn criter.	-8.497266
F-statistic	63.16195	Durbin-Watson stat	2.115452
Prob(F-statistic)	0.000000		

Ellaktor

Dependent Variable: ELLAKTOR
Method: Least Squares
Date: 03/31/20   Time: 03:03
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.

ELLAKTOR_VOL

ATILITY	0.038755	0.029871	1.297426	0.1956
FTSE_20	0.982156	0.070104	14.01002	0.0000
C	-0.000327	0.000797	-0.410266	0.6820

R-squared	0.433109	Mean dependent var	0.000585
Adjusted R-squared	0.428697	S.D. dependent var	0.006820
S.E. of regression	0.005155	Akaike info criterion	-7.686380
Sum squared resid	0.006828	Schwarz criterion	-7.645295
Log likelihood	1002.229	Hannan-Quinn criter.	-7.669864
F-statistic	98.17501	Durbin-Watson stat	2.214589
Prob(F-statistic)	0.000000		

Eurobank

Dependent Variable: EUROBANK_ERGASIAS
Method: Least Squares
Date: 03/31/20   Time: 03:04
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EUROBANK_ERGASIAS_				
VOLATI	0.019704	0.025662	0.767809	0.4433
FTSE_20	1.382041	0.111527	12.39199	0.0000
C	-0.000928	0.000912	-1.016922	0.3101

R-squared	0.374159	Mean dependent var	-0.000398
Adjusted R-squared	0.369289	S.D. dependent var	0.010383
S.E. of regression	0.008246	Akaike info criterion	-6.746809
Sum squared resid	0.017473	Schwarz criterion	-6.705724
Log likelihood	880.0852	Hannan-Quinn criter.	-6.730292
F-statistic	76.82369	Durbin-Watson stat	1.817092
Prob(F-statistic)	0.000000		

Fourlis

Dependent Variable: FOURLIS_HOLDING
Method: Least Squares
Date: 03/31/20   Time: 03:05

Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FOURLIS_HOLDING_V OLATILI	0.087122	0.040190	2.167748	0.0311
FTSE_20	1.083281	0.089155	12.15053	0.0000
C	-0.001245	0.001039	-1.198166	0.2320

R-squared	0.366232	Mean dependent var	0.000789	
Adjusted R-squared	0.361300	S.D. dependent var	0.008211	
S.E. of regression	0.006562	Akaike info criterion	-7.203535	
Sum squared resid	0.011067	Schwarz criterion	-7.162451	
Log likelihood	939.4596	Hannan-Quinn criter.	-7.187019	
F-statistic	74.25559	Durbin-Watson stat	2.227438	
Prob(F-statistic)	0.000000			

Gek Terna

Dependent Variable: GEK_TERNA_HLDG_RLST_C01
Method: Least Squares
Date: 03/31/20   Time: 03:06
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	-0.626633	0.165755	-3.780478	0.0002
GEK_TERNA_HLDG_RLST _CON_	0.195652	0.079947	2.447271	0.0151
C	0.024597	0.000665	36.98896	0.0000

R-squared	0.054121	Mean dependent var	0.024836	
Adjusted R-squared	0.046760	S.D. dependent var	0.010877	
S.E. of regression	0.010620	Akaike info criterion	-6.240730	
Sum squared resid	0.028984	Schwarz criterion	-6.199645	
Log likelihood	814.2949	Hannan-Quinn criter.	-6.224213	
F-statistic	7.352490	Durbin-Watson stat	0.831128	
Prob(F-statistic)	0.000785			

Sarantis

Dependent Variable: GR_SARANTIS
Method: Least Squares
Date: 03/31/20   Time: 03:07
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GR_SARANTIS_VOL ATILITY	-0.016567	0.032727	-0.506217	0.6131
FTSE_20	0.684528	0.059920	11.42412	0.0000
C	0.000921	0.000750	1.227562	0.2207

R-squared	0.343108	Mean dependent var	0.000542	
Adjusted R-squared	0.337996	S.D. dependent var	0.005407	
S.E. of regression	0.004399	Akaike info criterion	-8.003204	
Sum squared resid	0.004974	Schwarz criterion	-7.962119	
Log likelihood	1043.416	Hannan-Quinn criter.	-7.986687	
F-statistic	67.11813	Durbin-Watson stat	2.145263	
Prob(F-statistic)	0.000000			

Hellenic Exchanges (ATHEX)

Dependent Variable: HELLENIC_EXCHANGES_HDG_
Method: Least Squares
Date: 03/31/20   Time: 03:08
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HELLENIC_EXCHANGES _HDG__	0.052507	0.029849	1.759100	0.0798
FTSE_20	0.791126	0.061856	12.78971	0.0000
C	-0.000853	0.000692	-1.233111	0.2187

R-squared	0.390638	Mean dependent var	0.000234	
Adjusted R-squared	0.385896	S.D. dependent var	0.005697	
S.E. of regression	0.004464	Akaike info criterion	-7.973966	
Sum squared resid	0.005122	Schwarz criterion	-7.932881	
Log likelihood	1039.616	Hannan-Quinn criter.	-7.957449	
F-statistic	82.37630	Durbin-Watson stat	2.140523	
Prob(F-statistic)	0.000000			

Hellenic Petroleum (HELPE)

Dependent Variable: HELLENIC_PETROLEUM
Method: Least Squares
Date: 03/31/20   Time: 03:10
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.557539	0.057075	9.768597	0.0000
HELLENIC_PETROLEUM_ VOLAT	0.047045	0.030095	1.563236	0.1192
C	-0.000580	0.000666	-0.869971	0.3851

R-squared	0.270792	Mean dependent var	0.000360
Adjusted R-squared	0.265117	S.D. dependent var	0.004871
S.E. of regression	0.004176	Akaike info criterion	-8.107628
Sum squared resid	0.004481	Schwarz criterion	-8.066543
Log likelihood	1056.992	Hannan-Quinn criter.	-8.091111
F-statistic	47.71860	Durbin-Watson stat	2.114872
Prob(F-statistic)	0.000000		

Hellenic Telecom Organization (OTE)

Dependent Variable: HELLENIC_TELECOM_ORG_
Method: Least Squares
Date: 03/31/20   Time: 03:11
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.791363	0.052769	14.99687	0.0000
HELLENIC_TELECOM_O RG__VO	0.036244	0.026284	1.378970	0.1691
C	-0.000477	0.000594	-0.802648	0.4229

R-squared	0.467765	Mean dependent var	0.000245
Adjusted R-squared	0.463623	S.D. dependent var	0.005265
S.E. of regression	0.003856	Akaike info criterion	-8.266868

Sum squared resid	0.003821	Schwarz criterion	-8.225783
Log likelihood	1077.693	Hannan-Quinn criter.	-8.250351
F-statistic	112.9347	Durbin-Watson stat	2.165967
Prob(F-statistic)	0.000000		

Independent Power Transmission Operator (IPTO)

Dependent Variable: IPTO_HOLDING
Method: Least Squares
Date: 03/31/20   Time: 03:12
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.031798	0.013491	2.357009	0.0192
IPTO_HOLDING_VOL ATILITY	0.008368	0.009532	0.877866	0.3808
C	-0.000114	0.000144	-0.792861	0.4286

R-squared	0.022190	Mean dependent var	-8.84E-07
Adjusted R-squared	0.014580	S.D. dependent var	0.000994
S.E. of regression	0.000987	Akaike info criterion	-10.99319
Sum squared resid	0.000250	Schwarz criterion	-10.95210
Log likelihood	1432.115	Hannan-Quinn criter.	-10.97667
F-statistic	2.916109	Durbin-Watson stat	1.876194
Prob(F-statistic)	0.055938		

Jumbo

Dependent Variable: JUMBO
Method: Least Squares
Date: 03/31/20   Time: 03:13
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.630790	0.065074	9.693362	0.0000
JUMBO_VOLATIL ITY	0.042090	0.030350	1.386814	0.1667
C	0.000306	0.000749	0.408616	0.6832

R-squared	0.267729	Mean dependent var	0.001238	
Adjusted R-squared	0.262030	S.D. dependent var	0.005544	
S.E. of regression	0.004762	Akaike info criterion	-7.844683	
Sum squared resid	0.005829	Schwarz criterion	-7.803599	
Log likelihood	1022.809	Hannan-Quinn criter.	-7.828167	
F-statistic	46.98141	Durbin-Watson stat	1.996185	
Prob(F-statistic)	0.000000			

Lamda Development

Dependent Variable: LAMDA_DEVELOPMENT
Method: Least Squares
Date: 03/31/20   Time: 03:14
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.737013	0.087486	8.424360	0.0000
LAMDA_DEVELOPMEN T_VOLATI	0.114706	0.040361	2.842035	0.0048
C	-0.001667	0.001018	-1.637229	0.1028

R-squared	0.225148	Mean dependent var	0.000970	
Adjusted R-squared	0.219118	S.D. dependent var	0.007280	
S.E. of regression	0.006433	Akaike info criterion	-7.243143	
Sum squared resid	0.010637	Schwarz criterion	-7.202058	
Log likelihood	944.6086	Hannan-Quinn criter.	-7.226627	
F-statistic	37.33805	Durbin-Watson stat	1.488160	
Prob(F-statistic)	0.000000			

Motor Oil

Dependent Variable: MOTOR_OIL
Method: Least Squares
Date: 03/31/20   Time: 03:15
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.466077	0.046324	10.06132	0.0000

MOTOR_OIL_VOL ATILITY	0.005729	0.024775	0.231237	0.8173
C	0.000268	0.000504	0.530858	0.5960

R-squared	0.289502	Mean dependent var	0.000357	
Adjusted R-squared	0.283973	S.D. dependent var	0.003965	
S.E. of regression	0.003355	Akaike info criterion	-8.545364	
Sum squared resid	0.002892	Schwarz criterion	-8.504279	
Log likelihood	1113.897	Hannan-Quinn criter.	-8.528848	
F-statistic	52.35906	Durbin-Watson stat	2.041005	
Prob(F-statistic)	0.000000			

Mytilineos

Dependent Variable: MYTILINEOS
Method: Least Squares
Date: 03/31/20   Time: 03:16
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.000205	0.065225	15.33468	0.0000
MYTILINEOS_VOL ATILITY	0.033654	0.030695	1.096389	0.2739
C	2.00E-05	0.000788	0.025422	0.9797

R-squared	0.479285	Mean dependent var	0.000784	
Adjusted R-squared	0.475232	S.D. dependent var	0.006589	
S.E. of regression	0.004773	Akaike info criterion	-7.840272	
Sum squared resid	0.005855	Schwarz criterion	-7.799187	
Log likelihood	1022.235	Hannan-Quinn criter.	-7.823756	
F-statistic	118.2759	Durbin-Watson stat	2.036733	
Prob(F-statistic)	0.000000			

National Bank of Greece (NBG)

Dependent Variable: NATIONAL_BK_OF_GREECE
Method: Least Squares
Date: 03/31/20   Time: 03:19
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.604923	0.099298	16.16270	0.0000
NATIONAL_BK_OF_GRE ECE_VO	-0.036037	0.027099	-1.329852	0.1847
C	0.000585	0.000870	0.672188	0.5021

R-squared	0.510691	Mean dependent var	-0.000461	
Adjusted R-squared	0.506883	S.D. dependent var	0.010428	
S.E. of regression	0.007323	Akaike info criterion	-6.984184	
Sum squared resid	0.013781	Schwarz criterion	-6.943099	
Log likelihood	910.9439	Hannan-Quinn criter.	-6.967667	
F-statistic	134.1154	Durbin-Watson stat	1.958993	
Prob(F-statistic)	0.000000			

OPAP

Dependent Variable: OPAP
Method: Least Squares
Date: 03/31/20   Time: 03:21
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.481101	0.049706	9.678975	0.0000
OPAP_VOLATILIT Y	-0.012528	0.024669	-0.507836	0.6120
C	0.000603	0.000529	1.139753	0.2555

R-squared	0.275729	Mean dependent var	0.000342	
Adjusted R-squared	0.270093	S.D. dependent var	0.004252	
S.E. of regression	0.003633	Akaike info criterion	-8.386146	
Sum squared resid	0.003392	Schwarz criterion	-8.345062	
Log likelihood	1093.199	Hannan-Quinn criter.	-8.369630	
F-statistic	48.91976	Durbin-Watson stat	2.277123	
Prob(F-statistic)	0.000000			

Piraeus Port Authority (PPA)

Dependent Variable: PIRAEUS_PORT_AUTH_CR
Method: Least Squares

Date: 03/31/20   Time: 03:23
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20 PIRAEUS_PORT_AUTH_C	0.463737	0.055356	8.377412	0.0000
R_VOL	0.039213	0.027788	1.411143	0.1594
C	-0.000282	0.000568	-0.496678	0.6198

R-squared	0.214555	Mean dependent var	0.000421
Adjusted R-squared	0.208442	S.D. dependent var	0.004523
S.E. of regression	0.004024	Akaike info criterion	-8.181451
Sum squared resid	0.004162	Schwarz criterion	-8.140366
Log likelihood	1066.589	Hannan-Quinn criter.	-8.164934
F-statistic	35.10146	Durbin-Watson stat	2.368236
Prob(F-statistic)	0.000000		

Public Power Corporation (PPC)

Dependent Variable: PUBLIC_POWER
Method: Least Squares
Date: 03/31/20   Time: 03:24
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20 PUBLIC_POWER_VOL	0.671081	0.069568	9.646401	0.0000
ATILITY	0.014170	0.028556	0.496234	0.6202
C	-1.89E-05	0.000691	-0.027322	0.9782

R-squared	0.268827	Mean dependent var	0.000262
Adjusted R-squared	0.263137	S.D. dependent var	0.005905
S.E. of regression	0.005069	Akaike info criterion	-7.719944
Sum squared resid	0.006603	Schwarz criterion	-7.678859
Log likelihood	1006.593	Hannan-Quinn criter.	-7.703427
F-statistic	47.24506	Durbin-Watson stat	1.973996
Prob(F-statistic)	0.000000		

Terna Energy

Dependent Variable: TERNA_ENERGY
Method: Least Squares
Date: 03/31/20   Time: 03:25
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.566137	0.056256	10.06359	0.0000
TERNA_ENERGY_VOL ATILITY	0.022084	0.024276	0.909675	0.3638
C	-0.000159	0.000499	-0.318458	0.7504

R-squared	0.284286	Mean dependent var	0.000211
Adjusted R-squared	0.278716	S.D. dependent var	0.004822
S.E. of regression	0.004096	Akaike info criterion	-8.146312
Sum squared resid	0.004311	Schwarz criterion	-8.105227
Log likelihood	1062.021	Hannan-Quinn criter.	-8.129795
F-statistic	51.04088	Durbin-Watson stat	1.962819
Prob(F-statistic)	0.000000		

Titan Cement

Dependent Variable: TITAN_CEMENT
Method: Least Squares
Date: 03/31/20   Time: 03:26
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.000802	0.001596	0.502464	0.6158
TITAN_CEMENT_VO LATILITY	0.001778	0.001096	1.622898	0.1058
C	-3.35E-05	1.61E-05	-2.074287	0.0390

R-squared	0.010401	Mean dependent var	-1.01E-05
Adjusted R-squared	0.002700	S.D. dependent var	0.000117
S.E. of regression	0.000117	Akaike info criterion	-15.26187
Sum squared resid	3.50E-06	Schwarz criterion	-15.22078
Log likelihood	1987.043	Hannan-Quinn criter.	-15.24535
F-statistic	1.350639	Durbin-Watson stat	0.398770
Prob(F-statistic)	0.260907		

Viohalco

Dependent Variable: VIOHALCO
Method: Least Squares
Date: 03/31/20   Time: 03:27
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.196774	0.047606	4.133346	0.0000
VIOHALCO_VOL ATILITY	-0.014078	0.023555	-0.597666	0.5506
C	0.000381	0.000448	0.851736	0.3952

R-squared	0.066033	Mean dependent var	0.000140	
Adjusted R-squared	0.058764	S.D. dependent var	0.003610	
S.E. of regression	0.003502	Akaike info criterion	-8.459253	
Sum squared resid	0.003153	Schwarz criterion	-8.418168	
Log likelihood	1102.703	Hannan-Quinn criter.	-8.442736	
F-statistic	9.085108	Durbin-Watson stat	1.807556	
Prob(F-statistic)	0.000154			

Appendix E – EViews Stocks-Market Regression of Part I: Results for the Period 1/1998 – 10/2009

Aegean Airlines

Dependent Variable: AEGEAN_AIRLINES_CR
Method: Least Squares
Date: 03/31/20   Time: 23:06
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.162408	0.038399	4.229500	0.0000
AEGEAN_AIRLINES_CR _VOLAT	-0.003910	0.023364	-0.167354	0.8673

C	-0.000201	0.000344	-0.584161	0.5601

R-squared	0.116768	Mean dependent var	-0.000200	
Adjusted R-squared	0.104060	S.D. dependent var	0.002149	
S.E. of regression	0.002034	Akaike info criterion	-9.536676	
Sum squared resid	0.000575	Schwarz criterion	-9.474229	
Log likelihood	680.1040	Hannan-Quinn criter.	-9.511300	
F-statistic	9.188270	Durbin-Watson stat	1.715415	
Prob(F-statistic)	0.000179			

Alpha Bank

Dependent Variable: ALPHA_BANK
Method: Least Squares
Date: 03/31/20   Time: 23:07
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.176726	0.047036	25.01778	0.0000
ALPHA_BANK_VOL ATILITY	0.022780	0.024564	0.927350	0.3554
C	-0.000343	0.000515	-0.665712	0.5067

R-squared	0.818515	Mean dependent var	0.000458	
Adjusted R-squared	0.815904	S.D. dependent var	0.005852	
S.E. of regression	0.002511	Akaike info criterion	-9.115360	
Sum squared resid	0.000876	Schwarz criterion	-9.052913	
Log likelihood	650.1906	Hannan-Quinn criter.	-9.089984	
F-statistic	313.4521	Durbin-Watson stat	1.985178	
Prob(F-statistic)	0.000000			

Cenergy

Dependent Variable: CENERGY_HOLDINGS
Method: Least Squares
Date: 03/31/20   Time: 23:08
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.000000	0.000000	NA	1.0000
CENERGY_HOLDINGS_V				
OLATIL	0.000000	0.000000	NA	1.0000
C	0.000000	0.000000	NA	1.0000

Mean dependent var	0.000000	S.D. dependent var		0.000000
S.E. of regression	0.000000	Sum squared resid		0.000000

Coca Cola

Dependent Variable: COCA_COLA_HBC__ATH_
Method: Least Squares
Date: 03/31/20   Time: 23:09
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.709374	0.068104	10.41606	0.0000
COCA_COLA_HBC__ATH				
__VOLA	0.000381	0.035756	0.010653	0.9915
C	0.000181	0.000737	0.245079	0.8068

R-squared	0.442443	Mean dependent var	0.000408
Adjusted R-squared	0.434421	S.D. dependent var	0.004794
S.E. of regression	0.003605	Akaike info criterion	-8.391879
Sum squared resid	0.001807	Schwarz criterion	-8.329432
Log likelihood	598.8234	Hannan-Quinn criter.	-8.366503
F-statistic	55.15100	Durbin-Watson stat	1.900323
Prob(F-statistic)	0.000000		

Ellaktor

Dependent Variable: ELLAKTOR
Method: Least Squares
Date: 03/31/20   Time: 23:09
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.793522	0.104242	7.612295	0.0000
ELLAKTOR_VOL ATILITY	0.111574	0.050645	2.203068	0.0292
C	-0.001772	0.001168	-1.516963	0.1315

R-squared	0.307584	Mean dependent var	0.000830
Adjusted R-squared	0.297622	S.D. dependent var	0.006636
S.E. of regression	0.005562	Akaike info criterion	-7.524851
Sum squared resid	0.004300	Schwarz criterion	-7.462404
Log likelihood	537.2644	Hannan-Quinn criter.	-7.499475
F-statistic	30.87325	Durbin-Watson stat	2.083137
Prob(F-statistic)	0.000000		

Eurobank

Dependent Variable: EUROBANK_ERGASIAS
Method: Least Squares
Date: 03/31/20   Time: 23:10
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.805967	0.109791	7.340951	0.0000
EUROBANK_ERGASIAS_ VOLATI	0.143972	0.049478	2.909790	0.0042
C	-0.002296	0.001068	-2.149378	0.0333

R-squared	0.312561	Mean dependent var	0.000714
Adjusted R-squared	0.302670	S.D. dependent var	0.007018
S.E. of regression	0.005860	Akaike info criterion	-7.420379
Sum squared resid	0.004773	Schwarz criterion	-7.357932
Log likelihood	529.8469	Hannan-Quinn criter.	-7.395004
F-statistic	31.59991	Durbin-Watson stat	1.600604
Prob(F-statistic)	0.000000		

Fourlis

Dependent Variable: FOURLIS_HOLDING
Method: Least Squares
Date: 03/31/20   Time: 23:11
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.987741	0.138276	7.143237	0.0000
FOURLIS_HOLDING_V OLATILI	0.065810	0.068739	0.957382	0.3400
C	-0.000548	0.001657	-0.330638	0.7414

R-squared	0.268724	Mean dependent var	0.001226
Adjusted R-squared	0.258202	S.D. dependent var	0.008526
S.E. of regression	0.007343	Akaike info criterion	-6.969106
Sum squared resid	0.007496	Schwarz criterion	-6.906659
Log likelihood	497.8065	Hannan-Quinn criter.	-6.943730
F-statistic	25.53939	Durbin-Watson stat	2.220664
Prob(F-statistic)	0.000000		

GEK Terna

Dependent Variable: GEK_TERNA_HLDG_RLST_C01
Method: Least Squares
Date: 03/31/20   Time: 23:11
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	-0.437289	0.191556	-2.282822	0.0240
GEK_TERNA_HLDG_RLST _CON_	0.201804	0.077858	2.591950	0.0106
C	0.023227	0.000804	28.87966	0.0000

R-squared	0.059104	Mean dependent var	0.023404
Adjusted R-squared	0.045566	S.D. dependent var	0.009713
S.E. of regression	0.009489	Akaike info criterion	-6.456406
Sum squared resid	0.012516	Schwarz criterion	-6.393959
Log likelihood	461.4048	Hannan-Quinn criter.	-6.431030

F-statistic	4.365730	Durbin-Watson stat	0.718603
Prob(F-statistic)	0.014493		

Sarantis

Dependent Variable: GR_SARANTIS
Method: Least Squares
Date: 03/31/20   Time: 23:12
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.872189	0.087072	10.01689	0.0000
GR_SARANTIS_VOL ATILITY	-0.034390	0.044663	-0.769990	0.4426
C	0.000823	0.001006	0.817974	0.4148

R-squared	0.422583	Mean dependent var	0.000381
Adjusted R-squared	0.414274	S.D. dependent var	0.006069
S.E. of regression	0.004645	Akaike info criterion	-7.885350
Sum squared resid	0.002998	Schwarz criterion	-7.822903
Log likelihood	562.8598	Hannan-Quinn criter.	-7.859974
F-statistic	50.86353	Durbin-Watson stat	2.107000
Prob(F-statistic)	0.000000		

Hellenic Exchanges (ATHEX)

Dependent Variable: HELLENIC_EXCHANGES_HDG_
Method: Least Squares
Date: 03/31/20   Time: 23:14
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.692228	0.094270	7.343057	0.0000
HELLENIC_EXCHANGES _HDG__	0.049395	0.052499	0.940889	0.3484
C	-0.000922	0.001067	-0.864342	0.3889

R-squared	0.282430	Mean dependent var	0.000213
Adjusted R-squared	0.272105	S.D. dependent var	0.005718

S.E. of regression	0.004879	Akaike info criterion	-7.786942
Sum squared resid	0.003309	Schwarz criterion	-7.724495
Log likelihood	555.8729	Hannan-Quinn criter.	-7.761566
F-statistic	27.35464	Durbin-Watson stat	1.856223
Prob(F-statistic)	0.000000		

Hellenic Petroleum (HELPE)

Dependent Variable: HELLENIC_PETROLEUM
Method: Least Squares
Date: 03/31/20   Time: 23:15
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.567257	0.083443	6.798182	0.0000
HELLENIC_PETROLEUM_ VOLAT	0.142575	0.045140	3.158495	0.0019
C	-0.002469	0.000924	-2.672449	0.0084

