Cointegration Relation on Investors' Portfolio Choice at European Financial Markets: An Application for Turkey and Greece

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Abstract

Portfolio diversification is of vital importance to decrease risk at financial markets. It is essential to decide which financial asset must be added to optimal portfolio at national markets. In addition, it is crucial to determine which country's financial assets must be added to portfolio. While portfolio diversification is made by investors at international markets, cointegration relation is of capital importance as much as correlation degree. Scientific researches show that adding financial instruments to the same portfolio at markets without having cointegration relation is more successful than adding the one's having cointegration relation at the process of decreasing the portfolio risk. Thus, adding financial instruments to the same portfolio at markets without having cointegration features means making maximum profit at minimum risk level.

Basing on monthly index of financial markets of 16 developed and 4 developing countries within the European Financial Markets, we have carried out cointegration analysis. Data has been obtained by MSCI. Cointegration analysis has been carried out to Turkey and Greece separately. According to results, portfolio alternatives have been formed for Turkey and Greece taking into consideration both Markowitz Mean Variance Model and cointegration relation. By testing performance levels, variance co-efficient belonging to portfolios alternatives according to investors' choices has been analyzed according to effects of présense of cointegration relation on the portfolio choices for Turkey and Greece. In addition, we have analyzed advantage of international diversification in terms of risk and yield for Turkish and Greek investors which only investigate to their national market.

Key Words: Cointegration Analysis, Markowitz Model of Portfolio Selection, International Diversification.

1. Introduction

While determining portfolios having minimum risk and maximum yield, one of the most important factors is to understand presence of short and long relation between markets. Gathering to financial instruments belonging to markets which not having relationship each other to the same portfolio is a desired situation. Because, financial studies show that portfolio consisting of financial instruments which belong to markets without having cointegration relation has maximum yield at minimum risk level. For this reason, determining long period relation between financial markets has very big importance as well as values of correlation co-efficient. The aim of this study is to determine Turkish and Greek investors' countries investment alternatives at European Financial Markets. We choose 16 developed countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom) and 4 developing countries(Czech Rep., Hungary, Poland, Turkey) to reach a conclusion. Data has been obtained from MSCI as monthly index and we have applied cointegration analysis to find long term relation among these countries. All analysis is applied to all countries for Turkey and Greece separately.

The aim of this method is to find cointegration relation between all countries and 2 Countries (TR-GR). Thus, our aim is to determine which country has cointegration relationship with Turkey and Greece. According to results and considering to Markowitz Mean Variance Model, we have formed portfolio alternatives. Performance level of portfolio alternatives formed by connecting to investors' preference tested by risk / level levels. By this method, what we aim to achieve is if there is any effect of cointegration relation on Turkish and Greece investors' portfolio preference. In addition to this, we look over to benefits of international diversification to Turkish and Greek investors which invest to only national market. With this, we aim to present useful information to Turkish and Greek investors aiming international diversification at their portfolios. We present comprehensive literature work in the second chapter and give information about data set and methods used at study. In the third chapter, we analyze long term relationship for two countries at European Financial markets with Johansen Cointegration Test. As a result, we determine performance levels of portfolio alternatives selected by Markowitz Mean Variance Model under these conditions:

- We add all financial markets
- We include the test only long term relations
- We set the countries which long term relation apart the portfolio

In the last chapter, we present results according to the analysis.

2. Literature Review

There are lots of researches about whether there is any long and short time relation among the financial markets. Narayan and Smiyth (2005), studied the relation between developed 7 countries and New Zealand. They used data set including 1975-2003 years with Johansen Cointegration Test. In according the results, they did not found any cointegration relation between developed 7 countries and New Zealand. Shachmurove (2005), analyzed Middle East Countries and USA Stock Exchange Markets using Stock Exchange Market Daily data. After research, Shachmurove found long term relationship between Middle East Countries and USA Stock Exchange but this relation was not strong. Click and Plummer (2005), tested conintegration relation among Malaysia, Indonesia, Singapore and Philippines based on 1998-2002 monthly and daily data. According to Johansen Cointegration Test, they found a long term relationship among these countries. Efendioglu and Yoruk (2005), analyzed the relationship among Turkey, Germany, Holland and Italy Stock Exchange Markets based on 1993;07-2005;03 monthly and daily data. Results showed that there was no long term relationship between Turkey and these countries.