R-squared	0.279016	Mean dependent var	0.000370
Adjusted R-squared	0.268642	S.D. dependent var	0.005199
S.E. of regression	0.004446	Akaike info criterion	-7.972505
Sum squared resid	0.002748	Schwarz criterion	-7.910058
Log likelihood	569.0478	Hannan-Quinn criter.	-7.947129
F-statistic	26.89607	Durbin-Watson stat	2.126113
Prob(F-statistic)	0.000000		

Hellenic Telecom Organization (OTE)

Dependent Variable: HELLENIC_TELECOM_ORG_
Method: Least Squares
Date: 03/31/20   Time: 23:16
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.636655	0.055697	11.43072	0.0000

HELLENIC_TELECOM_O

RG__VO	-0.009510	0.035600	-0.267125	0.7898
C	6.06E-05	0.000689	0.087979	0.9300

R-squared	0.486697	Mean dependent var	8.71E-05
Adjusted R-squared	0.479311	S.D. dependent var	0.004111
S.E. of regression	0.002966	Akaike info criterion	-8.782163
Sum squared resid	0.001223	Schwarz criterion	-8.719716
Log likelihood	626.5336	Hannan-Quinn criter.	-8.756787
F-statistic	65.89759	Durbin-Watson stat	1.986439
Prob(F-statistic)	0.000000		

Independent Power Transmission Operator (IPTO)

Dependent Variable: IPTO_HOLDING
Method: Least Squares
Date: 03/31/20   Time: 23:17
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.000000	0.000000	NA	1.0000
IPTO_HOLDING_VOL ATILITY	0.000000	0.000000	NA	1.0000
C	0.000000	0.000000	NA	1.0000

Mean dependent var	0.000000	S.D. dependent var	0.000000
S.E. of regression	0.000000	Sum squared resid	0.000000

Jumbo

Dependent Variable: JUMBO
Method: Least Squares
Date: 03/31/20   Time: 23:18
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.594696	0.102692	5.791055	0.0000

JUMBO_VOLATIL ITY	0.072138	0.044499	1.621106	0.1073
C	-9.38E-05	0.001082	-0.086649	0.9311

R-squared	0.200017	Mean dependent var	0.001675
Adjusted R-squared	0.188507	S.D. dependent var	0.006061
S.E. of regression	0.005460	Akaike info criterion	-7.561855
Sum squared resid	0.004144	Schwarz criterion	-7.499407
Log likelihood	539.8917	Hannan-Quinn criter.	-7.536479
F-statistic	17.37688	Durbin-Watson stat	1.876027
Prob(F-statistic)	0.000000		

Lamda Development

Dependent Variable: LAMDA_DEVELOPMENT
Method: Least Squares
Date: 03/31/20   Time: 23:19
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.682358	0.142229	4.797589	0.0000
LAMDA_DEVELOPMEN T_VOLATI	0.204270	0.065033	3.141004	0.0021
C	-0.003453	0.001592	-2.169657	0.0317

R-squared	0.186212	Mean dependent var	0.001333
Adjusted R-squared	0.174503	S.D. dependent var	0.008351
S.E. of regression	0.007588	Akaike info criterion	-6.903662
Sum squared resid	0.008003	Schwarz criterion	-6.841215
Log likelihood	493.1600	Hannan-Quinn criter.	-6.878286
F-statistic	15.90310	Durbin-Watson stat	1.302406
Prob(F-statistic)	0.000001		

Motor Oil

Dependent Variable: MOTOR_OIL
Method: Least Squares
Date: 03/31/20   Time: 23:20
Sample: 1998M01 2009M10

Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.304353	0.060502	5.030502	0.0000
MOTOR_OIL_VOL				
ATILITY	-0.065245	0.043357	-1.504835	0.1346
C	0.001055	0.000712	1.481564	0.1407

R-squared	0.181392	Mean dependent var		0.000161
Adjusted R-squared	0.169613	S.D. dependent var		0.003498
S.E. of regression	0.003188	Akaike info criterion		-8.638004
Sum squared resid	0.001413	Schwarz criterion		-8.575557
Log likelihood	616.2983	Hannan-Quinn criter.		-8.612628
F-statistic	15.40020	Durbin-Watson stat		2.092308
Prob(F-statistic)	0.000001			

Mytilineos

Dependent Variable: MYTILINEOS
Method: Least Squares
Date: 03/31/20   Time: 23:20
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.058936	0.106261	9.965442	0.0000
MYTILINEOS_VOL				
ATILITY	0.047364	0.051198	0.925124	0.3565
C	-0.000557	0.001276	-0.436047	0.6635

R-squared	0.416729	Mean dependent var		0.000865
Adjusted R-squared	0.408337	S.D. dependent var		0.007345
S.E. of regression	0.005650	Akaike info criterion		-7.493393
Sum squared resid	0.004437	Schwarz criterion		-7.430945
Log likelihood	535.0309	Hannan-Quinn criter.		-7.468017
F-statistic	49.65560	Durbin-Watson stat		1.987011
Prob(F-statistic)	0.000000			

National Bank of Greece (NBG)

Dependent Variable: NATIONAL_BK_OF_GREECE
Method: Least Squares
Date: 03/31/20   Time: 23:21
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.336048	0.035000	38.17322	0.0000
NATIONAL_BK_OF_GRE ECE_VO	0.030325	0.016501	1.837795	0.0682
C	-0.000257	0.000361	-0.711142	0.4782

R-squared	0.912923	Mean dependent var	0.000754	
Adjusted R-squared	0.911670	S.D. dependent var	0.006277	
S.E. of regression	0.001866	Akaike info criterion	-9.709618	
Sum squared resid	0.000484	Schwarz criterion	-9.647171	
Log likelihood	692.3829	Hannan-Quinn criter.	-9.684242	
F-statistic	728.6416	Durbin-Watson stat	1.934335	
Prob(F-statistic)	0.000000			

OPAP

Dependent Variable: OPAP
Method: Least Squares
Date: 03/31/20   Time: 23:22
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.288232	0.059500	4.844258	0.0000
OPAP_VOLATILIT Y	0.024448	0.043764	0.558632	0.5773
C	2.20E-05	0.000743	0.029600	0.9764

R-squared	0.144462	Mean dependent var	0.000498	
Adjusted R-squared	0.132152	S.D. dependent var	0.003382	
S.E. of regression	0.003150	Akaike info criterion	-8.661816	
Sum squared resid	0.001379	Schwarz criterion	-8.599369	
Log likelihood	617.9890	Hannan-Quinn criter.	-8.636440	

F-statistic	11.73543	Durbin-Watson stat	1.917140	
Prob(F-statistic)	0.000020			

Piraeus Port Authority (PPA)

Dependent Variable: PIRAEUS_PORT_AUTH_CR
Method: Least Squares
Date: 03/31/20   Time: 23:23
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.284740	0.073455	3.876375	0.0002
PIRAEUS_PORT_AUTH_CR_VOL	0.050083	0.041957	1.193662	0.2346
C	-0.000488	0.000731	-0.667009	0.5059

R-squared	0.100868	Mean dependent var	0.000378
Adjusted R-squared	0.087931	S.D. dependent var	0.004079
S.E. of regression	0.003895	Akaike info criterion	-8.237103
Sum squared resid	0.002109	Schwarz criterion	-8.174656
Log likelihood	587.8343	Hannan-Quinn criter.	-8.211727
F-statistic	7.796804	Durbin-Watson stat	2.139523
Prob(F-statistic)	0.000618		

Public Power Corporation (PPC)

Dependent Variable: PUBLIC_POWER
Method: Least Squares
Date: 03/31/20   Time: 23:24
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.209778	0.058493	3.586390	0.0005
PUBLIC_POWER_VOLATILITY	-0.055460	0.035981	-1.541375	0.1255
C	0.000991	0.000628	1.578245	0.1168

R-squared	0.111888	Mean dependent var	0.000179
Adjusted R-squared	0.099110	S.D. dependent var	0.003246
S.E. of regression	0.003081	Akaike info criterion	-8.706405
Sum squared resid	0.001319	Schwarz criterion	-8.643958
Log likelihood	621.1548	Hannan-Quinn criter.	-8.681029
F-statistic	8.755912	Durbin-Watson stat	1.627569
Prob(F-statistic)	0.000262		

Terna Energy

Dependent Variable: TERNA_ENERGY
Method: Least Squares
Date: 03/31/20   Time: 23:25
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.171679	0.051068	3.361767	0.0010
TERNA_ENERGY_VOL ATILITY	-0.012340	0.029581	-0.417157	0.6772
C	1.86E-06	0.000439	0.004225	0.9966

R-squared	0.080430	Mean dependent var	-0.000101
Adjusted R-squared	0.067199	S.D. dependent var	0.002792
S.E. of regression	0.002696	Akaike info criterion	-8.973025
Sum squared resid	0.001010	Schwarz criterion	-8.910578
Log likelihood	640.0848	Hannan-Quinn criter.	-8.947649
F-statistic	6.078817	Durbin-Watson stat	1.652200
Prob(F-statistic)	0.002945		

Titan Cement

Dependent Variable: TITAN_CEMENT
Method: Least Squares
Date: 03/31/20   Time: 23:26
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.000000	0.000000	NA	1.0000
TITAN_CEMENT_VO LATILITY	0.000000	0.000000	NA	1.0000
C	0.000000	0.000000	NA	1.0000

Mean dependent var	0.000000	S.D. dependent var		0.000000
S.E. of regression	0.000000	Sum squared resid		0.000000

Viohalco

Dependent Variable: VIOHALCO
Method: Least Squares
Date: 03/31/20   Time: 23:26
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.000000	0.000000	NA	1.0000
VIOHALCO_VOL ATILITY	0.000000	0.000000	NA	1.0000
C	0.000000	0.000000	NA	1.0000

Mean dependent var	0.000000	S.D. dependent var		0.000000
S.E. of regression	0.000000	Sum squared resid		0.000000

Appendix F – EViews Stocks-Market Regression of Part I: Results for the Period 11/2009 – 8/2019

Aegean Airlines

Dependent Variable: AEGEAN_AIRLINES_CR
Method: Least Squares
Date: 03/31/20   Time: 23:29
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.506591	0.079494	6.372694	0.0000

AEGEAN_AIRLINES_CR

_VOLAT	0.061092	0.044928	1.359789	0.1766
C	-0.000570	0.001051	-0.542632	0.5884

R-squared	0.261729	Mean dependent var	0.000545
Adjusted R-squared	0.248890	S.D. dependent var	0.004611
S.E. of regression	0.003996	Akaike info criterion	-8.181906
Sum squared resid	0.001836	Schwarz criterion	-8.111464
Log likelihood	485.7324	Hannan-Quinn criter.	-8.153304
F-statistic	20.38468	Durbin-Watson stat	1.958582
Prob(F-statistic)	0.000000		

Alpha Bank

Dependent Variable: ALPHA_BANK
Method: Least Squares
Date: 03/31/20   Time: 23:33
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.866063	0.141866	13.15371	0.0000
ALPHA_BANK_VOL				
ATILITY	0.075197	0.036017	2.087803	0.0390
C	-0.002426	0.001457	-1.665154	0.0986

R-squared	0.602429	Mean dependent var	-0.000557
Adjusted R-squared	0.595515	S.D. dependent var	0.011313
S.E. of regression	0.007195	Akaike info criterion	-7.005777
Sum squared resid	0.005953	Schwarz criterion	-6.935336
Log likelihood	416.3408	Hannan-Quinn criter.	-6.977176
F-statistic	87.12827	Durbin-Watson stat	2.083814
Prob(F-statistic)	0.000000		

Cenergy

Dependent Variable: CENERGY_HOLDINGS
Method: Least Squares

Date: 03/31/20   Time: 23:35
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.087761	0.052376	1.675604	0.0965
CENERGY_HOLDINGS_V OLATIL	0.011116	0.031923	0.348217	0.7283
C	0.000312	0.000667	0.467443	0.6411

R-squared	0.024039	Mean dependent var		0.000489
Adjusted R-squared	0.007066	S.D. dependent var		0.002656
S.E. of regression	0.002646	Akaike info criterion		-9.006211
Sum squared resid	0.000805	Schwarz criterion		-8.935770
Log likelihood	534.3665	Hannan-Quinn criter.		-8.977610
F-statistic	1.416294	Durbin-Watson stat		2.312365
Prob(F-statistic)	0.246811			

Coca Cola

Dependent Variable: COCA_COLA_HBC__ATH_
Method: Least Squares
Date: 03/31/20   Time: 23:36
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.307671	0.057514	5.349460	0.0000
COCA_COLA_HBC__ATH __VOLA	-0.023797	0.032885	-0.723632	0.4708
C	0.001112	0.000732	1.519023	0.1315

R-squared	0.215877	Mean dependent var		0.000475
Adjusted R-squared	0.202240	S.D. dependent var		0.003218
S.E. of regression	0.002874	Akaike info criterion		-8.840828
Sum squared resid	0.000950	Schwarz criterion		-8.770387
Log likelihood	524.6089	Hannan-Quinn criter.		-8.812227
F-statistic	15.83035	Durbin-Watson stat		2.308501
Prob(F-statistic)	0.000001			

Ellaktor

Dependent Variable: ELLAKTOR
Method: Least Squares
Date: 03/31/20   Time: 23:37
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.177717	0.087020	13.53381	0.0000
ELLAKTOR_VOL ATILITY	-0.009990	0.036653	-0.272546	0.7857
C	0.001109	0.001115	0.995184	0.3217

R-squared	0.620538	Mean dependent var	0.000290
Adjusted R-squared	0.613939	S.D. dependent var	0.007051
S.E. of regression	0.004381	Akaike info criterion	-7.997991
Sum squared resid	0.002207	Schwarz criterion	-7.927550
Log likelihood	474.8815	Hannan-Quinn criter.	-7.969390
F-statistic	94.03049	Durbin-Watson stat	2.489038
Prob(F-statistic)	0.000000		

Eurobank

Dependent Variable: EUROBANK_ERGASIAS
Method: Least Squares
Date: 03/31/20   Time: 23:38
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.975399	0.187063	10.56007	0.0000
EUROBANK_ERGASIAS_ VOLATI	0.036789	0.040100	0.917430	0.3608
C	-0.002377	0.001894	-1.255004	0.2120

R-squared	0.494497	Mean dependent var	-0.001735
Adjusted R-squared	0.485705	S.D. dependent var	0.013266
S.E. of regression	0.009513	Akaike info criterion	-6.447143
Sum squared resid	0.010408	Schwarz criterion	-6.376702
Log likelihood	383.3814	Hannan-Quinn criter.	-6.418542

F-statistic	56.24800	Durbin-Watson stat	1.922430	
Prob(F-statistic)	0.000000			

Fourlis

Dependent Variable: FOURLIS_HOLDING
Method: Least Squares
Date: 03/31/20   Time: 23:39
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.179859	0.108833	10.84095	0.0000
FOURLIS_HOLDING_V OLATILI	0.109432	0.045659	2.396746	0.0182
C	-0.002005	0.001273	-1.575517	0.1179

R-squared	0.510449	Mean dependent var	0.000263
Adjusted R-squared	0.501935	S.D. dependent var	0.007818
S.E. of regression	0.005518	Akaike info criterion	-7.536631
Sum squared resid	0.003501	Schwarz criterion	-7.466190
Log likelihood	447.6612	Hannan-Quinn criter.	-7.508030
F-statistic	59.95466	Durbin-Watson stat	2.215806
Prob(F-statistic)	0.000000		

GEK Terna

Dependent Variable: GEK_TERNA_HLDG_RLST_C01
Method: Least Squares
Date: 03/31/20   Time: 23:40
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	-0.813243	0.349051	-2.329867	0.0216
GEK_TERNA_HLDG_RLST _CON_	0.218270	0.225106	0.969632	0.3343
C	0.026065	0.001111	23.45773	0.0000

R-squared	0.056090	Mean dependent var	0.026560
Adjusted R-squared	0.039674	S.D. dependent var	0.011946
S.E. of regression	0.011707	Akaike info criterion	-6.032160
Sum squared resid	0.015761	Schwarz criterion	-5.961719
Log likelihood	358.8974	Hannan-Quinn criter.	-6.003558
F-statistic	3.416793	Durbin-Watson stat	0.959842
Prob(F-statistic)	0.036184		

Sarantis

Dependent Variable: GR_SARANTIS
Method: Least Squares
Date: 03/31/20   Time: 23:40
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.492011	0.077944	6.312386	0.0000
GR_SARANTIS_VOL ATILITY	-0.020321	0.046112	-0.440684	0.6603
C	0.001410	0.001075	1.311845	0.1922

R-squared	0.273255	Mean dependent var	0.000737
Adjusted R-squared	0.260616	S.D. dependent var	0.004502
S.E. of regression	0.003871	Akaike info criterion	-8.245424
Sum squared resid	0.001723	Schwarz criterion	-8.174983
Log likelihood	489.4800	Hannan-Quinn criter.	-8.216823
F-statistic	21.61992	Durbin-Watson stat	2.386481
Prob(F-statistic)	0.000000		

Hellenic Exchanges (ATHEX)

Dependent Variable: HELLENIC_EXCHANGES_HDG_
Method: Least Squares
Date: 03/31/20   Time: 23:41
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.

FTSE_20	0.901560	0.077701	11.60289	0.0000
HELLENIC_EXCHANGES _HDG__	0.042637	0.035851	1.189276	0.2368
C	-0.000372	0.000941	-0.395157	0.6935

R-squared	0.540500	Mean dependent var	0.000260
Adjusted R-squared	0.532509	S.D. dependent var	0.005695
S.E. of regression	0.003894	Akaike info criterion	-8.233815
Sum squared resid	0.001744	Schwarz criterion	-8.163374
Log likelihood	488.7951	Hannan-Quinn criter.	-8.205214
F-statistic	67.63607	Durbin-Watson stat	2.700797
Prob(F-statistic)	0.000000		

Hellenic Petroleum (HELPE)

Dependent Variable: HELLENIC_PETROLEUM
Method: Least Squares
Date: 03/31/20   Time: 23:42
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.517088	0.073443	7.040634	0.0000
HELLENIC_PETROLEUM_ VOLAT	-0.066724	0.039359	-1.695287	0.0927
C	0.002085	0.000941	2.215070	0.0287

R-squared	0.344354	Mean dependent var	0.000348
Adjusted R-squared	0.332951	S.D. dependent var	0.004466
S.E. of regression	0.003647	Akaike info criterion	-8.364562
Sum squared resid	0.001530	Schwarz criterion	-8.294121
Log likelihood	496.5091	Hannan-Quinn criter.	-8.335961
F-statistic	30.19970	Durbin-Watson stat	1.974875
Prob(F-statistic)	0.000000		

Hellenic Telecom Organization (OTE)

Dependent Variable: HELLENIC_TELECOM_ORG_
Method: Least Squares
Date: 03/31/20   Time: 23:43

Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.976948	0.091555	10.67059	0.0000
HELLENIC_TELECOM_O				
RG__VO	0.051504	0.041173	1.250906	0.2135
C	-0.000357	0.001066	-0.334518	0.7386

R-squared	0.499044	Mean dependent var	0.000435
Adjusted R-squared	0.490332	S.D. dependent var	0.006398
S.E. of regression	0.004568	Akaike info criterion	-7.914516
Sum squared resid	0.002399	Schwarz criterion	-7.844075
Log likelihood	469.9564	Hannan-Quinn criter.	-7.885915
F-statistic	57.28057	Durbin-Watson stat	2.352348
Prob(F-statistic)	0.000000		

Independent Power Transmission Operator (IPTO)

Dependent Variable: IPTO_HOLDING
Method: Least Squares
Date: 03/31/20   Time: 23:44
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.069710	0.029230	2.384835	0.0187
IPTO_HOLDING_VOL				
ATILITY	0.022098	0.021463	1.029574	0.3054
C	-0.000333	0.000374	-0.889022	0.3758

R-squared	0.049472	Mean dependent var	-1.95E-06
Adjusted R-squared	0.032941	S.D. dependent var	0.001479
S.E. of regression	0.001454	Akaike info criterion	-10.20372
Sum squared resid	0.000243	Schwarz criterion	-10.13328
Log likelihood	605.0195	Hannan-Quinn criter.	-10.17512
F-statistic	2.992692	Durbin-Watson stat	1.886194
Prob(F-statistic)	0.054073		

Jumbo

Dependent Variable: JUMBO
Method: Least Squares
Date: 03/31/20   Time: 23:45
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.650369	0.075654	8.596598	0.0000
JUMBO_VOLATIL ITY	0.001307	0.038815	0.033680	0.9732
C	0.000976	0.000971	1.004433	0.3173

R-squared	0.401545	Mean dependent var		0.000711
Adjusted R-squared	0.391137	S.D. dependent var		0.004822
S.E. of regression	0.003762	Akaike info criterion		-8.302431
Sum squared resid	0.001628	Schwarz criterion		-8.231990
Log likelihood	492.8434	Hannan-Quinn criter.		-8.273830
F-statistic	38.58068	Durbin-Watson stat		2.233918
Prob(F-statistic)	0.000000			

Lamda Development

Dependent Variable: LAMDA_DEVELOPMENT
Method: Least Squares
Date: 03/31/20   Time: 23:46
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.759543	0.090949	8.351335	0.0000
LAMDA_DEVELOPMEN T_VOLATI	0.017120	0.042450	0.403302	0.6875
C	0.000463	0.001104	0.418897	0.6761

R-squared	0.381572	Mean dependent var		0.000533
Adjusted R-squared	0.370816	S.D. dependent var		0.005738
S.E. of regression	0.004552	Akaike info criterion		-7.921567
Sum squared resid	0.002382	Schwarz criterion		-7.851125
Log likelihood	470.3724	Hannan-Quinn criter.		-7.892965
F-statistic	35.47764	Durbin-Watson stat		2.266094
Prob(F-statistic)	0.000000			

Motor Oil

Dependent Variable: MOTOR_OIL
Method: Least Squares
Date: 03/31/20   Time: 23:47
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.646263	0.067043	9.639582	0.0000
MOTOR_OIL_VOL ATILITY	0.018473	0.034139	0.541122	0.5895
C	0.000467	0.000826	0.565881	0.5726

R-squared	0.453284	Mean dependent var	0.000592	
Adjusted R-squared	0.443776	S.D. dependent var	0.004466	
S.E. of regression	0.003331	Akaike info criterion	-8.546183	
Sum squared resid	0.001276	Schwarz criterion	-8.475742	
Log likelihood	507.2248	Hannan-Quinn criter.	-8.517582	
F-statistic	47.67338	Durbin-Watson stat	1.973977	
Prob(F-statistic)	0.000000			

Mytilineos

Dependent Variable: MYTILINEOS
Method: Least Squares
Date: 03/31/20   Time: 23:48
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.939377	0.069366	13.54241	0.0000
MYTILINEOS_VOL ATILITY	0.012583	0.031832	0.395312	0.6933
C	0.000803	0.000841	0.954079	0.3420

R-squared	0.621464	Mean dependent var	0.000687	
Adjusted R-squared	0.614881	S.D. dependent var	0.005573	

S.E. of regression	0.003458	Akaike info criterion	-8.470987
Sum squared resid	0.001375	Schwarz criterion	-8.400546
Log likelihood	502.7882	Hannan-Quinn criter.	-8.442386
F-statistic	94.40106	Durbin-Watson stat	2.261679
Prob(F-statistic)	0.000000		

National Bank of Greece (NBG)

Dependent Variable: NATIONAL_BK_OF_GREECE
Method: Least Squares
Date: 03/31/20   Time: 23:49
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.894346	0.207319	9.137334	0.0000
NATIONAL_BK_OF_GRE ECE_VO	-0.033532	0.051428	-0.652006	0.5157
C	0.000167	0.002119	0.078669	0.9374

R-squared	0.423791	Mean dependent var	-0.001923
Adjusted R-squared	0.413770	S.D. dependent var	0.013758
S.E. of regression	0.010534	Akaike info criterion	-6.243298
Sum squared resid	0.012761	Schwarz criterion	-6.172857
Log likelihood	371.3546	Hannan-Quinn criter.	-6.214697
F-statistic	42.29021	Durbin-Watson stat	1.966280
Prob(F-statistic)	0.000000		

OPAP

Dependent Variable: OPAP
Method: Least Squares
Date: 03/31/20   Time: 23:50
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.698761	0.077751	8.987118	0.0000

OPAP_VOLATILIT

Y	-0.026119	0.034864	-0.749179	0.4553
C	0.001093	0.000900	1.214988	0.2269

R-squared	0.425017	Mean dependent var	0.000155
Adjusted R-squared	0.415017	S.D. dependent var	0.005117
S.E. of regression	0.003913	Akaike info criterion	-8.223711
Sum squared resid	0.001761	Schwarz criterion	-8.153270
Log likelihood	488.1989	Hannan-Quinn criter.	-8.195110
F-statistic	42.50289	Durbin-Watson stat	2.615129
Prob(F-statistic)	0.000000		

Piraeus Port Authority (PPA)

Dependent Variable: PIRAEUS_PORT_AUTH_CR
Method: Least Squares
Date: 03/31/20   Time: 23:51
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.665169	0.080806	8.231685	0.0000
PIRAEUS_PORT_AUTH_C				
R_VOL	0.034464	0.040190	0.857524	0.3929
C	2.44E-05	0.000944	0.025892	0.9794

R-squared	0.374033	Mean dependent var	0.000474
Adjusted R-squared	0.363146	S.D. dependent var	0.005024
S.E. of regression	0.004009	Akaike info criterion	-8.175487
Sum squared resid	0.001848	Schwarz criterion	-8.105046
Log likelihood	485.3538	Hannan-Quinn criter.	-8.146886
F-statistic	34.35782	Durbin-Watson stat	2.525838
Prob(F-statistic)	0.000000		

Public Power Corporation (PPC)

Dependent Variable: PUBLIC_POWER
Method: Least Squares
Date: 03/31/20   Time: 23:53
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.174425	0.117747	9.974173	0.0000
PUBLIC_POWER_VOL ATILITY	0.029594	0.049538	0.597394	0.5514
C	5.23E-05	0.001505	0.034769	0.9723

R-squared	0.466001	Mean dependent var	0.000362
Adjusted R-squared	0.456714	S.D. dependent var	0.008029
S.E. of regression	0.005918	Akaike info criterion	-7.396423
Sum squared resid	0.004028	Schwarz criterion	-7.325982
Log likelihood	439.3889	Hannan-Quinn criter.	-7.367822
F-statistic	50.17802	Durbin-Watson stat	2.133928
Prob(F-statistic)	0.000000		

Terna Energy

Dependent Variable: TERNA_ENERGY
Method: Least Squares
Date: 03/31/20   Time: 23:54
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	1.002040	0.089433	11.20442	0.0000
TERNA_ENERGY_VOL ATILITY	0.007073	0.040015	0.176768	0.8600
C	0.000874	0.001031	0.847114	0.3987

R-squared	0.527948	Mean dependent var	0.000587
Adjusted R-squared	0.519738	S.D. dependent var	0.006468
S.E. of regression	0.004482	Akaike info criterion	-7.952372
Sum squared resid	0.002310	Schwarz criterion	-7.881930
Log likelihood	472.1899	Hannan-Quinn criter.	-7.923770
F-statistic	64.30862	Durbin-Watson stat	2.066291
Prob(F-statistic)	0.000000		

Titan Cement

Dependent Variable: TITAN_CEMENT

Method: Least Squares
Date: 03/31/20   Time: 23:55
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.001840	0.003451	0.533276	0.5949
TITAN_CEMENT_VO				
LATILITY	0.004428	0.002253	1.965176	0.0518
C	-8.93E-05	3.77E-05	-2.365877	0.0197

R-squared	0.032632	Mean dependent var		-2.22E-05
Adjusted R-squared	0.015808	S.D. dependent var		0.000173
S.E. of regression	0.000172	Akaike info criterion		-14.47585
Sum squared resid	3.39E-06	Schwarz criterion		-14.40540
Log likelihood	857.0749	Hannan-Quinn criter.		-14.44724
F-statistic	1.939616	Durbin-Watson stat		0.431325
Prob(F-statistic)	0.148433			

Viohalco

Dependent Variable: VIOHALCO
Method: Least Squares
Date: 03/31/20   Time: 23:55
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FTSE_20	0.418305	0.098291	4.255764	0.0000
VIOHALCO_VOL				
ATILITY	-0.066602	0.052336	-1.272600	0.2057
C	0.002029	0.001285	1.579727	0.1169

R-squared	0.153028	Mean dependent var		0.000309
Adjusted R-squared	0.138298	S.D. dependent var		0.005366
S.E. of regression	0.004981	Akaike info criterion		-7.741080
Sum squared resid	0.002854	Schwarz criterion		-7.670639
Log likelihood	459.7237	Hannan-Quinn criter.		-7.712479
F-statistic	10.38889	Durbin-Watson stat		1.816769
Prob(F-statistic)	0.000071			

Appendix G – EViews Stocks-Market Regression of Part II: Results for the Period 1/1998 – 8/2019

Aegean Airlines

Dependent Variable: AEGEAN_AIRLINES_CR
Method: Least Squares
Date: 04/05/20   Time: 13:49
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.369592	0.047469	7.785993	0.0000
AEGEAN_AIRLINES_CR _VOLAT	0.055989	0.023501	2.382450	0.0179
C	-0.000786	0.000424	-1.851704	0.0652

R-squared	0.193575	Mean dependent var	0.000138
Adjusted R-squared	0.187299	S.D. dependent var	0.003501
S.E. of regression	0.003156	Akaike info criterion	-8.667525
Sum squared resid	0.002560	Schwarz criterion	-8.626440
Log likelihood	1129.778	Hannan-Quinn criter.	-8.651008
F-statistic	30.84529	Durbin-Watson stat	1.943847
Prob(F-statistic)	0.000000		

Alpha Bank

Dependent Variable: ALPHA_BANK
Method: Least Squares
Date: 04/05/20   Time: 13:57
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.565262	0.086701	18.05346	0.0000
ALPHA_BANK_VOL ATILITY	0.042508	0.022775	1.866381	0.0631

C	-0.001240	0.000701	-1.770312	0.0779

R-squared	0.559281	Mean dependent var	-2.53E-06
Adjusted R-squared	0.555851	S.D. dependent var	0.008759
S.E. of regression	0.005837	Akaike info criterion	-7.437640
Sum squared resid	0.008757	Schwarz criterion	-7.396555
Log likelihood	969.8932	Hannan-Quinn criter.	-7.421123
F-statistic	163.0691	Durbin-Watson stat	2.078959
Prob(F-statistic)	0.000000		

Cenergy

Dependent Variable: CENERGY_HOLDINGS
Method: Least Squares
Date: 04/05/20   Time: 14:01
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.050630	0.026690	1.896999	0.0589
CENERGY_HOLDINGS_V OLATIL	0.026534	0.015166	1.749609	0.0814
C	-0.000149	0.000238	-0.627915	0.5306

R-squared	0.022506	Mean dependent var	0.000222
Adjusted R-squared	0.014899	S.D. dependent var	0.001801
S.E. of regression	0.001788	Akaike info criterion	-9.803939
Sum squared resid	0.000822	Schwarz criterion	-9.762854
Log likelihood	1277.512	Hannan-Quinn criter.	-9.787422
F-statistic	2.958642	Durbin-Watson stat	2.281056
Prob(F-statistic)	0.053660		

Coca Cola

Dependent Variable: COCA_COLA_HBC__ATH_
Method: Least Squares
Date: 04/05/20   Time: 14:04
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.581557	0.050414	11.53568	0.0000
COCA_COLA_HBC__ATH __VOLA	-0.010174	0.026745	-0.380406	0.7040
C	0.000586	0.000546	1.073117	0.2842

R-squared	0.350699	Mean dependent var	0.000439
Adjusted R-squared	0.345646	S.D. dependent var	0.004146
S.E. of regression	0.003354	Akaike info criterion	-8.545837
Sum squared resid	0.002891	Schwarz criterion	-8.504752
Log likelihood	1113.959	Hannan-Quinn criter.	-8.529320
F-statistic	69.40507	Durbin-Watson stat	2.079996
Prob(F-statistic)	0.000000		

Ellaktor

Dependent Variable: ELLAKTOR
Method: Least Squares
Date: 04/05/20   Time: 14:05
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.151054	0.072415	15.89527	0.0000
ELLAKTOR_VOL ATILITY	0.044483	0.029136	1.526739	0.1281
C	-0.000559	0.000756	-0.740327	0.4598

R-squared	0.495782	Mean dependent var	0.000585
Adjusted R-squared	0.491858	S.D. dependent var	0.006820
S.E. of regression	0.004861	Akaike info criterion	-7.803539
Sum squared resid	0.006074	Schwarz criterion	-7.762454
Log likelihood	1017.460	Hannan-Quinn criter.	-7.787022
F-statistic	126.3502	Durbin-Watson stat	2.253987
Prob(F-statistic)	0.000000		

Eurobank

Dependent Variable: EUROBANK_ERGASIAS
Method: Least Squares
Date: 04/05/20   Time: 14:06
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.429287	0.126080	11.33631	0.0000
EUROBANK_ERGASIAS_VOLATI	0.017986	0.026833	0.670319	0.5033
C	-0.001027	0.000939	-1.093658	0.2751

R-squared	0.333486	Mean dependent var		-0.000398
Adjusted R-squared	0.328299	S.D. dependent var		0.010383
S.E. of regression	0.008509	Akaike info criterion		-6.683844
Sum squared resid	0.018609	Schwarz criterion		-6.642759
Log likelihood	871.8997	Hannan-Quinn criter.		-6.667328
F-statistic	64.29414	Durbin-Watson stat		1.802859
Prob(F-statistic)	0.000000			

Fourlis

Dependent Variable: FOURLIS_HOLDING
Method: Least Squares
Date: 04/05/20   Time: 14:06
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.249067	0.094660	13.19537	0.0000
FOURLIS_HOLDING_VOLATILI	0.098878	0.040486	2.442297	0.0153
C	-0.001589	0.001015	-1.565130	0.1188

R-squared	0.405378	Mean dependent var		0.000789
Adjusted R-squared	0.400751	S.D. dependent var		0.008211
S.E. of regression	0.006356	Akaike info criterion		-7.267293
Sum squared resid	0.010383	Schwarz criterion		-7.226208
Log likelihood	947.7481	Hannan-Quinn criter.		-7.250776
F-statistic	87.60376	Durbin-Watson stat		2.269480
Prob(F-statistic)	0.000000			

GEK Terna

Dependent Variable: GEK_TERNA_HLDG_RLST_C01
Method: Least Squares
Date: 04/05/20   Time: 14:07
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	-0.722414	0.183615	-3.934392	0.0001
GEK_TERNA_HLDG_RLST _CON_	0.214565	0.080834	2.654390	0.0084
C	0.023925	0.000645	37.10344	0.0000

R-squared	0.057911	Mean dependent var	0.024108
Adjusted R-squared	0.050579	S.D. dependent var	0.010583
S.E. of regression	0.010312	Akaike info criterion	-6.299620
Sum squared resid	0.027327	Schwarz criterion	-6.258535
Log likelihood	821.9506	Hannan-Quinn criter.	-6.283104
F-statistic	7.898945	Durbin-Watson stat	0.847480
Prob(F-statistic)	0.000469		

Sarantis

Dependent Variable: GR_SARANTIS
Method: Least Squares
Date: 04/05/20   Time: 14:08
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.792262	0.063590	12.45889	0.0000
GR_SARANTIS_VOL ATILITY	-0.021248	0.033429	-0.635615	0.5256
C	0.000918	0.000737	1.247054	0.2135

R-squared	0.383807	Mean dependent var	0.000542
Adjusted R-squared	0.379012	S.D. dependent var	0.005407
S.E. of regression	0.004261	Akaike info criterion	-8.067163
Sum squared resid	0.004666	Schwarz criterion	-8.026078

Log likelihood	1051.731	Hannan-Quinn criter.	-8.050646
F-statistic	80.03854	Durbin-Watson stat	2.240411
Prob(F-statistic)	0.000000		

Hellenic Exchanges (ATHEX)

Dependent Variable: HELLENIC_EXCHANGES_HDG_
Method: Least Squares
Date: 04/05/20   Time: 14:09
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.907662	0.066293	13.69178	0.0000
HELLENIC_EXCHANGES _HDG__	0.066635	0.030902	2.156326	0.0320
C	-0.001201	0.000689	-1.741725	0.0828

R-squared	0.423717	Mean dependent var	0.000234
Adjusted R-squared	0.419233	S.D. dependent var	0.005697
S.E. of regression	0.004341	Akaike info criterion	-8.029780
Sum squared resid	0.004844	Schwarz criterion	-7.988695
Log likelihood	1046.871	Hannan-Quinn criter.	-8.013263
F-statistic	94.48087	Durbin-Watson stat	2.098491
Prob(F-statistic)	0.000000		

Hellenic Petroleum (HELPE)

Dependent Variable: HELLENIC_PETROLEUM
Method: Least Squares
Date: 04/05/20   Time: 14:09
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.664448	0.060467	10.98866	0.0000
HELLENIC_PETROLEUM_ VOLAT	0.057278	0.030627	1.870178	0.0626

C	-0.000810	0.000650	-1.247258	0.2134

R-squared	0.319700	Mean dependent var	0.000360
Adjusted R-squared	0.314406	S.D. dependent var	0.004871
S.E. of regression	0.004033	Akaike info criterion	-8.177052
Sum squared resid	0.004180	Schwarz criterion	-8.135967
Log likelihood	1066.017	Hannan-Quinn criter.	-8.160536
F-statistic	60.38717	Durbin-Watson stat	2.137192
Prob(F-statistic)	0.000000		

Hellenic Telecom Organization (OTE)

Dependent Variable: HELLENIC_TELECOM_ORG_
Method: Least Squares
Date: 04/05/20   Time: 14:10
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.866796	0.057912	14.96759	0.0000
HELLENIC_TELECOM_O RG__VO	0.042256	0.027997	1.509269	0.1325
C	-0.000664	0.000608	-1.091658	0.2760

R-squared	0.466637	Mean dependent var	0.000245
Adjusted R-squared	0.462486	S.D. dependent var	0.005265
S.E. of regression	0.003860	Akaike info criterion	-8.264751
Sum squared resid	0.003829	Schwarz criterion	-8.223666
Log likelihood	1077.418	Hannan-Quinn criter.	-8.248234
F-statistic	112.4242	Durbin-Watson stat	2.177185
Prob(F-statistic)	0.000000		

Independent Power Transmission Operator (IPTO)

Dependent Variable: IPTO_HOLDING
Method: Least Squares
Date: 04/05/20   Time: 14:11
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.043355	0.014761	2.937259	0.0036
IPTO_HOLDING_VOL				
ATILITY	0.012195	0.010854	1.123561	0.2622
C	-0.000156	0.000148	-1.051129	0.2942

R-squared	0.033822	Mean dependent var	-8.84E-07	
Adjusted R-squared	0.026303	S.D. dependent var	0.000994	
S.E. of regression	0.000981	Akaike info criterion	-11.00516	
Sum squared resid	0.000247	Schwarz criterion	-10.96407	
Log likelihood	1433.670	Hannan-Quinn criter.	-10.98864	
F-statistic	4.498215	Durbin-Watson stat	1.871700	
Prob(F-statistic)	0.012019			

Jumbo

Dependent Variable: JUMBO
Method: Least Squares
Date: 04/05/20   Time: 14:11
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.749392	0.068995	10.86154	0.0000
JUMBO_VOLATIL				
ITY	0.050675	0.030136	1.681566	0.0939
C	7.31E-05	0.000719	0.101760	0.9190

R-squared	0.314625	Mean dependent var	0.001238	
Adjusted R-squared	0.309291	S.D. dependent var	0.005544	
S.E. of regression	0.004607	Akaike info criterion	-7.910868	
Sum squared resid	0.005455	Schwarz criterion	-7.869783	
Log likelihood	1031.413	Hannan-Quinn criter.	-7.894351	
F-statistic	58.98857	Durbin-Watson stat	2.063479	
Prob(F-statistic)	0.000000			

Lamda Development

Dependent Variable: LAMDA_DEVELOPMENT
Method: Least Squares

Date: 04/05/20   Time: 14:12
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.907271	0.092099	9.851019	0.0000
LAMDA_DEVELOPMEN				
T_VOLATI	0.128903	0.039978	3.224327	0.0014
C	-0.001991	0.000976	-2.039699	0.0424

R-squared	0.283862	Mean dependent var	0.000970
Adjusted R-squared	0.278289	S.D. dependent var	0.007280
S.E. of regression	0.006185	Akaike info criterion	-7.321943
Sum squared resid	0.009831	Schwarz criterion	-7.280858
Log likelihood	954.8526	Hannan-Quinn criter.	-7.305427
F-statistic	50.93476	Durbin-Watson stat	1.511102
Prob(F-statistic)	0.000000		

Motor Oil

Dependent Variable: MOTOR_OIL
Method: Least Squares
Date: 04/05/20   Time: 14:12
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.535271	0.050035	10.69796	0.0000
MOTOR_OIL_VOL				
ATILITY	0.009889	0.026072	0.379287	0.7048
C	0.000142	0.000504	0.280817	0.7791

R-squared	0.316212	Mean dependent var	0.000357
Adjusted R-squared	0.310891	S.D. dependent var	0.003965
S.E. of regression	0.003291	Akaike info criterion	-8.583682
Sum squared resid	0.002784	Schwarz criterion	-8.542597
Log likelihood	1118.879	Hannan-Quinn criter.	-8.567165
F-statistic	59.42370	Durbin-Watson stat	2.024373
Prob(F-statistic)	0.000000		

Mytilineos

Dependent Variable: MYTILINEOS
Method: Least Squares
Date: 04/05/20   Time: 14:13
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.169983	0.066711	17.53808	0.0000
MYTILINEOS_VOL ATILITY	0.035751	0.029948	1.193748	0.2337
C	-0.000130	0.000745	-0.174331	0.8617

R-squared	0.546490	Mean dependent var		0.000784
Adjusted R-squared	0.542960	S.D. dependent var		0.006589
S.E. of regression	0.004454	Akaike info criterion		-7.978458
Sum squared resid	0.005099	Schwarz criterion		-7.937373
Log likelihood	1040.200	Hannan-Quinn criter.		-7.961941
F-statistic	154.8453	Durbin-Watson stat		2.076089
Prob(F-statistic)	0.000000			

National Bank of Greece (NBG)

Dependent Variable: NATIONAL_BK_OF_GREECE
Method: Least Squares
Date: 04/05/20   Time: 14:14
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.676441	0.113614	14.75564	0.0000
NATIONAL_BK_OF_GRE ECE_VO	-0.040926	0.028886	-1.416798	0.1578
C	0.000511	0.000910	0.561764	0.5748

R-squared	0.466352	Mean dependent var		-0.000461
Adjusted R-squared	0.462199	S.D. dependent var		0.010428
S.E. of regression	0.007647	Akaike info criterion		-6.897441
Sum squared resid	0.015030	Schwarz criterion		-6.856356
Log likelihood	899.6673	Hannan-Quinn criter.		-6.880924

F-statistic	112.2954	Durbin-Watson stat	1.969434	
Prob(F-statistic)	0.000000			

OPAP

Dependent Variable: OPAP
Method: Least Squares
Date: 04/05/20   Time: 14:15
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.540535	0.054104	9.990674	0.0000
OPAP_VOLATILIT Y	-0.007372	0.026221	-0.281165	0.7788
C	0.000438	0.000537	0.815604	0.4155

R-squared	0.287416	Mean dependent var	0.000342
Adjusted R-squared	0.281870	S.D. dependent var	0.004252
S.E. of regression	0.003603	Akaike info criterion	-8.402414
Sum squared resid	0.003337	Schwarz criterion	-8.361329
Log likelihood	1095.314	Hannan-Quinn criter.	-8.385898
F-statistic	51.82959	Durbin-Watson stat	2.273576
Prob(F-statistic)	0.000000		

Piraeus Port Authority (PPA)

Dependent Variable: PIRAEUS_PORT_AUTH_CR
Method: Least Squares
Date: 04/05/20   Time: 14:15
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.549934	0.059582	9.229870	0.0000
PIRAEUS_PORT_AUTH_C R_VOL	0.051352	0.029128	1.762994	0.0791
C	-0.000519	0.000566	-0.916878	0.3601

R-squared	0.249018	Mean dependent var	0.000421
Adjusted R-squared	0.243174	S.D. dependent var	0.004523
S.E. of regression	0.003935	Akaike info criterion	-8.226320
Sum squared resid	0.003980	Schwarz criterion	-8.185235
Log likelihood	1072.422	Hannan-Quinn criter.	-8.209803
F-statistic	42.60926	Durbin-Watson stat	2.359545
Prob(F-statistic)	0.000000		

Public Power Corporation (PPC)

Dependent Variable: PUBLIC_POWER
Method: Least Squares
Date: 04/05/20   Time: 14:16
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.776622	0.074865	10.37360	0.0000
PUBLIC_POWER_VOL ATILITY	0.022013	0.029231	0.753071	0.4521
C	-0.000255	0.000683	-0.373659	0.7090

R-squared	0.297935	Mean dependent var	0.000262
Adjusted R-squared	0.292471	S.D. dependent var	0.005905
S.E. of regression	0.004967	Akaike info criterion	-7.760567
Sum squared resid	0.006340	Schwarz criterion	-7.719482
Log likelihood	1011.874	Hannan-Quinn criter.	-7.744050
F-statistic	54.53138	Durbin-Watson stat	1.985340
Prob(F-statistic)	0.000000		

Terna Energy

Dependent Variable: TERNA_ENERGY
Method: Least Squares
Date: 04/05/20   Time: 14:16
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.633350	0.061294	10.33292	0.0000

TERNA_ENERGY_VOL				
ATILITY	0.027387	0.025340	1.080787	0.2808
C	-0.000297	0.000496	-0.599374	0.5495

R-squared	0.295034	Mean dependent var	0.000211
Adjusted R-squared	0.289548	S.D. dependent var	0.004822
S.E. of regression	0.004065	Akaike info criterion	-8.161443
Sum squared resid	0.004246	Schwarz criterion	-8.120358
Log likelihood	1063.988	Hannan-Quinn criter.	-8.144927
F-statistic	53.77825	Durbin-Watson stat	1.992945
Prob(F-statistic)	0.000000		

Titan Cement

Dependent Variable: TITAN_CEMENT
Method: Least Squares
Date: 04/05/20   Time: 14:17
Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.000603	0.001761	0.342603	0.7322
TITAN_CEMENT_VO				
LATILITY	0.001695	0.001270	1.334448	0.1832
C	-3.04E-05	1.68E-05	-1.804017	0.0724

R-squared	0.006922	Mean dependent var	-1.01E-05
Adjusted R-squared	-0.000806	S.D. dependent var	0.000117
S.E. of regression	0.000117	Akaike info criterion	-15.25836
Sum squared resid	3.51E-06	Schwarz criterion	-15.21727
Log likelihood	1986.587	Hannan-Quinn criter.	-15.24184
F-statistic	0.895740	Durbin-Watson stat	0.396039
Prob(F-statistic)	0.409576		

Viohalco

Dependent Variable: VIOHALCO
Method: Least Squares
Date: 04/05/20   Time: 14:17

Sample: 1998M01 2019M08
Included observations: 260

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.243724	0.051709	4.713355	0.0000
VIOHALCO_VOL ATILITY	-0.010188	0.024209	-0.420850	0.6742
C	0.000280	0.000433	0.645233	0.5194

R-squared	0.082446	Mean dependent var	0.000140
Adjusted R-squared	0.075305	S.D. dependent var	0.003610
S.E. of regression	0.003472	Akaike info criterion	-8.476983
Sum squared resid	0.003097	Schwarz criterion	-8.435898
Log likelihood	1105.008	Hannan-Quinn criter.	-8.460466
F-statistic	11.54624	Durbin-Watson stat	1.803505
Prob(F-statistic)	0.000016		

Appendix H – EViews Stocks-Market Regression of Part II: Results for the Period 1/1998 – 10/2009

Aegean Airlines

Dependent Variable: AEGEAN_AIRLINES_CR
Method: Least Squares
Date: 04/05/20   Time: 14:32
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.177338	0.041678	4.254959	0.0000
AEGEAN_AIRLINES_CR _VOLAT	-0.002047	0.024218	-0.084541	0.9327
C	-0.000232	0.000341	-0.682226	0.4962

R-squared	0.118829	Mean dependent var	-0.000200
Adjusted R-squared	0.106151	S.D. dependent var	0.002149
S.E. of regression	0.002032	Akaike info criterion	-9.539013
Sum squared resid	0.000574	Schwarz criterion	-9.476566
Log likelihood	680.2699	Hannan-Quinn criter.	-9.513637
F-statistic	9.372340	Durbin-Watson stat	1.713658

Prob(F-statistic)	0.000152	

Alpha Bank

Dependent Variable: ALPHA_BANK
Method: Least Squares
Date: 04/05/20   Time: 14:35
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.223881	0.058621	20.87777	0.0000
ALPHA_BANK_VOL ATILITY	0.022482	0.029105	0.772432	0.4412
C	-0.000356	0.000597	-0.595625	0.5524

R-squared	0.758354	Mean dependent var	0.000458
Adjusted R-squared	0.754877	S.D. dependent var	0.005852
S.E. of regression	0.002897	Akaike info criterion	-8.829060
Sum squared resid	0.001167	Schwarz criterion	-8.766613
Log likelihood	629.8632	Hannan-Quinn criter.	-8.803684
F-statistic	218.1110	Durbin-Watson stat	1.947624
Prob(F-statistic)	0.000000		

Cenergy

Dependent Variable: CENERGY_HOLDINGS
Method: Least Squares
Date: 04/05/20   Time: 14:36
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.000000	0.000000	NA	1.0000
CENERGY_HOLDINGS_V OLATIL	0.000000	0.000000	NA	1.0000
C	0.000000	0.000000	NA	1.0000

Mean dependent var	0.000000	S.D. dependent var	0.000000
S.E. of regression	0.000000	Sum squared resid	0.000000

Coca Cola

Dependent Variable: COCA_COLA_HBC__ATH_
Method: Least Squares
Date: 04/05/20   Time: 14:37
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.793580	0.071459	11.10546	0.0000
COCA_COLA_HBC__ATH __VOLA	-0.001214	0.035233	-0.034449	0.9726
C	0.000176	0.000710	0.247142	0.8052

R-squared	0.475219	Mean dependent var	0.000408
Adjusted R-squared	0.467669	S.D. dependent var	0.004794
S.E. of regression	0.003498	Akaike info criterion	-8.452463
Sum squared resid	0.001701	Schwarz criterion	-8.390016
Log likelihood	603.1249	Hannan-Quinn criter.	-8.427087
F-statistic	62.93631	Durbin-Watson stat	1.847234
Prob(F-statistic)	0.000000		

Ellaktor

Dependent Variable: ELLAKTOR
Method: Least Squares
Date: 04/05/20   Time: 14:38
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.973104	0.105639	9.211582	0.0000
ELLAKTOR_VOL ATILITY	0.109383	0.047678	2.294184	0.0233
C	-0.001742	0.001079	-1.613747	0.1089

R-squared	0.390237	Mean dependent var	0.000830
Adjusted R-squared	0.381464	S.D. dependent var	0.006636
S.E. of regression	0.005219	Akaike info criterion	-7.651967

Sum squared resid	0.003787	Schwarz criterion	-7.589520
Log likelihood	546.2897	Hannan-Quinn criter.	-7.626591
F-statistic	44.47877	Durbin-Watson stat	2.144236
Prob(F-statistic)	0.000000		

Eurobank

Dependent Variable: EUROBANK_ERGASIAS
Method: Least Squares
Date: 04/05/20   Time: 14:38
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.855303	0.119398	7.163481	0.0000
EUROBANK_ERGASIAS_ VOLATI	0.147102	0.050731	2.899623	0.0043
C	-0.002323	0.001074	-2.163266	0.0322

R-squared	0.302967	Mean dependent var	0.000714
Adjusted R-squared	0.292938	S.D. dependent var	0.007018
S.E. of regression	0.005901	Akaike info criterion	-7.406519
Sum squared resid	0.004840	Schwarz criterion	-7.344072
Log likelihood	528.8629	Hannan-Quinn criter.	-7.381143
F-statistic	30.20830	Durbin-Watson stat	1.588499
Prob(F-statistic)	0.000000		

Fourlis

Dependent Variable: FOURLIS_HOLDING
Method: Least Squares
Date: 04/05/20   Time: 14:39
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.169577	0.143852	8.130439	0.0000
FOURLIS_HOLDING_V OLATILI	0.065097	0.066468	0.979368	0.3291
C	-0.000573	0.001576	-0.363608	0.7167

R-squared	0.322332	Mean dependent var	0.001226
Adjusted R-squared	0.312581	S.D. dependent var	0.008526

S.E. of regression	0.007069	Akaike info criterion	-7.045239	
Sum squared resid	0.006946	Schwarz criterion	-6.982792	
Log likelihood	503.2120	Hannan-Quinn criter.	-7.019863	
F-statistic	33.05760	Durbin-Watson stat	2.266860	
Prob(F-statistic)	0.000000			

GEK Terna

Dependent Variable: GEK_TERNA_HLDG_RLST_C01
Method: Least Squares
Date: 04/05/20   Time: 14:39
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	-0.522719	0.216042	-2.419530	0.0168
GEK_TERNA_HLDG_RLST _CON_	0.218292	0.081302	2.684956	0.0081
C	0.022783	0.000806	28.27429	0.0000

R-squared	0.060915	Mean dependent var	0.022953	
Adjusted R-squared	0.047403	S.D. dependent var	0.009741	
S.E. of regression	0.009507	Akaike info criterion	-6.452586	
Sum squared resid	0.012564	Schwarz criterion	-6.390138	
Log likelihood	461.1336	Hannan-Quinn criter.	-6.427210	
F-statistic	4.508223	Durbin-Watson stat	0.720017	
Prob(F-statistic)	0.012676			

Sarantis

Dependent Variable: GR_SARANTIS
Method: Least Squares
Date: 04/05/20   Time: 14:40
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.009779	0.088869	11.36250	0.0000
GR_SARANTIS_VOL ATILITY	-0.030964	0.042458	-0.729276	0.4671

C	0.000685	0.000938	0.729807	0.4667

R-squared	0.484759	Mean dependent var	0.000381
Adjusted R-squared	0.477346	S.D. dependent var	0.006069
S.E. of regression	0.004387	Akaike info criterion	-7.999281
Sum squared resid	0.002676	Schwarz criterion	-7.936834
Log likelihood	570.9490	Hannan-Quinn criter.	-7.973905
F-statistic	65.38840	Durbin-Watson stat	2.235729
Prob(F-statistic)	0.000000		

Hellenic Exchanges (ATHEX)

Dependent Variable: HELLENIC_EXCHANGES_HDG_
Method: Least Squares
Date: 04/05/20   Time: 14:41
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.778433	0.101546	7.665850	0.0000
HELLENIC_EXCHANGES _HDG__	0.060481	0.053496	1.130563	0.2602
C	-0.001137	0.001062	-1.070264	0.2864

R-squared	0.301285	Mean dependent var	0.000213
Adjusted R-squared	0.291231	S.D. dependent var	0.005718
S.E. of regression	0.004814	Akaike info criterion	-7.813569
Sum squared resid	0.003222	Schwarz criterion	-7.751122
Log likelihood	557.7634	Hannan-Quinn criter.	-7.788193
F-statistic	29.96825	Durbin-Watson stat	1.841517
Prob(F-statistic)	0.000000		

Hellenic Petroleum (HELPE)

Dependent Variable: HELLENIC_PETROLEUM
Method: Least Squares
Date: 04/05/20   Time: 14:41
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.

ATHENS_INDEX	0.647524	0.088493	7.317266	0.0000
HELLENIC_PETROLEUM_ VOLAT	0.145111	0.044486	3.261954	0.0014
C	-0.002475	0.000890	-2.781282	0.0062

R-squared	0.305624	Mean dependent var	0.000370
Adjusted R-squared	0.295633	S.D. dependent var	0.005199
S.E. of regression	0.004364	Akaike info criterion	-8.010107
Sum squared resid	0.002647	Schwarz criterion	-7.947660
Log likelihood	571.7176	Hannan-Quinn criter.	-7.984732
F-statistic	30.58985	Durbin-Watson stat	2.177080
Prob(F-statistic)	0.000000		

Hellenic Telecom Organization (OTE)

Dependent Variable: HELLENIC_TELECOM_ORG_
Method: Least Squares
Date: 04/05/20   Time: 14:42
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.652067	0.063056	10.34113	0.0000
HELLENIC_TELECOM_O RG__VO	-0.007087	0.038333	-0.184889	0.8536
C	2.32E-06	0.000724	0.003206	0.9974

R-squared	0.437504	Mean dependent var	8.71E-05
Adjusted R-squared	0.429410	S.D. dependent var	0.004111
S.E. of regression	0.003105	Akaike info criterion	-8.690645
Sum squared resid	0.001340	Schwarz criterion	-8.628198
Log likelihood	620.0358	Hannan-Quinn criter.	-8.665269
F-statistic	54.05642	Durbin-Watson stat	1.980831
Prob(F-statistic)	0.000000		

Independent Power Transmission Operator (IPTO)

Dependent Variable: IPTO_HOLDING

Method: Least Squares
Date: 04/05/20   Time: 14:42
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.000000	0.000000	NA	1.0000
IPTO_HOLDING_VOL ATILITY	0.000000	0.000000	NA	1.0000
C	0.000000	0.000000	NA	1.0000

Mean dependent var	0.000000	S.D. dependent var	0.000000
S.E. of regression	0.000000	Sum squared resid	0.000000

Jumbo

Dependent Variable: JUMBO
Method: Least Squares
Date: 04/05/20   Time: 14:43
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.733707	0.106806	6.869524	0.0000
JUMBO_VOLATIL ITY	0.072810	0.042842	1.699501	0.0915
C	-0.000127	0.001025	-0.123464	0.9019

R-squared	0.258144	Mean dependent var	0.001675
Adjusted R-squared	0.247470	S.D. dependent var	0.006061
S.E. of regression	0.005258	Akaike info criterion	-7.637289
Sum squared resid	0.003843	Schwarz criterion	-7.574842
Log likelihood	545.2475	Hannan-Quinn criter.	-7.611913
F-statistic	24.18392	Durbin-Watson stat	1.936236
Prob(F-statistic)	0.000000		

Lamda Development

Dependent Variable: LAMDA_DEVELOPMENT
Method: Least Squares
Date: 04/05/20   Time: 14:43
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.873262	0.148385	5.885109	0.0000
LAMDA_DEVELOPMEN T_VOLATI	0.205719	0.062675	3.282327	0.0013
C	-0.003460	0.001509	-2.293551	0.0233

R-squared	0.240648	Mean dependent var	0.001333
Adjusted R-squared	0.229722	S.D. dependent var	0.008351
S.E. of regression	0.007330	Akaike info criterion	-6.972896
Sum squared resid	0.007467	Schwarz criterion	-6.910449
Log likelihood	498.0756	Hannan-Quinn criter.	-6.947520
F-statistic	22.02539	Durbin-Watson stat	1.313573
Prob(F-statistic)	0.000000		

Motor Oil

Dependent Variable: MOTOR_OIL
Method: Least Squares
Date: 04/05/20   Time: 14:44
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.336411	0.065719	5.118919	0.0000
MOTOR_OIL_VOL ATILITY	-0.058637	0.045220	-1.296707	0.1969
C	0.000910	0.000717	1.269603	0.2063

R-squared	0.187581	Mean dependent var	0.000161
Adjusted R-squared	0.175892	S.D. dependent var	0.003498
S.E. of regression	0.003176	Akaike info criterion	-8.645593
Sum squared resid	0.001402	Schwarz criterion	-8.583146
Log likelihood	616.8371	Hannan-Quinn criter.	-8.620217
F-statistic	16.04699	Durbin-Watson stat	2.069675
Prob(F-statistic)	0.000001		

Mytilineos

Dependent Variable: MYTILINEOS
Method: Least Squares
Date: 04/05/20   Time: 14:44
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.245582	0.106890	11.65291	0.0000
MYTILINEOS_VOL ATILITY	0.045574	0.048000	0.949444	0.3440
C	-0.000568	0.001178	-0.482092	0.6305

R-squared	0.494182	Mean dependent var	0.000865	
Adjusted R-squared	0.486904	S.D. dependent var	0.007345	
S.E. of regression	0.005262	Akaike info criterion	-7.635868	
Sum squared resid	0.003848	Schwarz criterion	-7.573421	
Log likelihood	545.1466	Hannan-Quinn criter.	-7.610492	
F-statistic	67.90127	Durbin-Watson stat	2.034423	
Prob(F-statistic)	0.000000			

National Bank of Greece (NBG)

Dependent Variable: NATIONAL_BK_OF_GREECE
Method: Least Squares
Date: 04/05/20   Time: 14:45
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.390033	0.050348	27.60830	0.0000
NATIONAL_BK_OF_GRE ECE_VO	0.032435	0.022519	1.440336	0.1520
C	-0.000318	0.000484	-0.657946	0.5117

R-squared	0.845808	Mean dependent var	0.000754	
Adjusted R-squared	0.843590	S.D. dependent var	0.006277	
S.E. of regression	0.002482	Akaike info criterion	-9.138216	
Sum squared resid	0.000857	Schwarz criterion	-9.075769	

Log likelihood	651.8133	Hannan-Quinn criter.	-9.112840
F-statistic	381.2371	Durbin-Watson stat	1.673078
Prob(F-statistic)	0.000000		

OPAP

Dependent Variable: OPAP
Method: Least Squares
Date: 04/05/20   Time: 14:45
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.331009	0.063961	5.175204	0.0000
OPAP_VOLATILIT				
Y	0.033500	0.045828	0.730997	0.4660
C	-0.000121	0.000752	-0.161038	0.8723

R-squared	0.161629	Mean dependent var	0.000498
Adjusted R-squared	0.149566	S.D. dependent var	0.003382
S.E. of regression	0.003118	Akaike info criterion	-8.682086
Sum squared resid	0.001352	Schwarz criterion	-8.619639
Log likelihood	619.4281	Hannan-Quinn criter.	-8.656710
F-statistic	13.39883	Durbin-Watson stat	1.884590
Prob(F-statistic)	0.000005		

Piraeus Port Authority (PPA)

Dependent Variable: PIRAEUS_PORT_AUTH_CR
Method: Least Squares
Date: 04/05/20   Time: 14:46
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.336235	0.078900	4.261523	0.0000
PIRAEUS_PORT_AUTH_C				
R_VOL	0.066477	0.042647	1.558779	0.1213
C	-0.000726	0.000720	-1.008159	0.3151

R-squared	0.120218	Mean dependent var	0.000378
Adjusted R-squared	0.107559	S.D. dependent var	0.004079
S.E. of regression	0.003853	Akaike info criterion	-8.258858
Sum squared resid	0.002064	Schwarz criterion	-8.196411
Log likelihood	589.3789	Hannan-Quinn criter.	-8.233482
F-statistic	9.496808	Durbin-Watson stat	2.119539
Prob(F-statistic)	0.000136		

Public Power Corporation (PPC)

Dependent Variable: PUBLIC_POWER
Method: Least Squares
Date: 04/05/20   Time: 14:46
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.230227	0.063706	3.613886	0.0004
PUBLIC_POWER_VOL ATILITY	-0.052234	0.037652	-1.387285	0.1676
C	0.000905	0.000636	1.423163	0.1569

R-squared	0.114299	Mean dependent var	0.000179
Adjusted R-squared	0.101555	S.D. dependent var	0.003246
S.E. of regression	0.003077	Akaike info criterion	-8.709123
Sum squared resid	0.001316	Schwarz criterion	-8.646676
Log likelihood	621.3478	Hannan-Quinn criter.	-8.683747
F-statistic	8.968896	Durbin-Watson stat	1.635354
Prob(F-statistic)	0.000217		

Terna Energy

Dependent Variable: TERNA_ENERGY
Method: Least Squares
Date: 04/05/20   Time: 14:46
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.180448	0.055714	3.238836	0.0015

TERNA_ENERGY_VOL ATILITY	-0.008104	0.030695	-0.264030	0.7921
C	-6.15E-05	0.000436	-0.141032	0.8880

R-squared	0.075114	Mean dependent var	-0.000101
Adjusted R-squared	0.061807	S.D. dependent var	0.002792
S.E. of regression	0.002704	Akaike info criterion	-8.967261
Sum squared resid	0.001016	Schwarz criterion	-8.904814
Log likelihood	639.6755	Hannan-Quinn criter.	-8.941885
F-statistic	5.644426	Durbin-Watson stat	1.658186
Prob(F-statistic)	0.004397		

Titan Cement

Dependent Variable: TITAN_CEMENT
Method: Least Squares
Date: 04/05/20   Time: 14:47
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.000000	0.000000	NA	1.0000
TITAN_CEMENT_VO LATILITY	0.000000	0.000000	NA	1.0000
C	0.000000	0.000000	NA	1.0000

Mean dependent var	0.000000	S.D. dependent var	0.000000
S.E. of regression	0.000000	Sum squared resid	0.000000

Viohalco

Dependent Variable: VIOHALCO
Method: Least Squares
Date: 04/05/20   Time: 14:47
Sample: 1998M01 2009M10
Included observations: 142

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.000000	0.000000	NA	1.0000

VIOHALCO_VOL

ATILITY	0.000000	0.000000	NA	1.0000
C	0.000000	0.000000	NA	1.0000

Mean dependent var	0.000000	S.D. dependent var	0.000000
S.E. of regression	0.000000	Sum squared resid	0.000000

Appendix I – EViews Stocks-Market Regression of Part II: Results for the Period 11/2009 – 8/2019

Aegean Airlines

Dependent Variable: AEGEAN_AIRLINES_CR
Method: Least Squares
Date: 04/05/20   Time: 14:49
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.589222	0.086970	6.775027	0.0000
AEGEAN_AIRLINES_CR _VOLAT	0.081196	0.049188	1.650726	0.1015
C	-0.001009	0.001078	-0.935179	0.3517

R-squared	0.286518	Mean dependent var	0.000545
Adjusted R-squared	0.274109	S.D. dependent var	0.004611
S.E. of regression	0.003928	Akaike info criterion	-8.216059
Sum squared resid	0.001775	Schwarz criterion	-8.145617
Log likelihood	487.7475	Hannan-Quinn criter.	-8.187457
F-statistic	23.09063	Durbin-Watson stat	2.046756
Prob(F-statistic)	0.000000		

Alpha Bank

Dependent Variable: ALPHA_BANK
Method: Least Squares
Date: 04/05/20   Time: 14:50
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX ALPHA_BANK_VOL	1.960621	0.169559	11.56303	0.0000
ATILITY	0.079689	0.039745	2.005016	0.0473
C	-0.002953	0.001576	-1.873320	0.0636

R-squared	0.539707	Mean dependent var	-0.000557
Adjusted R-squared	0.531702	S.D. dependent var	0.011313
S.E. of regression	0.007742	Akaike info criterion	-6.859287
Sum squared resid	0.006892	Schwarz criterion	-6.788846
Log likelihood	407.6979	Hannan-Quinn criter.	-6.830685
F-statistic	67.42035	Durbin-Watson stat	2.046177
Prob(F-statistic)	0.000000		

Cenergy

Dependent Variable: CENERGY_HOLDINGS
Method: Least Squares
Date: 04/05/20   Time: 14:50
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX CENERGY_HOLDINGS_V	0.110191	0.057952	1.901405	0.0598
OLATIL	0.022374	0.032386	0.690872	0.4910
C	0.000116	0.000621	0.187345	0.8517

R-squared	0.032232	Mean dependent var	0.000489
Adjusted R-squared	0.015401	S.D. dependent var	0.002656
S.E. of regression	0.002635	Akaike info criterion	-9.014641
Sum squared resid	0.000799	Schwarz criterion	-8.944200
Log likelihood	534.8638	Hannan-Quinn criter.	-8.986040
F-statistic	1.915060	Durbin-Watson stat	2.328548
Prob(F-statistic)	0.152002		

Coca Cola

Dependent Variable: COCA_COLA_HBC__ATH_
Method: Least Squares

Date: 04/05/20   Time: 14:52
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.334823	0.064144	5.219823	0.0000
COCA_COLA_HBC__ATH __VOLA	-0.036765	0.037817	-0.972185	0.3330
C	0.001269	0.000784	1.618133	0.1084

R-squared	0.215910	Mean dependent var	0.000475
Adjusted R-squared	0.202273	S.D. dependent var	0.003218
S.E. of regression	0.002874	Akaike info criterion	-8.840870
Sum squared resid	0.000950	Schwarz criterion	-8.770428
Log likelihood	524.6113	Hannan-Quinn criter.	-8.812268
F-statistic	15.83339	Durbin-Watson stat	2.260373
Prob(F-statistic)	0.000001		

Ellaktor

Dependent Variable: ELLAKTOR
Method: Least Squares
Date: 04/05/20   Time: 14:53
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.342842	0.093099	14.42377	0.0000
ELLAKTOR_VOL ATILITY	0.002888	0.037152	0.077724	0.9382
C	0.000504	0.001089	0.462699	0.6445

R-squared	0.649487	Mean dependent var	0.000290
Adjusted R-squared	0.643391	S.D. dependent var	0.007051
S.E. of regression	0.004211	Akaike info criterion	-8.077347
Sum squared resid	0.002039	Schwarz criterion	-8.006906
Log likelihood	479.5635	Hannan-Quinn criter.	-8.048746
F-statistic	106.5454	Durbin-Watson stat	2.452194
Prob(F-statistic)	0.000000		

Eurobank

Dependent Variable: EUROBANK_ERGASIAS
Method: Least Squares
Date: 04/05/20   Time: 14:53
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	2.057998	0.219354	9.382102	0.0000
EUROBANK_ERGASIAS_ VOLATI	0.042665	0.042939	0.993618	0.3225
C	-0.003044	0.001996	-1.524550	0.1301

R-squared	0.436026	Mean dependent var	-0.001735
Adjusted R-squared	0.426218	S.D. dependent var	0.013266
S.E. of regression	0.010049	Akaike info criterion	-6.337690
Sum squared resid	0.011612	Schwarz criterion	-6.267249
Log likelihood	376.9237	Hannan-Quinn criter.	-6.309088
F-statistic	44.45507	Durbin-Watson stat	1.890674
Prob(F-statistic)	0.000000		

Fourlis

Dependent Variable: FOURLIS_HOLDING
Method: Least Squares
Date: 04/05/20   Time: 14:54
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.331521	0.118530	11.23361	0.0000
FOURLIS_HOLDING_V OLATILI	0.135399	0.047573	2.846145	0.0052
C	-0.002770	0.001268	-2.185316	0.0309

R-squared	0.529782	Mean dependent var	0.000263
Adjusted R-squared	0.521605	S.D. dependent var	0.007818
S.E. of regression	0.005408	Akaike info criterion	-7.576923
Sum squared resid	0.003363	Schwarz criterion	-7.506482
Log likelihood	450.0384	Hannan-Quinn criter.	-7.548321
F-statistic	64.78378	Durbin-Watson stat	2.273899

Prob(F-statistic)	0.000000	

GEK Terna

Dependent Variable: GEK_TERNA_HLDG_RLST_C01
Method: Least Squares
Date: 04/05/20   Time: 14:54
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	-0.942377	0.376841	-2.500732	0.0138
GEK_TERNA_HLDG_RLST _CON_	0.230782	0.218909	1.054241	0.2940
C	0.025158	0.001042	24.13650	0.0000

R-squared	0.065279	Mean dependent var		0.025498
Adjusted R-squared	0.049023	S.D. dependent var		0.011402
S.E. of regression	0.011119	Akaike info criterion		-6.135293
Sum squared resid	0.014217	Schwarz criterion		-6.064852
Log likelihood	364.9823	Hannan-Quinn criter.		-6.106692
F-statistic	4.015698	Durbin-Watson stat		0.989958
Prob(F-statistic)	0.020616			

Sarantis

Dependent Variable: GR_SARANTIS
Method: Least Squares
Date: 04/05/20   Time: 14:55
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.546436	0.086508	6.316610	0.0000
GR_SARANTIS_VOL ATILITY	-0.033184	0.052141	-0.636420	0.5258
C	0.001548	0.001140	1.357794	0.1772

R-squared	0.279261	Mean dependent var	0.000737
Adjusted R-squared	0.266727	S.D. dependent var	0.004502

S.E. of regression	0.003855	Akaike info criterion	-8.253723
Sum squared resid	0.001709	Schwarz criterion	-8.183282
Log likelihood	489.9696	Hannan-Quinn criter.	-8.225122
F-statistic	22.27928	Durbin-Watson stat	2.430014
Prob(F-statistic)	0.000000		

Hellenic Exchanges (ATHEX)

Dependent Variable: HELLENIC_EXCHANGES_HDG_
Method: Least Squares
Date: 04/05/20   Time: 14:55
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.055615	0.081211	12.99836	0.0000
HELLENIC_EXCHANGES				
_HDG__	0.062152	0.036288	1.712748	0.0895
C	-0.000956	0.000906	-1.055228	0.2935

R-squared	0.595901	Mean dependent var	0.000260
Adjusted R-squared	0.588874	S.D. dependent var	0.005695
S.E. of regression	0.003651	Akaike info criterion	-8.362295
Sum squared resid	0.001533	Schwarz criterion	-8.291854
Log likelihood	496.3754	Hannan-Quinn criter.	-8.333694
F-statistic	84.79198	Durbin-Watson stat	2.648206
Prob(F-statistic)	0.000000		

Hellenic Petroleum (HELPE)

Dependent Variable: HELLENIC_PETROLEUM
Method: Least Squares
Date: 04/05/20   Time: 14:56
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.645356	0.077124	8.367728	0.0000
HELLENIC_PETROLEUM_				
VOLAT	-0.063210	0.040765	-1.550600	0.1237

C	0.001830	0.000917	1.996131	0.0483

R-squared	0.421259	Mean dependent var	0.000348
Adjusted R-squared	0.411194	S.D. dependent var	0.004466
S.E. of regression	0.003427	Akaike info criterion	-8.489329
Sum squared resid	0.001350	Schwarz criterion	-8.418888
Log likelihood	503.8704	Hannan-Quinn criter.	-8.460728
F-statistic	41.85368	Durbin-Watson stat	1.963801
Prob(F-statistic)	0.000000		

Hellenic Telecom Organization (OTE)

Dependent Variable: HELLENIC_TELECOM_ORG_
Method: Least Squares
Date: 04/05/20   Time: 14:56
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.131546	0.097612	11.59229	0.0000
HELLENIC_TELECOM_O RG__VO	0.070244	0.042410	1.656315	0.1004
C	-0.000921	0.001044	-0.881971	0.3796

R-squared	0.539815	Mean dependent var	0.000435
Adjusted R-squared	0.531812	S.D. dependent var	0.006398
S.E. of regression	0.004378	Akaike info criterion	-7.999406
Sum squared resid	0.002204	Schwarz criterion	-7.928965
Log likelihood	474.9649	Hannan-Quinn criter.	-7.970804
F-statistic	67.44981	Durbin-Watson stat	2.409074
Prob(F-statistic)	0.000000		

Independent Power Transmission Operator (IPTO)

Dependent Variable: IPTO_HOLDING
Method: Least Squares
Date: 04/05/20   Time: 14:57
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.

ATHENS_INDEX IPTO_HOLDING_VOL	0.099516	0.032293	3.081667	0.0026
ATILITY	0.037278	0.025942	1.436983	0.1534
C	-0.000524	0.000399	-1.313250	0.1917

R-squared	0.079665	Mean dependent var	-1.95E-06
Adjusted R-squared	0.063659	S.D. dependent var	0.001479
S.E. of regression	0.001431	Akaike info criterion	-10.23600
Sum squared resid	0.000235	Schwarz criterion	-10.16556
Log likelihood	606.9240	Hannan-Quinn criter.	-10.20740
F-statistic	4.977240	Durbin-Watson stat	1.888162
Prob(F-statistic)	0.008451		

Jumbo

Dependent Variable: JUMBO
Method: Least Squares
Date: 04/05/20   Time: 14:58
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX JUMBO_VOLATIL	0.746384	0.082871	9.006614	0.0000
ITY	0.013983	0.040740	0.343235	0.7320
C	0.000563	0.000965	0.583196	0.5609

R-squared	0.422887	Mean dependent var	0.000711
Adjusted R-squared	0.412850	S.D. dependent var	0.004822
S.E. of regression	0.003695	Akaike info criterion	-8.338744
Sum squared resid	0.001570	Schwarz criterion	-8.268303
Log likelihood	494.9859	Hannan-Quinn criter.	-8.310143
F-statistic	42.13380	Durbin-Watson stat	2.317599
Prob(F-statistic)	0.000000		

Lamda Development

Dependent Variable: LAMDA_DEVELOPMENT
Method: Least Squares
Date: 04/05/20   Time: 14:58
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.906832	0.096338	9.413030	0.0000
LAMDA_DEVELOPMEN T_VOLATI	0.030386	0.043211	0.703213	0.4833
C	3.08E-05	0.001069	0.028803	0.9771

R-squared	0.438176	Mean dependent var		0.000533
Adjusted R-squared	0.428405	S.D. dependent var		0.005738
S.E. of regression	0.004338	Akaike info criterion		-8.017560
Sum squared resid	0.002164	Schwarz criterion		-7.947118
Log likelihood	476.0360	Hannan-Quinn criter.		-7.988958
F-statistic	44.84526	Durbin-Watson stat		2.324122
Prob(F-statistic)	0.000000			

Motor Oil

Dependent Variable: MOTOR_OIL
Method: Least Squares
Date: 04/05/20   Time: 14:59
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.761391	0.071056	10.71531	0.0000
MOTOR_OIL_VOL ATILITY	0.026981	0.034835	0.774534	0.4402
C	0.000183	0.000794	0.230719	0.8179

R-squared	0.506439	Mean dependent var		0.000592
Adjusted R-squared	0.497855	S.D. dependent var		0.004466
S.E. of regression	0.003165	Akaike info criterion		-8.648467
Sum squared resid	0.001152	Schwarz criterion		-8.578025
Log likelihood	513.2595	Hannan-Quinn criter.		-8.619865
F-statistic	59.00029	Durbin-Watson stat		1.933143
Prob(F-statistic)	0.000000			

Mytilineos

Dependent Variable: MYTILINEOS
Method: Least Squares
Date: 04/05/20   Time: 14:59
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.082514	0.072427	14.94629	0.0000
MYTILINEOS_VOL				
ATILITY	0.017366	0.032433	0.535436	0.5934
C	0.000514	0.000817	0.629053	0.5306

R-squared	0.667372	Mean dependent var	0.000687
Adjusted R-squared	0.661587	S.D. dependent var	0.005573
S.E. of regression	0.003242	Akaike info criterion	-8.600273
Sum squared resid	0.001209	Schwarz criterion	-8.529831
Log likelihood	510.4161	Hannan-Quinn criter.	-8.571671
F-statistic	115.3657	Durbin-Watson stat	2.291429
Prob(F-statistic)	0.000000		

National Bank of Greece (NBG)

Dependent Variable: NATIONAL_BK_OF_GREECE
Method: Least Squares
Date: 04/05/20   Time: 15:00
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	2.007121	0.237586	8.447979	0.0000
NATIONAL_BK_OF_GRE				
ECE_VO	-0.032868	0.054072	-0.607856	0.5445
C	-0.000303	0.002184	-0.138714	0.8899

R-squared	0.386621	Mean dependent var	-0.001923
Adjusted R-squared	0.375954	S.D. dependent var	0.013758
S.E. of regression	0.010869	Akaike info criterion	-6.180785
Sum squared resid	0.013585	Schwarz criterion	-6.110344
Log likelihood	367.6663	Hannan-Quinn criter.	-6.152184

F-statistic	36.24308	Durbin-Watson stat	2.000890
Prob(F-statistic)	0.000000		

OPAP

Dependent Variable: OPAP
Method: Least Squares
Date: 04/05/20   Time: 15:00
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.791437	0.085493	9.257336	0.0000
OPAP_VOLATILIT				
Y	-0.018681	0.036958	-0.505475	0.6142
C	0.000750	0.000906	0.828266	0.4092

R-squared	0.437589	Mean dependent var	0.000155
Adjusted R-squared	0.427808	S.D. dependent var	0.005117
S.E. of regression	0.003870	Akaike info criterion	-8.245820
Sum squared resid	0.001723	Schwarz criterion	-8.175379
Log likelihood	489.5034	Hannan-Quinn criter.	-8.217219
F-statistic	44.73848	Durbin-Watson stat	2.663795
Prob(F-statistic)	0.000000		

Piraeus Port Authority (PPA)

Dependent Variable: PIRAEUS_PORT_AUTH_CR
Method: Least Squares
Date: 04/05/20   Time: 15:00
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.802877	0.085575	9.382092	0.0000
PIRAEUS_PORT_AUTH_C				
R_VOL	0.046068	0.041907	1.099277	0.2739
C	-0.000296	0.000924	-0.320426	0.7492

R-squared	0.437937	Mean dependent var	0.000474
Adjusted R-squared	0.428162	S.D. dependent var	0.005024
S.E. of regression	0.003799	Akaike info criterion	-8.283172
Sum squared resid	0.001660	Schwarz criterion	-8.212730
Log likelihood	491.7071	Hannan-Quinn criter.	-8.254570
F-statistic	44.80169	Durbin-Watson stat	2.528924
Prob(F-statistic)	0.000000		

Public Power Corporation (PPC)

Dependent Variable: PUBLIC_POWER
Method: Least Squares
Date: 04/05/20   Time: 15:01
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	1.397095	0.122649	11.39098	0.0000
PUBLIC_POWER_VOL ATILITY	0.045870	0.048422	0.947284	0.3455
C	-0.000591	0.001419	-0.416647	0.6777

R-squared	0.531859	Mean dependent var	0.000362
Adjusted R-squared	0.523718	S.D. dependent var	0.008029
S.E. of regression	0.005541	Akaike info criterion	-7.528048
Sum squared resid	0.003531	Schwarz criterion	-7.457607
Log likelihood	447.1548	Hannan-Quinn criter.	-7.499447
F-statistic	65.32627	Durbin-Watson stat	2.158676
Prob(F-statistic)	0.000000		

Terna Energy

Dependent Variable: TERNA_ENERGY
Method: Least Squares
Date: 04/05/20   Time: 15:02
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.

ATHENS_INDEX	1.153455	0.095477	12.08102	0.0000
TERNA_ENERGY_VOL				
ATILITY	0.014899	0.040902	0.364265	0.7163
C	0.000503	0.001001	0.501797	0.6168

R-squared	0.564873	Mean dependent var	0.000587
Adjusted R-squared	0.557305	S.D. dependent var	0.006468
S.E. of regression	0.004303	Akaike info criterion	-8.033822
Sum squared resid	0.002130	Schwarz criterion	-7.963381
Log likelihood	476.9955	Hannan-Quinn criter.	-8.005221
F-statistic	74.64522	Durbin-Watson stat	2.115308
Prob(F-statistic)	0.000000		

Titan Cement

Dependent Variable: TITAN_CEMENT
Method: Least Squares
Date: 04/05/20   Time: 15:02
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.001703	0.003887	0.438025	0.6622
TITAN_CEMENT_VO				
LATILITY	0.004830	0.002796	1.727448	0.0868
C	-8.72E-05	4.08E-05	-2.135013	0.0349

R-squared	0.025292	Mean dependent var	-2.22E-05
Adjusted R-squared	0.008341	S.D. dependent var	0.000173
S.E. of regression	0.000172	Akaike info criterion	-14.46829
Sum squared resid	3.42E-06	Schwarz criterion	-14.39785
Log likelihood	856.6290	Hannan-Quinn criter.	-14.43969
F-statistic	1.492055	Durbin-Watson stat	0.425089
Prob(F-statistic)	0.229231		

Viohalco

Dependent Variable: VIOHALCO
Method: Least Squares

Date: 04/05/20   Time: 15:03
Sample: 2009M11 2019M08
Included observations: 118

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATHENS_INDEX	0.530433	0.106772	4.967901	0.0000
VIOHALCO_VOL ATILITY	-0.053678	0.051280	-1.046764	0.2974
C	0.001575	0.001186	1.328496	0.1866

R-squared	0.189263	Mean dependent var	0.000309
Adjusted R-squared	0.175163	S.D. dependent var	0.005366
S.E. of regression	0.004874	Akaike info criterion	-7.784805
Sum squared resid	0.002732	Schwarz criterion	-7.714364
Log likelihood	462.3035	Hannan-Quinn criter.	-7.756204
F-statistic	13.42314	Durbin-Watson stat	1.805319
Prob(F-statistic)	0.000006		

Appendix J – EViews Chow test of Part I: Coefficients of Market Return & Volatility

Aegean Airlines

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	6.632934	Prob. F(3,254)	0.0002
Log likelihood ratio	19.61035	Prob. Chi-Square(3)	0.0002
Wald Statistic	19.89880	Prob. Chi-Square(3)	0.0002

Alpha Bank

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	8.620694	Prob. F(3,254)	0.0000
Log likelihood ratio	25.21029	Prob. Chi-Square(3)	0.0000
Wald Statistic	25.86208	Prob. Chi-Square(3)	0.0000

Cenergy

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	2.215667	Prob. F(3,254)	0.0868
Log likelihood ratio	6.716511	Prob. Chi-Square(3)	0.0815
Wald Statistic	6.647000	Prob. Chi-Square(3)	0.0840

Coca Cola

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	7.011076	Prob. F(3,254)	0.0002
Log likelihood ratio	20.68499	Prob. Chi-Square(3)	0.0001
Wald Statistic	21.03323	Prob. Chi-Square(3)	0.0001

Ellaktor

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	4.181144	Prob. F(3,254)	0.0065
Log likelihood ratio	12.53276	Prob. Chi-Square(3)	0.0058
Wald Statistic	12.54343	Prob. Chi-Square(3)	0.0057

Eurobank

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	12.78167	Prob. F(3,254)	0.0000
Log likelihood ratio	36.55609	Prob. Chi-Square(3)	0.0000
Wald Statistic	38.34500	Prob. Chi-Square(3)	0.0000

Fourlis

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.537606	Prob. F(3,254)	0.6569
Log likelihood ratio	1.645696	Prob. Chi-Square(3)	0.6491
Wald Statistic	1.612818	Prob. Chi-Square(3)	0.6565

GEK Terna

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	2.115388	Prob. F(3,254)	0.0987
Log likelihood ratio	6.416248	Prob. Chi-Square(3)	0.0930
Wald Statistic	6.346163	Prob. Chi-Square(3)	0.0959

Sarantis

Chow Breakpoint Test: 2009M11

Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	4.526041	Prob. F(3,254)	0.0041
Log likelihood ratio	13.54010	Prob. Chi-Square(3)	0.0036
Wald Statistic	13.57812	Prob. Chi-Square(3)	0.0035

Hellenic Exchanges (ATHEX)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	1.169729	Prob. F(3,254)	0.3218
Log likelihood ratio	3.567493	Prob. Chi-Square(3)	0.3121
Wald Statistic	3.509187	Prob. Chi-Square(3)	0.3196

Hellenic Petroleum (HELPE)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	4.017829	Prob. F(3,254)	0.0081
Log likelihood ratio	12.05441	Prob. Chi-Square(3)	0.0072
Wald Statistic	12.05349	Prob. Chi-Square(3)	0.0072

Hellenic Telecom Organization (OTE)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	4.652742	Prob. F(3,254)	0.0035
Log likelihood ratio	13.90918	Prob. Chi-Square(3)	0.0030
Wald Statistic	13.95823	Prob. Chi-Square(3)	0.0030

Independent Power Transmission Operator (IPTO)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	2.430187	Prob. F(3,254)	0.0657
Log likelihood ratio	7.357683	Prob. Chi-Square(3)	0.0613
Wald Statistic	7.290561	Prob. Chi-Square(3)	0.0632

Jumbo

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.837767	Prob. F(3,254)	0.4742
Log likelihood ratio	2.560026	Prob. Chi-Square(3)	0.4645
Wald Statistic	2.513302	Prob. Chi-Square(3)	0.4729

Lamda Development

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	2.052259	Prob. F(3,254)	0.1071
Log likelihood ratio	6.227044	Prob. Chi-Square(3)	0.1011
Wald Statistic	6.156777	Prob. Chi-Square(3)	0.1042

Motor Oil

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	6.428592	Prob. F(3,254)	0.0003
Log likelihood ratio	19.02778	Prob. Chi-Square(3)	0.0003
Wald Statistic	19.28578	Prob. Chi-Square(3)	0.0002

Mytilineos

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.608340	Prob. F(3,254)	0.6101
Log likelihood ratio	1.861450	Prob. Chi-Square(3)	0.6017
Wald Statistic	1.825019	Prob. Chi-Square(3)	0.6095

National Bank of Greece (NBG)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	3.426562	Prob. F(3,254)	0.0178
Log likelihood ratio	10.31516	Prob. Chi-Square(3)	0.0161
Wald Statistic	10.27969	Prob. Chi-Square(3)	0.0163

OPAP

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	6.769882	Prob. F(3,254)	0.0002
Log likelihood ratio	20.00006	Prob. Chi-Square(3)	0.0002
Wald Statistic	20.30964	Prob. Chi-Square(3)	0.0001

Piraeus Port Authority (PPA)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	4.378007	Prob. F(3,254)	0.0050
Log likelihood ratio	13.10822	Prob. Chi-Square(3)	0.0044
Wald Statistic	13.13402	Prob. Chi-Square(3)	0.0044

Public Power Corporation (PPC)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	19.88339	Prob. F(3,254)	0.0000
Log likelihood ratio	54.84543	Prob. Chi-Square(3)	0.0000
Wald Statistic	59.65016	Prob. Chi-Square(3)	0.0000

Terna Energy

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables

Equation Sample: 1998M01 2019M08

F-statistic	25.24934	Prob. F(3,254)	0.0000
Log likelihood ratio	67.85857	Prob. Chi-Square(3)	0.0000
Wald Statistic	75.74802	Prob. Chi-Square(3)	0.0000

Titan Cement

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	2.730889	Prob. F(3,254)	0.0444
Log likelihood ratio	8.253786	Prob. Chi-Square(3)	0.0410
Wald Statistic	8.192666	Prob. Chi-Square(3)	0.0422

Viohalco

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	8.866580	Prob. F(3,254)	0.0000
Log likelihood ratio	25.89469	Prob. Chi-Square(3)	0.0000
Wald Statistic	26.59974	Prob. Chi-Square(3)	0.0000

Appendix K – EViews Chow test of Part I: Coefficients of Volatility

Aegean Airlines

Chow Breakpoint Test: 2009M11

Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.009855	Prob. F(2,256)	0.9902
Log likelihood ratio	0.020017	Prob. Chi-Square(2)	0.9900
Wald Statistic	0.019710	Prob. Chi-Square(2)	0.9902

Alpha Bank

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.377620	Prob. F(2,256)	0.6859
Log likelihood ratio	0.765910	Prob. Chi-Square(2)	0.6818
Wald Statistic	0.755239	Prob. Chi-Square(2)	0.6855

Cenergy

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.133681	Prob. F(2,256)	0.8749
Log likelihood ratio	0.271397	Prob. Chi-Square(2)	0.8731
Wald Statistic	0.267361	Prob. Chi-Square(2)	0.8749

Coca Cola

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	1.849632	Prob. F(2,256)	0.1594
Log likelihood ratio	3.730178	Prob. Chi-Square(2)	0.1549
Wald Statistic	3.699263	Prob. Chi-Square(2)	0.1573

Ellaktor

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	16.66843	Prob. F(2,256)	0.0000
Log likelihood ratio	31.82768	Prob. Chi-Square(2)	0.0000
Wald Statistic	33.33685	Prob. Chi-Square(2)	0.0000

Eurobank

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	59.95373	Prob. F(2,256)	0.0000
Log likelihood ratio	99.88305	Prob. Chi-Square(2)	0.0000
Wald Statistic	119.9075	Prob. Chi-Square(2)	0.0000

Fourlis

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	3.162366	Prob. F(2,256)	0.0440
Log likelihood ratio	6.345489	Prob. Chi-Square(2)	0.0419
Wald Statistic	6.324732	Prob. Chi-Square(2)	0.0423

GEK Terna

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.625103	Prob. F(2,256)	0.5360
Log likelihood ratio	1.266650	Prob. Chi-Square(2)	0.5308
Wald Statistic	1.250206	Prob. Chi-Square(2)	0.5352

Sarantis

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	1.499957	Prob. F(2,256)	0.2251
Log likelihood ratio	3.029074	Prob. Chi-Square(2)	0.2199
Wald Statistic	2.999914	Prob. Chi-Square(2)	0.2231

Hellenic Exchanges (ATHEX)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	12.12980	Prob. F(2,256)	0.0000
Log likelihood ratio	23.54011	Prob. Chi-Square(2)	0.0000
Wald Statistic	24.25961	Prob. Chi-Square(2)	0.0000

Hellenic Petroleum (Helpe)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	6.726118	Prob. F(2,256)	0.0014
Log likelihood ratio	13.31556	Prob. Chi-Square(2)	0.0013
Wald Statistic	13.45224	Prob. Chi-Square(2)	0.0012

Hellenic Telecom Organization (OTE)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	15.12011	Prob. F(2,256)	0.0000
Log likelihood ratio	29.03003	Prob. Chi-Square(2)	0.0000
Wald Statistic	30.24022	Prob. Chi-Square(2)	0.0000

Independent Power Transmission Operator (IPTO)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	22.52509	Prob. F(2,256)	0.0000
Log likelihood ratio	42.14588	Prob. Chi-Square(2)	0.0000
Wald Statistic	45.05019	Prob. Chi-Square(2)	0.0000

Jumbo

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables

Equation Sample: 1998M01 2019M08

F-statistic	0.898769	Prob. F(2,256)	0.4084
Log likelihood ratio	1.819245	Prob. Chi-Square(2)	0.4027
Wald Statistic	1.797538	Prob. Chi-Square(2)	0.4071

Lamda Development

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	1.520552	Prob. F(2,256)	0.2206
Log likelihood ratio	3.070419	Prob. Chi-Square(2)	0.2154
Wald Statistic	3.041103	Prob. Chi-Square(2)	0.2186

Motor Oil

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	29.26254	Prob. F(2,256)	0.0000
Log likelihood ratio	53.53046	Prob. Chi-Square(2)	0.0000
Wald Statistic	58.52508	Prob. Chi-Square(2)	0.0000

Mytilineos

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	1.043512	Prob. F(2,256)	0.3537

Log likelihood ratio	2.111040	Prob. Chi-Square(2)	0.3480
Wald Statistic	2.087024	Prob. Chi-Square(2)	0.3522

National Bank of Greece (NBG)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	42.75474	Prob. F(2,256)	0.0000
Log likelihood ratio	74.93147	Prob. Chi-Square(2)	0.0000
Wald Statistic	85.50947	Prob. Chi-Square(2)	0.0000

OPAP

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	28.11089	Prob. F(2,256)	0.0000
Log likelihood ratio	51.61945	Prob. Chi-Square(2)	0.0000
Wald Statistic	56.22178	Prob. Chi-Square(2)	0.0000

Piraeus Port Authority (PPA)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	16.56730	Prob. F(2,256)	0.0000
Log likelihood ratio	31.64586	Prob. Chi-Square(2)	0.0000
Wald Statistic	33.13460	Prob. Chi-Square(2)	0.0000

Public Power Corporation (PPC)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	58.67920	Prob. F(2,256)	0.0000
Log likelihood ratio	98.11395	Prob. Chi-Square(2)	0.0000
Wald Statistic	117.3584	Prob. Chi-Square(2)	0.0000

Terna Energy

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	46.69885	Prob. F(2,256)	0.0000
Log likelihood ratio	80.86867	Prob. Chi-Square(2)	0.0000
Wald Statistic	93.39769	Prob. Chi-Square(2)	0.0000

Titan Cement

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	12.62844	Prob. F(2,256)	0.0000
Log likelihood ratio	24.46366	Prob. Chi-Square(2)	0.0000
Wald Statistic	25.25689	Prob. Chi-Square(2)	0.0000

Viohalco

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	80.41214	Prob. F(2,256)	0.0000
Log likelihood ratio	126.7467	Prob. Chi-Square(2)	0.0000
Wald Statistic	160.8243	Prob. Chi-Square(2)	0.0000

Appendix L – EViews Chow test of Part II: Coefficients of Market Return & Volatility

Aegean Airlines

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.381978	Prob. F(3,254)	0.7661
Log likelihood ratio	1.170366	Prob. Chi-Square(3)	0.7601
Wald Statistic	1.145935	Prob. Chi-Square(3)	0.7660

Alpha Bank

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	7.327434	Prob. F(3,254)	0.0001
Log likelihood ratio	21.58064	Prob. Chi-Square(3)	0.0001
Wald Statistic	21.98230	Prob. Chi-Square(3)	0.0001

Cenergy

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	2.445102	Prob. F(3,254)	0.0645
Log likelihood ratio	7.402203	Prob. Chi-Square(3)	0.0601
Wald Statistic	7.335305	Prob. Chi-Square(3)	0.0619

Coca Cola

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	7.677959	Prob. F(3,254)	0.0001
Log likelihood ratio	22.56944	Prob. Chi-Square(3)	0.0000
Wald Statistic	23.03388	Prob. Chi-Square(3)	0.0000

Ellaktor

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	3.605573	Prob. F(3,254)	0.0140
Log likelihood ratio	10.84296	Prob. Chi-Square(3)	0.0126
Wald Statistic	10.81672	Prob. Chi-Square(3)	0.0128

Eurobank

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	11.10030	Prob. F(3,254)	0.0000
Log likelihood ratio	32.03091	Prob. Chi-Square(3)	0.0000
Wald Statistic	33.30090	Prob. Chi-Square(3)	0.0000

Fourlis

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.607921	Prob. F(3,254)	0.6104
Log likelihood ratio	1.860173	Prob. Chi-Square(3)	0.6019
Wald Statistic	1.823762	Prob. Chi-Square(3)	0.6098

GEK Terna

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	1.724580	Prob. F(3,254)	0.1624
Log likelihood ratio	5.242739	Prob. Chi-Square(3)	0.1549
Wald Statistic	5.173740	Prob. Chi-Square(3)	0.1595

Sarantis

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables

Equation Sample: 1998M01 2019M08

F-statistic	5.432640	Prob. F(3,254)	0.0012
Log likelihood ratio	16.16953	Prob. Chi-Square(3)	0.0010
Wald Statistic	16.29792	Prob. Chi-Square(3)	0.0010

Hellenic Exchanges (ATHEX)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	1.583028	Prob. F(3,254)	0.1939
Log likelihood ratio	4.816381	Prob. Chi-Square(3)	0.1857
Wald Statistic	4.749085	Prob. Chi-Square(3)	0.1911

Hellenic Petroleum (HELPE)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	3.883415	Prob. F(3,254)	0.0097
Log likelihood ratio	11.66004	Prob. Chi-Square(3)	0.0086
Wald Statistic	11.65024	Prob. Chi-Square(3)	0.0087

Hellenic Telecom Organization (OTE)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	6.813631	Prob. F(3,254)	0.0002
Log likelihood ratio	20.12443	Prob. Chi-Square(3)	0.0002

Wald Statistic	20.44089	Prob. Chi-Square(3)	0.0001

Independent Power Transmission Operator (IPTO)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	4.217455	Prob. F(3,254)	0.0062
Log likelihood ratio	12.63900	Prob. Chi-Square(3)	0.0055
Wald Statistic	12.65237	Prob. Chi-Square(3)	0.0055

Jumbo

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.672028	Prob. F(3,254)	0.5699
Log likelihood ratio	2.055561	Prob. Chi-Square(3)	0.5610
Wald Statistic	2.016084	Prob. Chi-Square(3)	0.5691

Lamda Development

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	1.750123	Prob. F(3,254)	0.1572
Log likelihood ratio	5.319602	Prob. Chi-Square(3)	0.1498
Wald Statistic	5.250370	Prob. Chi-Square(3)	0.1544

Motor Oil

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	7.629065	Prob. F(3,254)	0.0001
Log likelihood ratio	22.43174	Prob. Chi-Square(3)	0.0001
Wald Statistic	22.88719	Prob. Chi-Square(3)	0.0000

Mytilineos

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.706721	Prob. F(3,254)	0.5488
Log likelihood ratio	2.161237	Prob. Chi-Square(3)	0.5396
Wald Statistic	2.120162	Prob. Chi-Square(3)	0.5478

National Bank of Greece (NBG)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	3.451967	Prob. F(3,254)	0.0172
Log likelihood ratio	10.39013	Prob. Chi-Square(3)	0.0155
Wald Statistic	10.35590	Prob. Chi-Square(3)	0.0158

OPAP

Chow Breakpoint Test: 2009M11

Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	7.231234	Prob. F(3,254)	0.0001
Log likelihood ratio	21.30861	Prob. Chi-Square(3)	0.0001
Wald Statistic	21.69370	Prob. Chi-Square(3)	0.0001

Piraeus Port Authority (PPA)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	5.823187	Prob. F(3,254)	0.0007
Log likelihood ratio	17.29410	Prob. Chi-Square(3)	0.0006
Wald Statistic	17.46956	Prob. Chi-Square(3)	0.0006

Public Power Corporation (PPC)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	26.08475	Prob. F(3,254)	0.0000
Log likelihood ratio	69.82722	Prob. Chi-Square(3)	0.0000
Wald Statistic	78.25425	Prob. Chi-Square(3)	0.0000

Terna Energy

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	29.61683	Prob. F(3,254)	0.0000
Log likelihood ratio	77.98964	Prob. Chi-Square(3)	0.0000
Wald Statistic	88.85048	Prob. Chi-Square(3)	0.0000

Titan Cement

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	2.377752	Prob. F(3,254)	0.0704
Log likelihood ratio	7.201109	Prob. Chi-Square(3)	0.0658
Wald Statistic	7.133257	Prob. Chi-Square(3)	0.0678

Viohalco

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	11.32980	Prob. F(3,254)	0.0000
Log likelihood ratio	32.65325	Prob. Chi-Square(3)	0.0000
Wald Statistic	33.98940	Prob. Chi-Square(3)	0.0000

Appendix M – EViews Chow test of Part II: Coefficients of Volatility

Aegean Airlines

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.111940	Prob. F(2,256)	0.8941
Log likelihood ratio	0.227278	Prob. Chi-Square(2)	0.8926
Wald Statistic	0.223880	Prob. Chi-Square(2)	0.8941

Alpha Bank

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.144457	Prob. F(2,256)	0.8656
Log likelihood ratio	0.293263	Prob. Chi-Square(2)	0.8636
Wald Statistic	0.288915	Prob. Chi-Square(2)	0.8655

Cenergy

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	37.66167	Prob. F(2,256)	0.0000
Log likelihood ratio	67.05850	Prob. Chi-Square(2)	0.0000
Wald Statistic	75.32334	Prob. Chi-Square(2)	0.0000

Coca Cola

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.768070	Prob. F(2,256)	0.4650
Log likelihood ratio	1.555480	Prob. Chi-Square(2)	0.4594

Wald Statistic	1.536140	Prob. Chi-Square(2)	0.4639

Ellaktor

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	15.51807	Prob. F(2,256)	0.0000
Log likelihood ratio	29.75199	Prob. Chi-Square(2)	0.0000
Wald Statistic	31.03615	Prob. Chi-Square(2)	0.0000

Eurobank

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	60.49088	Prob. F(2,256)	0.0000
Log likelihood ratio	100.6250	Prob. Chi-Square(2)	0.0000
Wald Statistic	120.9818	Prob. Chi-Square(2)	0.0000

Fourlis

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	2.199807	Prob. F(2,256)	0.1129
Log likelihood ratio	4.430396	Prob. Chi-Square(2)	0.1091
Wald Statistic	4.399614	Prob. Chi-Square(2)	0.1108

GEK Terna

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.144141	Prob. F(2,256)	0.8658
Log likelihood ratio	0.292623	Prob. Chi-Square(2)	0.8639
Wald Statistic	0.288283	Prob. Chi-Square(2)	0.8658

Sarantis

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.810433	Prob. F(2,256)	0.4458
Log likelihood ratio	1.641003	Prob. Chi-Square(2)	0.4402
Wald Statistic	1.620866	Prob. Chi-Square(2)	0.4447

Hellenic Exchanges (ATHEX)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	10.62675	Prob. F(2,256)	0.0000
Log likelihood ratio	20.73626	Prob. Chi-Square(2)	0.0000
Wald Statistic	21.25351	Prob. Chi-Square(2)	0.0000

Hellenic Petroleum (HELPE)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	5.012737	Prob. F(2,256)	0.0073
Log likelihood ratio	9.987803	Prob. Chi-Square(2)	0.0068
Wald Statistic	10.02547	Prob. Chi-Square(2)	0.0067

Hellenic Telecom Organization (OTE)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	13.32055	Prob. F(2,256)	0.0000
Log likelihood ratio	25.74012	Prob. Chi-Square(2)	0.0000
Wald Statistic	26.64110	Prob. Chi-Square(2)	0.0000

Independent Power Transmission Operator (IPTO)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	17.92047	Prob. F(2,256)	0.0000
Log likelihood ratio	34.06819	Prob. Chi-Square(2)	0.0000
Wald Statistic	35.84094	Prob. Chi-Square(2)	0.0000

Jumbo

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.482021	Prob. F(2,256)	0.6181
Log likelihood ratio	0.977266	Prob. Chi-Square(2)	0.6135
Wald Statistic	0.964042	Prob. Chi-Square(2)	0.6175

Lamda Development

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.955264	Prob. F(2,256)	0.3861
Log likelihood ratio	1.933176	Prob. Chi-Square(2)	0.3804
Wald Statistic	1.910529	Prob. Chi-Square(2)	0.3847

Motor Oil

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	26.69574	Prob. F(2,256)	0.0000
Log likelihood ratio	49.25179	Prob. Chi-Square(2)	0.0000
Wald Statistic	53.39148	Prob. Chi-Square(2)	0.0000

Mytilineos

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	0.666588	Prob. F(2,256)	0.5143
Log likelihood ratio	1.350493	Prob. Chi-Square(2)	0.5090
Wald Statistic	1.333176	Prob. Chi-Square(2)	0.5135

National Bank of Greece (NBG)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	42.70053	Prob. F(2,256)	0.0000
Log likelihood ratio	74.84893	Prob. Chi-Square(2)	0.0000
Wald Statistic	85.40107	Prob. Chi-Square(2)	0.0000

OPAP

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	26.98354	Prob. F(2,256)	0.0000
Log likelihood ratio	49.73505	Prob. Chi-Square(2)	0.0000
Wald Statistic	53.96708	Prob. Chi-Square(2)	0.0000

Piraeus Port Authority (PPA)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	14.60994	Prob. F(2,256)	0.0000
Log likelihood ratio	28.10157	Prob. Chi-Square(2)	0.0000
Wald Statistic	29.21988	Prob. Chi-Square(2)	0.0000

Public Power Corporation (PPC)

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	58.90675	Prob. F(2,256)	0.0000
Log likelihood ratio	98.43068	Prob. Chi-Square(2)	0.0000
Wald Statistic	117.8135	Prob. Chi-Square(2)	0.0000

Terna Energy

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	46.92110	Prob. F(2,256)	0.0000
Log likelihood ratio	81.19924	Prob. Chi-Square(2)	0.0000
Wald Statistic	93.84220	Prob. Chi-Square(2)	0.0000

Titan Cement

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1998M01 2019M08

F-statistic	9.023338	Prob. F(2,256)	0.0002
Log likelihood ratio	17.71146	Prob. Chi-Square(2)	0.0001
Wald Statistic	18.04668	Prob. Chi-Square(2)	0.0001

Viohalco

Chow Breakpoint Test: 2009M11
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables

Equation Sample: 1998M01 2019M08

F-statistic	72.11423	Prob. F(2,256)	0.0000
Log likelihood ratio	116.1831	Prob. Chi-Square(2)	0.0000
Wald Statistic	144.2285	Prob. Chi-Square(2)	0.0000

References

[1] *Laeven, L and Valencis, F. (2008) "Systemic Banking Crises: A New Database" International Monetary Fund Working Paper WP / 08/224, Washington, DC*

[1] *Kaminsky, GL and MC Reinhart (1999) "The twin crises: The Causes of Banking and Balance of Payments Problems", American economic Review Vol. 89 pp 473 - 500*

[1] *Bezbakh, P. and Gherardi, S. (2000) ''Under Dictionnaite de l economie'', Paris, Larousse - Le Monde*

Ramonet, I. (2008) "La crisis del siglo/The crisis of the century'', Spain

Stiglitz J.E. (2010) "Freefall: America, Free Markets, and the Sinking of the World Economy '', USA

Totsikas A. (2012) ''Οικονομικές κρίσεις και χρεοκοπία (19ος – 20ος αιώνας)''
https://argolikivivliothiki.gr/2012/11/01/economic-crises/

Day-long newspaper ''Taxheaven'' article (2011) available in the website
http://www.taxheaven.gr/news/news/view/id/7187

Hellenic Parliament (2010) ''Σύμβαση Δανειακής Διευκόλυνσης 8/5/2010''
http://drupal.antibaro.gr/sites/default/files/mnhmonio2010-gre.pdf

Day-long newspaper ''Newsbomb'' article (2015) available in the website
http://www.newsbomb.gr/oikonomia/news/story/614595/symfonia-ta-35-metra-poy-perilamvanei-to-neo-mnimonio#ixzz44c7DP02D

Nikitas, S. (2013) ''Όταν άρχισε η κρίση: Η κατάρρευση της Lehman Brothers''
http://news247.gr/eidiseis/afieromata/otan-arxise-h-krish-h-katarreysh-ths-lehman-brothers.2409495.html

Sorein, A.R. (2008) "Form whispers to coup de grace", International Herald Tribune, May 19, 2008

Website of the Piraeus Bank http://www.piraeusbankgroup.com/el/group-profile/brief-profile

Website of the Alpha Banking http://www.alpha.gr/page/default.asp?la=1&id=30

Website of the Eurobank https://www.eurobank.gr/online/home/

Website of the NBG https://www.nbg.gr/el/i-bank/retail/internet-banking

Website of the Attica Bank http://www.atticabank.gr/el/

Michalopoulos G., http://www.hba.gr/5Ekdosis/UplPDFs/syllogikostomos/12-c%20Michalopoulos%20229-246.pdf

Hardouvelis, G. (2016) ''The Greek Banking System in the Crisis years''

Attica Bank Financial Statements "30 Sept 2014 Financial statements"

https://www.marketscreener.com/PIRAEUS-BANK-SA-1408756/company/

European Commission (2015-11-29). "Amendment of the restructuring plan approved in 2014 and granting of new aid to Piraeus Bank" (PDF). p. 5. State Aid SA.43364 (2015/N) – Greece.

Group, Piraeus Bank. "Corporate Profile – Piraeus Bank". www.piraeusbankgroup.com.

"General information about the Group"

https://www.athexgroup.gr/en/web/guest/stock-profile/-/select-stock/60

"Greek Bank of Piraeus to buy Arab Bank network in Cyprus for 15 mln eur". Hemscott. 10 December 2007.

Luke Baker (2012-07-23). "EU says mismanaged Greek banks face "revamp"". Reuters.

Papadoyiannis, Yiannis (28 May 2014). "Absorption of Geniki makes financial sense for Piraeus group". ekathimerini.com.

Green, Elaine (24 September 2013). "Greek Banking No Longer Lost At Sea?". Forbes.

"Restructuring of two Greek banks approved by EU". Greek Herald.

"State aid: Commission approves aid for Piraeus Bank on the basis of an amended restructuring plan". European Commission. 2015-11-29.

""The market is beginning to recognize us as a bank that is looking to lend"". The Business Report. 27 September 2017.

Editorial, Reuters. "Piraeus Bank agrees to sell Serbian operations to Direktna Bank". U.S.

"Direktna Banka buys Piraeus Bank's Serbian unit". www.balkaneu.com.

Marica, Irina (2017-12-22). *"Greek group Piraeus sells Romanian subsidiary to J. C. Flowers"*. *Romania Insider*.

"Piraeus Bank Agrees the Sale of Piraeus Bank Romania"

Watch, CEE Market. "Serbian Direktna Banka completes acquisition of Piraeus Bank Beograd || Central European Financial Observer"

"Athens Exchange Group: Banks (ranked by capitalization) – helex.gr"

"National Bank of Greece (NBG) Delisting Process to Begin"

Αθανάσιος Κ. Μπούνταλης (2016). Το Χρήμα στην Ελλάδα, 1821-2001. Η ιστορία ενός θεσμού. MIG Publishing. σελ. 109-110

Tschoegl, A. (2004). "Financial Integration, Dis-integration and Emerging Re-integration in the Eastern Mediterranean, c. 1850 to the Present". Financial Markets, Institutions & Instruments. 13 (5): 245–285.

National Bank of Greece Press Release (Athens, 13 May 2005)

"National Bank of Greece Had Negative Equity at Year End". *CNBC*. *May 17, 2012.*

"Alpha Bank Rejects $3.8 Billion Bid From National Bank of Greece". *Bloomberg BusinessWeek. 18 February 2011.*

"Greece's National Bank finalizes swap to create nation's 'largest banking group'". *China Post. February 20, 2013.*

"EU, IMF resisting Greek bank NBG's takeover of Eurobank: sources". *Reuters. March 30, 2013.*

"Restructuring of two Greek banks approved by EU". *Greek Herald.*

"National Bank of Greece gets 2.71 billion euro state aid by the European Commission". *Reuters. 2015-12-04.*

Laura Noonan (22 December 2015). "NBG offloads Finansbank to QNB at bargain price". *Financial Times.*

"Results 2015" *(PDF). National Bank of Greece.*

"The Eurobank Group". *www.eurobank.gr.*

"EFG Eurobank Ergasias - History". *eurobank.gr. Archived from the original on 7 August 2011.*

"Greece's EFG Eurobank to split from EFG Group". *Reuters.*

http://www.chinapost.com.tw/business/europe/2013/02/20/370680/Greeces-National.htm .

"ALPHA Stock Overview". Athens Exchange Group. August 11, 2015.

Alkman Granitsas, Stelios Bouras and Nektaria Stamouli. (March 14, 2012). "2nd UPDATE: Greece's Alpha Bank To Call Off Merger With Eurobank". The Wall Street Journal. Dow Jones & Company.

Fabio Benedetti-Valentini and Elisa Martinuzzi (October 17, 2012). "Credit Agricole Exits Greece Taking Profit Hit on Unit". Bloomberg.

"Nine Month 2014 Results: Profit after Tax at Euro 110.5 million". www.londonstockexchange.com.

"Greek Alpha Bank hits recap target, rights issue oversubscribed- sources". reuters.com.

"Alpha Bank SA undertakes the deposits of three Cooperative Banks". Reuters. December 8, 2013.

"Greek bill gives rescue fund legal cover for bank capital boosts". reuters.com.

"Alpha Bank buys back in full 940m euro worth of preference shares". marketall.eu.

"3rd Quarter Results". announce.ft.com.

"Alpha Bank to buy Citi's Greek retail assets". ft.com.

"Greece's Eurobank, Alpha Bank Ask Central Bank for Emergency Liquidity Assistance". Wall Street Journal. January 16, 2015.

McCarthy, Sebastian (November 8, 2019). "National Bank, Eurobank, Alpha Bank, Attica Bank raided in collusion probe". City AM.

Merge and Acquire Archived December 22, 2015, at the Wayback Machine, The Ukrainian Week (9 October 2015)

"Alpha Finance US Corporation". linkedin.com.

"Greece's Alpha Bank to buy Ukraine's Astra Bank". Reuters. March 27, 2008.

"Turkish regulator blocks bank sale". Financial Times. August 10, 2007.

"Greece's Alpha Bank to buy Ukraine's Astra Bank". Reuters. March 27, 2008. Archived from the original on January 25, 2010. Retrieved February 20, 2012.

Merge and Acquire Archived December 22, 2015, at the Wayback Machine, The Ukrainian Week (9 October 2015)

"Alpha Finance US Corporation". linkedin.com. Retrieved May 13, 2011.

National Bank of Greece". Banksdaily.com. 25 May 2021. Retrieved 9 September 2021.

Jump up to:ᵃ ᵇ ᶜ ᵈ ᵉ <"Group and Bank Annual Financial Report" (PDF). National Bank of Greece. March 2018. Retrieved 9 September 2021.

Hellenic Financial Stability Fund (November 2019). *"Interim Statement of Financial Position of the Hellenic Financial Stability Fund, as of 30 June 2019"* (PDF).

"Results 2017" (PDF). National Bank of Greece. Retrieved 31 May 2017.

"{ticker} {securityName} {exchange}:{ticker} Stock Quote Price News". quote.morningstar.com. Retrieved 17 August 2017.

"Athens Exchange Group: Banks (ranked by capitalization) – helex.gr". *Athens Exchange Group*. 4 December 2018. Retrieved 4 December 2018.

"Athens Exchange Group: Stocks (ranked by capitalization) – helex.gr". *Athens Exchange Group*. 4 December 2018. Retrieved 4 December 2018.

"Georgios Stavros". National Bank of Greece - Historical Archive. Archived from *the original* on 2014-05-20.

Jump up to:ᵃ ᵇ "National Bank of Greece (NBG) Delisting Process to Begin". Yahoo Finance. Retrieved 2015-12-01.

Jump up to:ᵃ ᵇ "Εθνική Τράπεζα της Ελλάδος (ΕΤΕ)". www.greekhistoryrepository.gr (in Greek). Retrieved 2021-08-22.

Theofilidi, Christina (2020-11-24). "National Bank of Greece: The Journey from Traditional, Incumbent Bank to Digital Champion". International Banker. Retrieved 2021-08-22.

Αθανάσιος Κ. Μπούνταλης (2016). Το Χρήμα στην Ελλάδα, 1821-2001. Η ιστορία ενός θεσμού. MIG Publishing. σελ. 109-110. ISBN 978-9-60937-758-4.

Tschoegl, A. (2004). "Financial Integration, Dis-integration and Emerging Re-integration in the Eastern Mediterranean, c. 1850 to the Present". Financial Markets, Institutions & Instruments. 13 (5): 245–285. doi:10.1111/j.0963-8008.2004.00078.x. S2CID 154853310.

"History of National Bank of Greece – FundingUniverse". www.fundinguniverse.com. Retrieved 2021-08-22.

Petrakis, Panagiotis E. (2020). The evolution of the Greek economy : past challenges and future approaches. Pantelis C. Kostis. Cham, Switzerland. ISBN 978-3-030-47210-8. OCLC 1202754481.

Jump up to:ᵃ ᵇ "National Bank of Greece Press Release (Athens, 13 May 2005)".
Archived from the original on 27 September 2007. Retrieved 13 April 2007.

"National Bank of Greece Had Negative Equity at Year End". *CNBC*. *May 17, 2012.*
Retrieved 17 August 2017.

"Alpha Bank Rejects $3.8 Billion Bid From National Bank of Greece". *Bloomberg*
BusinessWeek. 18 February 2011. Retrieved 15 July 2011.

"Greece's National Bank finalizes swap to create nation's 'largest banking group'". *China*
Post. February 20, 2013.

"EU, IMF resisting Greek bank NBG's takeover of Eurobank: sources". *Reuters. March*
30, 2013.

"Restructuring of two Greek banks approved by EU". *Greek Herald. Retrieved 23*
July2014.

"National Bank of Greece gets 2.71 billion euro state aid by the European
Commission". *Reuters. 2015-12-04. Retrieved 2015-12-05.*

Laura Noonan (22 December 2015). *"NBG offloads Finansbank to QNB at bargain*
price". *Financial Times*. *Retrieved 22 December 2015.*

"PRESS RELEASE, NBG Group: Q4.15 results highlights" (pdf). NBG Group. 15 March
2015. p. 4. Retrieved 23 March 2015.

Sutton, Sam (2016-10-06). *"National Bank of Greece's PE subsidiary emerges as Stage*
Capital". *Buyouts. Retrieved 2021-08-12.*

"NBG prepares Frontier NPL securitization of €7 bn". *Aurora News Real State. 2*
February 2020. Retrieved 2021-08-12.

Jump up to:ᵃ ᵇ "Greece's NBG hires Morgan Stanley to advise on six billion euro bad
debt sale". *Reuters. 2020-06-30. Retrieved 2021-08-12.*

Papadogiannis, Giannis (2021-05-19). *"National Bank works on Frontier 2 project, eyes*
further drop in NPLs in 2021". *Business Daily (in Greek). Retrieved 2021-08-12.*

Mukhopadhyay, Akankshita; Lozano, Cheska (6 July 2021). *"National Bank of Greece,*
Eurobank lead the way in bad loan cleanup". *S&P Global Market Intelligence.*
Retrieved 2021-08-12.

"NBG selects DoValue-led consortium as preferred bidder |
eKathimerini.com". *www.ekathimerini.com. 22 July 2021. Retrieved 2021-08-12.*

Online, Τα Νέα (8 December 2006). "Δωρεά της Εθνικής Τράπεζας νέα πτέρυγα και χειρουργεία του "Ευαγγελισμός"". Retrieved 17 August 2017.

https://www.eurobank.gr/-/media/eurobank/omilos/enimerosi-ependuton/enimerosi-metoxon-eurobank/oikonomika-apotelesmata-part-01/2017/full-year-2017/4q2017-results-pr-en.pdf

Μαυρογιωργη, Φαιδρα. "Τράπεζες στα χέρια των Funds". Retrieved 17 August 2017.

"Profile - helex.gr". www.helex.gr. Retrieved 17 August 2017.

"The Eurobank Group". www.eurobank.gr. Retrieved 2019-07-31.

"Eurobank Ergasias". www.eurobank.gr. Retrieved 17 August 2017.

"EFG Eurobank Ergasias - History". eurobank.gr. Archived from the original on 7 August 2011. Retrieved 23 April 2018.

Jump up to:ᵃ ᵇ "Archives from other banks: Archives from Eurobank financial merger partners". eurobank.gr. Archived from the original on 17 September 2021. Retrieved 16 September2021.

Jump up to:ᵃ ᵇ ᶜ ᵈ "Eurobank: Our History". eurobank.gr. Archived from the original on 28 April 2021. Retrieved 16 September 2021.

"Alpha Bank sagt Fusion mit Eurobank ab. Die Fusion zwischen der Alpha Bank und der EFG Eurobank ist abgesagt worden. Die Alpha Bank will den Fusionsvorschlag zurückziehen, weil der Schuldenschnitt für Griechenland höhere Verluste mit sich bringt als erwartet" [Alpha Bank cancels merger with Eurobank. The merger between Alpha Bank and EFG Eurobank has been canceled. Alpha Bank wants to withdraw the merger proposal because the debt cut for Greece will result in higher losses than expected.]. Handelsblatt (in German). 14 March 2012. Archived from the original on 25 January 2013. Retrieved 6 July 2021.

Tagaris, Karolina (23 July 2012). "Greece's EFG Eurobank to split from EFG Group". Reuters. Retrieved 16 September 2021.

AFP staff (20 February 2013). "Greece's National Bank finalizes swap to create nation's 'largest banking group'". The China Post. Athens. Agence France-Presse. Archived from the original on 5 August 2016.

"Eurobank Ergasias". www.eurobank.gr. Archived from the original on 17 August 2017. Retrieved 17 August 2017.

Monga, Nektaria Stamouli and Vipal (26 November 2018). "Greece's Eurobank to Acquire Grivalia Properties". Wall Street Journal. ISSN 0099-9660. Retrieved 26 July 2021.

Furber, Sophia (11 March 2021). "Eurobank unveils €3.3B 'Mexico' bad-loan securitization". www.spglobal.com. Retrieved 26 July 2021.

Kholaif, Dahlia (23 December 2012). "Burgan Bank Concludes Purchase of Eurobank Tekfen". Bloomberg News. Archived from the original on 15 July 2014. Retrieved 16 January 2015.

Jump up to:ᵃ ᵇ Clark, Simon (16 January 2015). "Greece's Eurobank, Alpha Bank Ask Central Bank for Emergency Liquidity Assistance". The Wall Street Journal. Archived from the original on 18 January 2018. Retrieved 16 January 2015.

Hope, Kerin (26 November 2018). "Greece's Eurobank to accelerate bad loan reduction with Grivalia takeover". Financial Times. Retrieved 26 July 2021.

Kokkinidis, Tasos (8 November 2018). "Piraeus Bank Sells Bulgarian Subsidiary to Eurobank". GreekReporter.com. Retrieved 26 July 2021.

Jump up to:ᵃ ᵇ "FINANSIJSKI IZVEŠTAJI ZA GODINU ZAVRŠENU 31. DECEMBRA 2017. GODINE I IZVEŠTAJ NEZAVISNOG REVIZORA" (PDF). eurobank.rs (in Serbian). 19 April 2018. Retrieved 16 December 2018.

EB

"Corporate Profile". Retrieved 14 May 2018.

Jump up to:ᵃ ᵇ "Q3 2020 Results Presentation" (PDF).

Jump up to:ᵃ ᵇ ᶜ "Q1 2018 Results Presentation" (PDF). piraeusbankgroup.com. Retrieved 14 May2018.

Jump up to:ᵃ ᵇ Revenues in 2018

Jump up to:ᵃ ᵇ "Cancellation of the CoCo coupon payment". 2020-11-23.

4-traders. "Piraeus Bank SA company : Shareholders, managers and business summary - Athens Stock Exchange: - 4-Traders". www.4-traders.com. Retrieved 17 August 2017.

"TPEIR Profile & Executives - Piraeus Bank SA - Bloomberg". bloomberg.com. Retrieved 28 November 2012.

Jump up to:ᵃ ᵇ ᶜ Group, Piraeus Bank. "Corporate Profile - Piraeus Bank". www.piraeusbankgroup.com. Retrieved 17 August 2017.

European Commission (2015-11-29). "Amendment of the restructuring plan approved in 2014 and granting of new aid to Piraeus Bank" (PDF). p. 5. State Aid SA.43364 (2015/N) – Greece. As of 30 September 2015, based on Bank of Greece data and reported results from peer group, the Bank holds the leading position in Greece with total domestic gross loans of EUR 63 billion and 2 position (very close to the first) in total domestic customer deposits with EUR 35 billion.

"General information about the Group". Retrieved 25 November 2013.

TPEIR: profile.helex.gr

"Greek Bank of Piraeus to buy Arab Bank network in Cyprus for 15 mln eur". Hemscott. 10 December 2007. Retrieved 2007-12-11.

Luke Baker (2012-07-23). "EU says mismanaged Greek banks face "revamp"". Reuters. Retrieved 2020-03-07. Michael Sallas, and his children had taken out loans of more than 100 million euros to secretly buy shares representing an undeclared family stake in the bank of more than 6 percent. The purchases, conducted as part of an 800-million-euro (624.16 billion pounds) Piraeus rights issue in January 2011 designed to strengthen the bank's capital base, were made via offshore companies owned by Sallas and his two children

Papadoyiannis, Yiannis (28 May 2014). "Absorption of Geniki makes financial sense for Piraeus group". ekathimerini.com. Retrieved 25 January 2016.

Green, Elaine (24 September 2013). "Greek Banking No Longer Lost At Sea?". Forbes. Retrieved 21 February 2015.

"Restructuring of two Greek banks approved by EU". Greek Herald. Retrieved 23 July2014.

"State aid: Commission approves aid for Piraeus Bank on the basis of an amended restructuring plan". European Commission. 2015-11-29.

"The market is beginning to recognize us as a bank that is looking to lend". The Business Report. 27 September 2017. Retrieved 27 September 2017.

Editorial, Reuters. "Piraeus Bank agrees to sell Serbian operations to Direktna Bank". U.S. Retrieved 2018-03-28.

"Direktna Banka buys Piraeus Bank's Serbian unit". www.balkaneu.com. Retrieved 2018-03-28.

Marica, Irina (2017-12-22). "Greek group Piraeus sells Romanian subsidiary to J. C. Flowers". Romania Insider. Retrieved 2018-03-28.

"Piraeus Bank Agrees the Sale of Piraeus Bank Romania". Retrieved 2018-03-28.

Watch, CEE Market. "Serbian Direktna Banka completes acquisition of Piraeus Bank Beograd || Central European Financial Observer". Retrieved October 10, 2019.

Jump up to:[a] [b] Hellenic Financial Stability Fund (November 2019). "Interim Statement of Financial Position of the Hellenic Financial Stability Fund, as of 30 June 2019" (PDF). Archived from the original (PDF) on 21 June 2020. Retrieved 8 March 2020.

4-traders. "Piraeus bank shareholder structure/ 4-traders.com". www.4-traders.com. Retrieved 2018-08-03.

"Greece had a plan for its banks. Then the coronavirus struck". POLITICO. 2020-11-27. Retrieved 2020-11-30.

30 Sept 2014 Financial statements" (PDF). Retrieved 12 March 2015.

"Attica Bank company : Shareholders, managers and business summary | Athens Stock Exchange:". 4-Traders. Retrieved 6 May 2018.

"Group Companies". Retrieved 27 May 2013.[permanent dead link]

https://www.terna-energy.com/

http://www.mytilineos.gr/Uploads/FINANCIALS/2017/ANNUAL_FINANCIAL_REPORT _01.01.2017_31.12.2017.pdf

http://www.mytilineos.gr/Uploads/FINANCIALS/2017/ANNUAL_FINANCIAL_REPORT _01.01.2017_31.12.2017.pdf

http://www.mytilineos.gr/Uploads/FINANCIALS/2017/ANNUAL_FINANCIAL_REPORT _01.01.2017_31.12.2017.pdf

http://www.mytilineos.gr/Uploads/FINANCIALS/2017/ANNUAL_FINANCIAL_REPORT _01.01.2017_31.12.2017.pdf

http://www.mytilineos.gr/Uploads/FINANCIALS/2017/ANNUAL_FINANCIAL_REPORT _01.01.2017_31.12.2017.pdf

Jump up to:[a] [b] "Major Shareholders - Mytilineos Corporate Website". www.mytilineos.gr. Retrieved 13 January 2021.

http://www.mytilineos.gr/Uploads/FINANCIALS/2017/ANNUAL_FINANCIAL_REPORT _01.01.2017_31.12.2017.pdf

https://www.mytilineos.gr/

https://www.fourlis.gr/

"Service Depantments Info Lines Contact – Coca-Cola HBC". coca-colahellenic.com. Retrieved 01 November 2021. Check date values in: |access-date= (help)

Jump up to:ᵃ ᵇ ᶜ "Preliminary Results 2020" (PDF). Coca-Cola HBC AG. Retrieved 25 February2021.

"Coca-Cola Hellenic Bottling Company". Market Screener. Retrieved 3 March 2019.

"Coca-Cola bottler gains fizz in emerging markets". The Times. 15 February 2018. Retrieved 20 March 2018.

"Coca-Cola Hellenic Bottling Company sales volumes pick up". Financial Times. 15 February 2014. Retrieved 20 March 2018.

Jump up to:ᵃ ᵇ "Coca-Cola HBC AG named industry leader in the 2014 Dow Jones Sustainability Index". coca-colahellenic.com. Archived from the original on 21 February 2015. Retrieved 15 March 2015.

"Sustainability ratings". coca-colahellenic.com. Retrieved 15 March 2015.

"Coca-Cola bottling firm returns to growth". The Guardian. 19 February 2016. Retrieved 20 March 2016.

"Commission clears Merger between Hellenic Bottling Company and Coca-Cola Beverages plc, subject to undertakings". European Commission. 8 February 2000. Retrieved 20 March 2016.

Deborah Ball And Nektaria Stamouli (12 October 2012). "Bottler Spills Out of Athens". Wall Street Journal. Retrieved 15 March 2015.

"Coca-Cola Hellenic lists on London Stock Exchange". London loves business. 29 April 2013. Retrieved 20 March 2016.

"Coca-Cola HBC AG Intends to delist from the New York Stock Exchange and deregister its shares with the U.S. Securities and Exchange Commission". coca-colahellenic.com. Archived from the original on 27 March 2015. Retrieved 15 March 2015.

Rhiannon Curry (2017-10-03). "Coca-Cola HBC chief executive dies". Telegraph.co.uk. Retrieved 2018-03-02.

"Coca Cola HBC appoints Zoran Bogdanovic as new CEO following death of Dimitris Lois". City A.M. 2017-12-07. Retrieved 2018-03-02.

Scully, Jules (18 February 2019). "Coca-Cola HBC acquires Serbian company Bambi for 260m euros". foodbev.com. Retrieved 18 February 2019.

Dimitrioski, Zarko (18 February 2019). "Serbian Condiments Producer Sold For €260 Million To Coca-Cola HBC". forbes.com. Retrieved 18 February 2019.

"Where we Operate". Coca-Cola HBC AG. Archived from the original on 2011-08-10. Retrieved 2013-09-13.

"Shareholder structure". Coca-Cola HBC AG. Retrieved 20 March 2016.

https://www.coca-colahellenic.com/

"Ο Γιάννης Παπαθανασίου νέος πρόεδρος των ΕΛΠΕ".

https://www.helpe.gr/userfiles/8ea1f0cb-9e62-48e4-b947-a27b00fb14bb/Annual_Financial_Report_2017_en_1.pdf

https://www.helpe.gr/userfiles/8ea1f0cb-9e62-48e4-b947-a27b00fb14bb/Annual_Financial_Report_2017_en_1.pdf

https://www.helpe.gr/userfiles/8ea1f0cb-9e62-48e4-b947-a27b00fb14bb/Annual_Financial_Report_2017_en_1.pdf

https://www.helpe.gr/userfiles/8ea1f0cb-9e62-48e4-b947-a27b00fb14bb/Annual_Financial_Report_2017_en_1.pdf

https://www.helpe.gr/userfiles/8ea1f0cb-9e62-48e4-b947-a27b00fb14bb/Annual_Financial_Report_2017_en_1.pdf

"HELLENIC PETROLEUM S.A. : Shareholders Board Members Managers and Company Profile | GRS298343005 | MarketScreener". Retrieved 20 February 2018.

https://www.helpe.gr/userfiles/8ea1f0cb-9e62-48e4-b947-a27b00fb14bb/Annual_Financial_Report_2017_en_1.pdf

https://www.helpe.gr/userfiles/8ea1f0cb-9e62-48e4-b947-a27b00fb14bb/Annual%20Financial%20Report%202016UPDATED_1.pdf

"Shareholders Structure". Hellenic Petroleum. 31 December 2008. Retrieved 2009-10-25.

https://www.helpe.gr/

GEK Terna 2014, p. 35.

GEK Terna 2014, p. 72.

Jump up to:ᵃ ᵇ GEK Terna 2014, p. 33.

https://www.gekterna.com/investor-relations/the-share/shareholders/

https://www.gekterna.com/investor-relations/group/at-a-glance

http://www.gekterna.com/userfiles/25cf6784-d046-4d9e-ac0f-a34d00d4050d/GEKTERNA_Presentation_07-09-2015_EN.pdf

Terna Energy website

Profile of Terna Energy on the Athens Exchange

"Company profile: GEK TERNA". *Athens Exchange*. *Retrieved 22 February 2015.*

"US fund to invest 100 mln euros in Greece's GEK Terna". *Reuters*. *4 November 2013. Retrieved 22 February 2015.*

Barrow, Keith (30 January 2015). *"Greece to review rail privatisation"*. *International Railway Journal*.

http://www.gekterna.com/userfiles/FinancialStatements/2014/gekterna_fs_notes_31-12-2014_en.pdf

https://www.gekterna.com/

"E-JUMBO Το Επίσημο Ηλεκτρονικό Κατάστημα JUMBO". *Jumbo (in Greek). Retrieved 13 January 2021.*

"Jumbo Albania" *(in Albanian). Retrieved 13 January 2021.*

"jumbo_master – Jumbo Kosovë" *(in Albanian). Retrieved 13 January 2021.*

"Company Overview". *jumbo.ba.*

"verojumbo – Веро" *(in Macedonian). Retrieved 13 January 2021.*

"Jumbo Srbija | Sve za dom i porodicu!" *(in Serbian). Retrieved 13 January 2021.*

"jumbo_master – Jumbo Montenegro" *(in Serbian). Retrieved 13 January 2021.*

https://www.e-jumbo.gr/en/home-page

https://www.lamdadev.com/el/

"List of Public Companies Worldwide, Letter - Businessweek - Businessweek". *Bloomberg.com. Retrieved 2015-12-31.*

"MOH.GR Company Profile & Executives - Motor Oil Hellas Corinth Refineries S.A. - Wall Street Journal". *Quotes.wsj.com. 2014-12-31. Retrieved 2015-12-31.*

Jump up to:[a] [b] [c] [d] *"Motor Oil: Στα 315,1 εκατ. τα κέρδη του 2017 – Αύξηση εσόδων και κερδών - NEWS - Fortunegreece.com"*. *13 March 2018. Retrieved 1 August 2018.*

"Motor Oil: Σημαντική αύξηση κερδών το 2017". *Retrieved 1 August2018.*

"Motor Oil Hellas Corinth Refineries S.A.: Shareholders Board Members Managers and Company Profile | GRS426003000 | MarketScreener". *www.marketscreener.com. Retrieved 13 January 2021.*

"MOH:Athens Stock Quote - Motor Oil Hellas Corinth Refineries SA". *Bloomberg.com. Retrieved 1 August 2018.*

Jump up to:ᵃ ᵇ "Company Info Motor Oil Hellas Corinth Refineries". *Wall Street Journal. Retrieved August 19, 2020.*

"Vardis John Vardinoyannis". *Bloomberg. Retrieved August 19, 2020.*

"Motor Oil Hellas Corinth Refineries: Bad Zipcode, Great Asset". *MOI Global. January 11, 2017. Retrieved August 19, 2020.*

"TechnipFMC Awarded a Significant Contract by Motor Oil Hellas for a New Naphtha Complex in Greece". *FinanzNachrichten. January 9, 2020. Retrieved August 21, 2020.*

"Griechenland: Motor Oil Hellas baut neuen Naphtha-Behandlungskomplex". *Wirtschaftskammer Österreich. Retrieved August 21, 2020.*

"Regulation (EC) No 139/2004 Merger Procedure" (PDF). *Commission of the European Communities. March 30, 2009. Retrieved August 25, 2020.*

"Greek company Motor Oil buys out Lukoil petrol stations". *in-cyprus.com. Retrieved 13 January 2021.*

"Motor Oil Hellas Corinth Refineries S.A." *MarketScreener. Retrieved August 25, 2020.*

"Coral". *Motor Oil Hellas. Retrieved August 25, 2020.*

https://www.moh.gr/en/

https://www.capital.gr/finance/el/allstocks

 "OPAP Integrated Annual Report 2017". *Issuu.*

Jump up to:ᵃ ᵇ "Shareholder Structure". *OPAP. Retrieved 19 January 2017.*

"Archived copy" (PDF). *Archived from the original (PDF) on 9 May 2018. Retrieved 28 April 2018.*

"Το ΣτΕ επικύρωσε το μονοπώλιο του ΟΠΑΠ". *www.kathimerini.gr.*

Jump up to:ᵃ ᵇ "OPAP: History". *OPAP.gr. Archived from the original on 17 December 2008. Retrieved 28 July 2008.*

"Greek Football: From the first steps to the era of PRO-PO".

Jump up to:ᵃ ᵇ ᶜ "Greek Football: From the first steps to the era of PRO-PO". *www.opap.gr/en.*

"Οι επιζήμιες μετοχοποιήσεις του ΟΠΑΠ". *www.enet.gr.*

"HRADF Signs Concession Agreement with Hellenic Lotteries". *greece.greekreporter.com. 31 July 2013.*

"Scientific Games Announces its Consortium Signs the Greek State Lotteries' Concession Agreement". www.prnewswire.com.

"Press Release - Signing of the concession agreement for the Hellenic State Lotteries"(PDF).

"Στον ΟΠΑΠ το ιπποδρομιακό στοίχημα". www.kathimerini.gr.

"Greece carries out first privatisation under radical left government". www.yahoo.com. *Archived from the original on 2 February 2017.*

"Horse racing employees happy with ODIE privatization". www.ekathimerini.com.

"Greece starts assets sales with horse racing gambling license". www.reuters.com. *17 April 2015.*

"OPAP develops betting offering with first horse races in Greece". www.gamingintelligence.com. *21 July 2017.*

"Press Release - PMU resumes its activity in Greece" (PDF). *Archived from the original (PDF) on 2 February 2017.*

"OPAP Homepage - Games". www.opap.gr. *Retrieved 1 February 2017.*

"1959: "Το παιδί μίλησε: Προ-Πο!"". www.tovima.gr.

"OPAP S.A. (Hellenic Org.of Football Prog)". *Google Finance.*

Μανδραβέλης, Βαγγέλης. "Κόντρα ΟΠΑΠ – πρακτόρων για τη μείωση προμηθειών | Η ΚΑΘΗΜΕΡΙΝΗ". *Retrieved 13 January 2021.*

"Archived copy". *Archived from the original on 27 June 2018. Retrieved 13 June2018.*

"apergoun-9-10-martiou-ta-praktoria-fountoni-kontra-me-ton-opap". *March 2017.*

"Archived copy" (PDF). *Archived from the original (PDF) on 22 November 2009. Retrieved 16 July 2010.*

"Tax inspectors set sights on Stanleybet". *Kathimerini. Retrieved 8 December 2008.*

"Greek police raid Stanleybet outlet at OPAP's behest". *EUbusiness. Archived from the original on 10 November 2008. Retrieved 8 December 2008.*

Christofer, Kat (8 December 2008). "Athenian democracy in ruins". *London: Guardian. Retrieved 8 December 2008.*

https://www.opap.gr/en/home

"FY 2017 Statements". *OTE.*

OTE Group Timeline

Telecom.com, *«EU Commission gives approval without any conditions to Deutsche Telekom's investment in the Greek telecommunications group OTE»*, 10.02.2008.

Reuters, *«Greece to sell 5 pct OTE stake to Deutsche Telekom»*, 18.06.2009

Reuters, *«Greece sells 10 percent OTE stake to Deutsche Telekom»*, 06.06.2011.

The Economist, *"Deutsche Telekom to take another 5% stake in Greece's OTE"*, 22.03.2018.

NEWSBOMB, *"Reduced prices of up to 25% for two Double Play Plans"*, 10.05.2012. (in Greek)

TELECOMPAPER, *"OTE TV passes 100,000 subscribers mark"*, 15.10.2012.

Techblog, *"OTE VDSL, High-speed internet speeds up to 50Mbps"*, 26.11.2012 (in Greek)

Ekathimerini.com, *"OTE Saving 80 million from voluntary redundancy"*, 07.01.2013

Naftemporiki, *"OTE: 700 million euro issue of bonds completed"*, 30.01.2013 (in Greek)

FE Investegate, *"OTE: Agreement for the sale of Hellas Sat"*, 107.02.2013.

Comms Update, *"OTE, Cosmote expand VDSL, LTE networks"*, 15.07.2014

Liberal.gr, *"M. Tsamaz: Raising the bar for 2017 - OTE's three strategic goals"*, 04.09.2017 (in Greek)

https://www.cosmote.gr/hub/

"UNLOCODE (GR) - GREECE". service.unece.org. Retrieved 24 April 2020.

MarketScreener. *"PIRAEUS PORT AUTHORITY : Shareholders Board Members Managers and Company Profile - GRS470003013 - MarketScreener"*. www.marketscreener.com.

ANNUAL_FINANCIAL_REPORT_2020.pdf Piraeus Port Authority S.A. p24

"Port of Piraeus holds". Metaforespress. 2021-01-19. Retrieved 2021-01-19.

"The financial results for the year 2019 of PPA S.A. were presented to the Hellenic Fund and Asset Management Association". Piraeus Port Authority. 2020-05-19. Retrieved 2020-05-21.

"Greece to offer concessions but won't privatise 10 ports". Seatrade Maritime News. 2019.

Στρατηγική - Όραμα (in Greek). Piraeus Port Authority S.A. Archived from *the original* on 2010-11-27. Retrieved 2010-09-26.

Hellander, Paul (2008). *Greece*. Lonely Planet. ISBN *978-1-74104-656-4*.

"PPA: Annual Financial Report 2016". *2017-02-16. Archived from the original (PDF) on 2017-02-18. Retrieved 2017-02-17.*

Jump up to:ᵃ ᵇ Fu Jing (2012-06-19). "COSCO eyeing further Piraeus port investment". chinadaily.com.cn. Retrieved 2012-11-21.

Fu Jing (2018-06-19). "China bought most of Greece's main port and now it wants to make it the biggest in Europe". CNBC. Retrieved 2019-11-21.

"Greek President Hopes For More Investments Following Piraeus Port Authority Deal | Hellenic Shipping News Worldwide". 2016-04-26. Archived from the original on 2016-04-26. Retrieved 2020-05-08.

Jump up to:ᵃ ᵇ ᶜ "Shareholders". www.olp.gr. Retrieved 2020-05-08.

1Wright, Robert; Hope, Kerin; Kwong, Robin (5 June 2008). "Cosco set to control Greek port". Financial Times. Retrieved 14 December2020.

"China's Cosco acquires 51 pct stake in Greece's Piraeus Port". Reuters. 2016-08-10. Retrieved 2020-05-08.

Jump up to:ᵃ ᵇ "Presentation of P.P.A SA". www.olp.gr. Retrieved 2020-05-08.

"Greece completes transfer of 16% stake in Piraeus port to COSCO". Reuters. 2021-10-07. Retrieved 2021-10-08.

Liz Alderman (2012-10-10). "Under Chinese, a Greek Port Thrives". The New York Times. Retrieved 2012-11-21.

Liz Alderman (2015-10-10). "Chinese military ships arrive in Piraeus port". GB Times. Retrieved 2019-11-21.

"Αύξηση 6,4% στη διακίνηση κοντέινερ από ΟΛΠ το 2017, του Νίκου Χ. Ρουσάνογλου - Kathimerini". www.kathimerini.gr.

"Piraeus Port Authority posts record profits - Kathimerini". www.ekathimerini.com.

Jump up to:ᵃ ᵇ ᶜ ᵈ ᵉ ᶠ ᵍ Gogos, Giorgos (2020-04-03). "Forced Privatization of The Greek Port of Piraeus, One Year Later" (Interview by Dimitri Lascaris). Youtube.

"Workers protest as Greece sells Piraeus Port to China COSCO". Reuters. 2016-04-08. Retrieved 2020-05-08.

"Greek Port Workers Strike Again Over Privatization". The Maritime Executive. Retrieved 2020-05-08.

Ship; bunker.com. "Greek Dock Workers Walk Out, Protest Over Piraeus and Thessaloniki Port Privatisation". Ship & Bunker. Retrieved 2020-05-08.

"Ιστορικά Στοιχεία, Ένωση Μονίμων & Δοκίμων Λιμενεργατών Ο.Λ.Π." www.dockers.gr. Retrieved 2020-05-08.

"World Container Traffic Data 2015" (PDF). International Association of Ports and Harbors (IAPH). 2016-06-10. Retrieved 2016-04-09.

"Greece's Piraeus becomes top container-handling port in Mediterranean - Xinhua | English.news.cn".

"Lloyd's List". Lloyd's List.

"Die Zeit: Ο Πειραιάς μεγαλύτερο λιμάνι της Μεσογείου ως το 2019 - Kathimerini". www.kathimerini.gr.

Glass, David. *"Piraeus becomes second largest port in the Med"*. www.seatrade-maritime.com.

"Greek president hopes for more investments following Piraeus Port Authority deal". Hellenic Shipping News. 11 April 2016. Retrieved 13 April 2016.

OLP (2011-10-05). *"PPA Statistics 2007-2010"*. Retrieved 2012-11-22.

Jump up to:*a b c* *"(Container Terminal)"* (PDF). Archived from *the original*(PDF) on 2010-11-27. Retrieved 2009-09-23.

Ose, Mixanikos. *"MixanikosOse: Ας γνωρίσουμε το Ικόνιο (δηλαδή το εμπορικό Λιμάνι του Πειραιά - έδρα της COSCO στην χώρα μας)"*. mixanikosose.blogspot.com.

"Car Terminal". Olp.gr. Archived from *the original* on 2009-06-03. Retrieved 2009-09-23.

Jump up to:*a b* *"Παρουσιάσεις Ο.Λ.Π. ΑΕ"*. www.olp.gr.

Jump up to:*a b* *"Port of Piraeus in Focus"*. Ferry Shipping News. Retrieved 2020-05-08.

Jump up to:*a b* Accessed 2 Apr. 2020 *"Cruise Terminal Presentation 2017"*Check |url= value (*help*). Piraeus Port Authority. 2020-04-02.

Solomonidis, Christos. *"Port of Piraeus - Olympic Games 2004"*. Rogan Associates.

ANA. *"Cruise Ship Arrivals in Greece up Almost 15% in 2019"*. The National Herald. Retrieved 2020-05-08.

2012 Network Statement, Athens: OSE, 2012, p. 3.3, archived from *the original* (pdf) on 2013-03-10

Jump up to:*a b* *"Piraeus Port, The Green Port of the Mediterranean Sea"*(PDF). Piraeus Port Authority.

Jump up to:*a b* *""EcoPorts Port" Status - Environmental Management Standard PERS"*. www.olp.gr. Retrieved 2020-05-08.

Jump up to:*a b c* *"Ship-generated Waste Management Plan"*. www.olp.gr. Retrieved 2020-05-08.

Jump up to:ᵃ ᵇ ᶜ ᵈ "Environmental Quality Monitoring Programs". www.olp.gr. Retrieved 2020-05-08.

Ullyett, Richard (2019-02-24). "Piraeus Port Authority details environmental plan". PortSEurope. Retrieved 2020-05-08.

"The port of Piraeus pioneer in the principles of environmental sustainability | Hellenic Shipping News Worldwide". www.hellenicshippingnews.com. Retrieved 2020-05-08.

"Environmental Report" (PDF). Piraeus Port Authority. Retrieved 2020-04-14.

https://www.olp.gr/en/

"PPC's Shareholding Structure | PPC S.A." www.dei.gr. Retrieved 13 January 2021.

Annual Report 2017

"PPC Group - PPC S.A." www.dei.gr. Retrieved 13 February 2020.

"Profile - HEDNO S.A." www.deddie.gr. Retrieved 13 February 2020.

"PPC's Shareholding Structure - PPC S.A." www.dei.gr. Retrieved 17 August 2017.

Granitsas, Alkman (20 June 2011). "Strike Forces Power Cuts in Greece". Wall Street Journal. Retrieved 17 August 2017.

el:Αιολικό πάρκο Κύθνου

https://www.dei.gr/Documents2/FinStat2014T4%20.pdf

https://www.dei.gr/el

https://www.sarantisgroup.com/

Terna Energy 2014, p. 24.

Terna Energy 2014, p. 56.

Jump up to:ᵃ ᵇ Terna Energy 2014, p. 22.

Terna Energy 2014, p. 19.

Jump up to:ᵃ ᵇ "Company profile: Terna Energy". Athens Exchange. Retrieved 21 December 2015.

"US fund to invest 100 mln euros in Greece's GEK Terna". Reuters. 4 November 2013. Retrieved 21 December 2015.

https://www.terna-energy.com/

http://media.interactive.netuse.gr/pegasus/Multimedia/pdf/ELLAKTOR_ANNUAL_FINANCIAL_REPORT_2017_eng_id5942741.pdf

"Shareholding".

Gemaco SA

"Agenda:24 hr strike at the Athens metro and Piraeus electric railway". *2011-01-30.*

"A good find for Ellaktor". *2011-02-05.*

"Historic deal signed to build Oman's Blue City". *2007-01-07. Archived from the original on 2010-12-16.*

Jump up to:ᵃ ᵇ "Ellaktor 2010 Third Quarter Report Presentation" *(PDF). January 2011. Archived from the original (PDF) on 2011-03-04. Retrieved 2011-02-05.*

Jump up to:ᵃ ᵇ ᶜ "Mideast, solar deals attractive for Ellaktor". *2011-02-02.*

"Elefsina-Patras-Tsakona motorway, Greece". *Archived from the original on 2011-07-12. Retrieved 2011-02-05.*

https://ellaktor.com/en/

"IATA - Airline and Airport Code Search". *iata.org. Retrieved 16 April 2015.*

Jump up to:ᵃ ᵇ "CONTRACTIONS FAA JO 7340.2". *faa.gov. Archived from the original on 19 April 2014.*

Jump up to:ᵃ ᵇ ᶜ "Milestones". *aegeanair.com. Archived from the original on 21 April 2014. Retrieved 20 March 2014.*

"With a total of 158 international routes and 7 bases in Greece and 1 in Cyprus, Aegean Airlines is a key pillar of the Greek tourism". *aegeanair.com. Archived from the originalon 28 June 2013. Retrieved 28 October 2013.*

Hofmann, Kurt (7 December 2018). *"Aegean selects Pratt GTF engine for A320neo family aircraft"*. *Air Transport World. Archived from the original on 9 December 2018. Retrieved 10 December 2018.*

"Full Year 2020 Results & KPIs" *(PDF).*

"Full Year 2020 Results & KPIs" *(PDF).*

"Full Year 2020 Results & KPIs" *(PDF).*

"Full Year 2020 Results & KPIs" *(PDF).*

Jump up to:ᵃ ᵇ "Annual Financial Report" *(PDF). 12 April 2021.*

"Conditions & Notices". *Archived from the original on 12 November 2013. Retrieved 12 November 2013.*

"ΠΕΡΙΛΗΨΗ ΠΡΟΣΚΛΗΣΗΣ ΤΩΝ ΜΕΤΟΧΩΝ ΤΗΣ ΑΝΩΝΥΜΗΣ ΕΤΑΙΡΕΙΑΣ ΜΕ ΤΗΝ ΕΠΩΝΥΜΙΑ "ΑΕΡΟΠΟΡΙΑ ΑΙΓΑΙΟΥ ΑΝΩΝΥΜΗ ΑΕΡΟΠΟΡΙΚΗ ΕΤΑΙΡΕΙΑ" και δ.τ. "ΑΕΡΟΠΟΡΙΑ ΑΙΓΑΙΟΥ Α.Ε." (ΑΡ. Μ.Α.Ε. 32603/06/Β/95/3) ΣΕ ΤΑΚΤΙΚΗ ΓΕΝΙΚΗ

ΣΥΝΕΛΕΥΣΗ" *(PDF). businessregistry.gr. Archived from the original (PDF) on 25 September 2015. Retrieved 24 September 2015.*

Dron, Alan. "Aegean 1Q losses widen as it invests in capacity". atwonline.com. Penton. Archived from the original on 28 May 2016. Retrieved 9 December 2018.

"Headquarters." Aegean Airlines. Retrieved on 22 February 2010. "Aegean Airlines Headquarters 31, Viltanioti Str. 145 64, Kifisia, Athens, Greece" Address in Greek: Βιλτανιώτη 31 145 64, Κηφισιά, Αθήνα

Young, Kathryn M. (22 October 2012). "Aegean strikes deal to acquire Olympic Air". atwonline.com. Retrieved 20 March 2014.

George Georgiopoulos, Foo Yun Chee (9 October 2013). "Aegean Airlines wins EU approval to buy Olympic Air". Reuters. reuters.com. Retrieved 20 March 2014.

"AEGEAN: European Commission's approval of the acquisition of Olympic Air allows the creation of a viable, dynamic Greek carrier". aegeanair.com. 9 October 2013. Retrieved 20 March 2014.

"Aegean, Ryanair asked to submit plans for Cyprus Airways".

Jump up to:ᵃ ᵇ ᶜ ᵈ "Milestones". Aegean Airlines. en.aegeanair.com. Archived from the original on 24 September 2009. Retrieved 4 February 2009.

"Directory: World Airlines". Flight International. 27 March 2007. p. 45.

Georgiopoulos, George (2 December 2008). "Greece's Aegean Air to grow routes despite downturn". Reuters. Retrieved 29 May 2013.

"Olympic Air and Aegean Air mulling cooperation". 11 February 2010. Archived from the original on 11 July 2011.

Jump up to:ᵃ ᵇ ᶜ Georgiopoulo, George (22 February 2010). "UPDATE 3-Greek carriers Aegean, Olympic agree merger". Reuters. Archived from the original on 29 March 2010. Retrieved 22 February 2010.

Staff (22 February 2010). "Aegean, Olympic Air Announce Merger". Capital.gr. Archived from the original on 30 March 2010. Retrieved 23 February 2010.

Jump up to:ᵃ ᵇ Staff (22 February 2010). "Greek airlines agree merger: statement". AFG. Retrieved 23 February 2010.

Staff (22 February 2010). "Greek airlines merge". CTV. Archived from the original on 4 June 2011. Retrieved 23 February 2010.

Staff (23 February 2010). "Aegean Airlines and Olympic Air to merge". Archived from the original on 24 August 2010. Retrieved 23 February 2010.

Bruce, Michael (23 February 2010). "Greek merger" (PDF). travelweekly.com.au. p. 3. Archived from the original (PDF) on 31 March 2010. Retrieved 29 May 2013.

Jump up to:ᵃ ᵇ ᶜ Staff (26 January 2011). "Olympic Air and Aegean merger is blocked by EU". BBC Online. Archived from the original on 27 January 2011. Retrieved 26 January 2011.

Jump up to:ᵃ ᵇ Torello, Alessandro (26 January 2011). "EU Blocks Greek Airlines' Merger". Wall Street Journal. Archived from the original on 4 February 2011. Retrieved 26 January 2011.

Jump up to:ᵃ ᵇ ᶜ Chee, Foo Yun (26 January 2011). "EU blocks Olympic/Aegean merger, says anti-competitive". Reuters. Retrieved 26 January 2011.

Reals, Kerry (26 January 2011). "EC blocks Aegean/Olympic merger on monopoly grounds". Flight International. Archived from the original on 29 January 2011. Retrieved 26 January 2011.

EUROPA - PRESS RELEASES - Press Release - Mergers: Commission opens in-depth investigation into proposed acquisition of Olympic Air by Aegean Airlines. Europa.eu. Retrieved on 20 August 2013.

"Competition Commission puts off Olympic-Aegean merger decision until 16 Oct". ekathimerini.com. 13 August 2013. Retrieved 17 January 2014.

"Aegean Airlines Accelerates Olympic Air Network Realignment to Feb 2014". Retrieved 3 June 2015.

"ΑΡΑΙΓ: Μέτοχοι με ποσοστό άνω του 5%". Retrieved 3 July 2014.

"Annual Reports". Aegeanair.com. 27 January 2009. Archived from the original on 11 August 2011. Retrieved 16 July 2011.

"• Προβολή θέματος – Επιβατική κίνηση -last update: ΦΕΒΡΟΥΑΡΙΟΣ 2009". Airliners.gr. 7 January 2008. Retrieved 5 May 2009.

"2012 Results". aegeanair.com. Retrieved 20 March 2014.

Jump up to:ᵃ ᵇ "Annual Financial Report 2013" (PDF). aegeanair.com. Archived from the original(PDF) on 21 March 2014. Retrieved 20 March 2014.

"Annual Financial Report 2007" (PDF). aegeanair.com. Archived from the original(PDF) on 20 April 2013. Retrieved 20 March 2014.

"Annual Financial Report 2008" (PDF). aegeanair.com. Archived from the original(PDF) on 20 April 2013. Retrieved 20 March 2014.

"Annual Financial Report 2009" (PDF). aegeanair.com. Archived from the original(PDF) on 20 April 2013. Retrieved 20 March 2014.

"Annual Financial Report 2010" *(PDF). aegeanair.com. Archived from* *the* *original(PDF) on 20 April 2013. Retrieved 20 March 2014.*

"Annual Financial Report 2011" *(PDF). aegeanair.com. Archived from* *the* *original(PDF) on 20 April 2013. Retrieved 20 March 2014.*

"Annual Financial Report 2012" *(PDF). aegeanair.com. Archived from* *the* *original(PDF) on 20 April 2013. Retrieved 20 March 2014.*

"Annual Report 2014" *(PDF). April 2015. Retrieved 8 June 2016.*

"Annual Financial Report (1st January to 31st December 2015)" *(PDF). aegeanair.com. Retrieved 6 June 2016.*

"Annual Financial Report (1st January to 31st December 2016)" *(PDF). aegeanair.com. Retrieved 23 March 2017.*[permanent dead link]

"Annual Financial Report (1st January to 31st December 2017)" *(PDF). aegeanair.com. Retrieved 15 March 2018.*

Aegean Airlines, *Annual Financial Report 2018,* *retrieved 29 March 2019*

"AEGEAN: 2019 Financial Results". *aviator.aero. Retrieved 17 March 2020.*

"Annual Financial Report 2019" *(PDF). Aegean Airlines. Archived from* *the* *original(PDF) on 17 March 2020.*

"Full Year 2020 Results & KPIs" *(PDF).*

"Profile | About Aegean". *Aegean Airlines. Retrieved 25 September 2018.*

"Profile on Aegean Airlines". *CAPA. Centre for Aviation.* *Archived* *from the original on 29 October 2016. Retrieved 29 October 2016.*

"Συνεργασία Aegean-Volotea για πτήσεις με χρήση κοινών κωδικών (code-share)". *www.naftemporiki.gr (in Greek). 7 July 2021. Retrieved 11 July 2021.*

"Aegean Airlines / Hainan Airlines plans Feb 2018 codeshare launch".

"TRENITALIA, INTEGRAZIONE FRECCE/AEREI: AGEVOLAZIONI SU BIGLIETTI DELLE FRECCE PER I PASSEGGERI DI AEGEAN AIRLINES" *(PDF). trenitalia.com. 22 January 2014. Retrieved 2 June 2015.*

"Charter Services". *aegeanair.com. Retrieved 24 June 2015.*

https://boardingpass.ro/aegean-airlines-devine-actionar-majoritar-al-companiei-romanesti-animawings/

"Airbus Order and Deliveries". *Airbus. May 2021.* *Archived* *from the original on 29 June 2021. Retrieved 30 August 2021.*

"Fleet | About Aegean".

"Seat map". *Aegean Airlines.*

"AIRBUS A319 | About Aegean". *Aegean Airlines (in Greek). Retrieved 11 July 2021.*

"AIRBUS A320 | About Aegean". *Aegean Airlines (in Greek). Retrieved 11 July 2021.*

Jump up to:[a] [b] *"AEGEAN announces order of up to 42 new aircraft of the A320neo Family, valued at 5 billion dollars at list prices"*. *Aegean Airlines (Press release). 28 March 2018.*

"AIRBUS A320neo | About Aegean". *Aegean Airlines (in Greek). Retrieved 11 July2021.*

Jump up to:[a] [b] *"AEGEAN Airlines firms up order for 30 A320neo Family aircraft"*. *Airbus (Press release). 18 June 2018.*

"A new era of growth for AEGEAN". *.aegeanair.com. Retrieved 12 February 2020.*

"AIRBUS A321 | About Aegean". *Aegean Airlines (in Greek). Retrieved 11 July 2021.*

"AIRBUS A321neo | About Aegean". *Aegean Airlines (in Greek). Retrieved 11 July2021.*

"Blue Magazine". *aegeanair.com. Archived from the original on 9 May 2015. Retrieved 12 November 2015.*

"All HCAA Aircraft May 2013" *(PDF). ypa.gr. 2 May 2013. Retrieved 19 June 2015.*

"Aegean commits to FANS-B+ upgrade for A320s". *ATW Online. 16 August 2010. Retrieved 29 May 2013.*

"Aviointeriors S.p.A. - AVIOINTERIORS DELIVERS THE FIRST THREE A321 SHIPSETS OF COLUMBUS TWO TO AEGEAN AIRLINES". *Archived from the original on 26 June 2015. Retrieved 3 June 2015.*

"AEGEAN upgrades and expands its fleet. 7 brand-new Airbus A320 to be added in its existing fleet in 2015-16". *27 August 2014. Retrieved 19 March 2015.*

"Aegean Airlines adds two additional aircraft to its previous A320ceo order". *airbus.com. Airbus. 28 August 2014. Retrieved 19 March 2015.*

"Παρουσίαση AEGEAN". *aegeanair.com. Retrieved 8 November 2015.*

"Υπογραφή προσυμφώνου με την Airbus για την αγορά έως 42 νέων αεροσκαφών οικογένειας A320neo, αξίας 5 δις. δολαρίων σε τιμές καταλόγου | About Aegean". *Aegean Airlines (in Greek). Retrieved 30 March 2018.*

"Η AEGEAN επιλέγει τους κινητήρες GTF™ της Pratt & Whitney για τα νέα αεροσκάφη Airbus της οικογένειας A320neo | About Aegean".

https://en.aegeanair.com/

"Stocks, All Markets – helex.gr". *helex.gr. Retrieved 2021-02-02.*

Jump up to:[a] [b] "Markets". helex.gr.

"Indices – helex.gr". helex.gr.

Jump up to:[a] [b] [c] [d] [e] [f] "GD: Index overview". Helex.gr. Retrieved 19 April 2016.

Udland, Myles (28 June 2015). "REPORT: Greece's stock market will be closed for at least a week". Business Insider. Retrieved 1 July 2015.

Jump up to:[a] [b] "Greek stock market bloodbath as exchange reopens". AP. 3 August 2015. Retrieved 3 August 2015.

"Market Holidays". Athens Exchange Group. 12 August 2015. Retrieved 12 August 2015.

Jump up to:[a] [b] "History - helex.gr". www.helex.gr. Archived from the original on 2015-07-16. Retrieved 2018-05-29.

Zeynep Copur (31 January 2015). Handbook of Research on Behavioral Finance and Investment Strategies ... IGI Global. p. 257. ISBN 9781466674851. Retrieved 3 August 2015.

Market Hours, Athens Exchange via Wikinvest

"ANNUAL REPORT 2009" (PDF). Hellenic Republic Capital Market Commission. Archived from the original (PDF) on 2011-10-03. Retrieved 2011-06-07.

"Companies, All Markets – helex.gr". helex.gr. Retrieved 2021-02-02.

"Stocks, Alternative Market– helex.gr". helex.gr. Retrieved 2021-02-02.

"Stocks, Main Market– helex.gr". helex.gr. Retrieved 2021-02-02.

"Stocks, Surveillance– helex.gr". helex.gr. Retrieved 2021-02-02.

"Stocks, Under Suspension – helex.gr". helex.gr. Retrieved 2021-02-02.

"ASE Quote – Athens Stock Exchange General Index". Bloomberg.com.

"GD: Index composition". Helex.gr. Retrieved 19 April 2016.

"Historical data: ATHEX Composite Index - Greece (^ATH)".

Jump up to:[a] [b] "Board of Directors - helex.gr". www.helex.gr. Retrieved 2018-05-29.

"Press Release of 14th Annual General Meeting". www.helex.gr. Retrieved 2018-05-29.

"Socrates Lazaridis, Hellenic Exchanges - Athens Stock Exchange SA: Profile & Biography". Bloomberg. Retrieved 2018-05-29.

https://www.athexgroup.gr/

"FTSE: Index overview". Helex.gr. Retrieved 19 April 2016.

"FTASE Quote - FTSE/Athens Stock Exchange Large Cap Index - Bloomberg Markets". *Bloomberg.com. 2012-12-03. Retrieved 2015-12-31.*

"FTSE/Athens Stock Exchange 20 Index | ISIN GRI99201A006 | WKN A1RRGZ". *Finanzen.handelsblatt.com. 2015-09-16. Retrieved 2015-12-31.*

"ATHENS SE FTSE/ASE 20 chart, prices and performance - FT.com". *Markets.ft.com. Retrieved 2015-12-31.*

"FTSE.AT: Summary for FTSE/ATHEX LARGE CA- Yahoo! Finance". *Finance.yahoo.com. 2015-11-18. Retrieved 2015-12-31.*

Some shares of this company are traded as Athex: TITP

"FTSE: Index composition (May 25, 2018)". *Hellenic Exchanges Group. 25 May 2018. Retrieved 27 May 2018.*

"Symbols of the companies in the Athens Stock Exchange". *Hellenic Exchanges. Retrieved 15 January 2015.*

"FTSE/Athens Stock Exchange Large Cap Index". *Bloomberg. Retrieved 24 January 2013.*

"FTSE/ATHEX Index Series Semi-Annual Review". *FTSE. 10 November 2014. Archived from the original on 15 January 2015. Retrieved 15 January 2015.*

"FTSE/ATHEX Index Series homepage". *FTSE. Retrieved 15 January 2015.*

https://www.athexgroup.gr/en/web/guest/stocks

https://www.euro2day.gr/IndicesDetail.aspx?i=2