Ceylan (2006), analyses the effect of G-7 Countries' Stock Exchange Markets on Istanbul Stock Exchange market. According to the analyze, all countries have long term strong effect (Except Japan) on Istanbul Stock Exchange market. Onay (2006), constituted lots of index and investigated long term relation among these index. Czech Republic, Hungary, Slovakia, Poland, Bulgaria and Romania countries' index member of EU; Turkey and Croatia countries' index candidate to EU; Morgan Stanley Capital International Stock Exchange; MSCI EU Index; S&P Index. Onay used Engle-Granger causality analysis and Johansen cointegration test. As a result, Onay found that nothing Stock Exchange Market had long term relationship among each other. Neaime (2006), investigated relationship between Middle East and North African Countries and found that Turkey had been effected from England and United States Stock Exchange Markets.

Lagoarde, Segot and Lucey (2007), wanted to find optimal portfolio alternative investigating relationship between MENA and 7 Middle East Countries Using monthly data. They used Sharpe ratio and Jabson-Korkie Test statistic as judgment criteria. They found that diversification included in MENA had been more advantageous than others. Egert and Kocenda (2007); investigated to relation among the European Financial Markets in 2003-2005. As a result; they didn't find any cointegration relationship between Central and Eastern Countries but these 2 groups had cointegration relationship with Western Countries. Korkmaz and Çevik (2008), investigated long term relation between Turkey and 12 developed and 22 developed countries. They used 1995; 01-2007; 12 years' monthly data set and applied to data Johansen cointegration test. According to test result; Turkey has long term cointegration relationship 5 developed countries and 7 developing countries.

Küçükcolak (2008), investigated relationship Stock Exchange markets of Turkey and England; Germany and France. Küçükcolak used Engle-Granger test and found that Turkey had not long term relation with England in 2001; 01 -2005; 12 years. Küçükkaya (2009), analyzed to relation between USA and Turkey's Stock Exchange Market in 1998; 05-2008; 05 years. As a result, Kucukkaya did not found any long or short term relationship between 2 countries. Alexakis (2009), investigated long term relation between England and Greece's Stock Exchange Market in 2001-2005 years. Result showed that there was no evidence about long term relation between 2 countries. Vuran (2010), found that Germany, Turkey and England's Stock Exchange Market have relation between each other.

Boztosun and Celik (2011) investigated long term relation between Europen and Turkey's financial markets using 2002; 01-2009; 12 years monthly data. Johansen-Jeselius was used by writers and they found that Turkey had long term relationship with Norway, Holland, Belgium, Germany and England but there was no evidence about long term relation with France, Austria, Sweden, Switzerland and Spain. Scientific research shows that collecting countries into the same portfolio is may be beneficial for diversification.

3. Methodology

At this study, we have used monthly data belonging to 16 developed and 4 developing countries announced by MSCI. Data set are consisted of 195 index value between 31.05.1995 and 31.03.2011. First of all, we have taken natural algorithm of index value belonging to each country. We have reached the results applying these operations to data which was ready for analysis as below.

At first level, we have analyzed basic statistical values of European Financial Markets. After this study, correlation matrix has been developed and general evaluation of short time relation among the markets has been made.

At second stage, we have made cointegration analysis for evaluating of long term relation among the European Financial Markets. Before cointegration analysis, root cause analysis was applied by using ADF test. According to data, Johansen Cointegration test was applied to index values of countries which have the same integrated degree. We analyzed cointegration relation among the nonstagnant time series. At this study, methods based on VAR models was used. VAR Model can be determined like this Formula at below.

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i y_{t-i} + Bx_t + \varepsilon_t$$
$$\Pi = \sum_{i=1}^{p} A_i - I \text{ ve } \Gamma_i = -\sum_{j=i+1}^{p} A_j$$

Yt=Nonstagnant variables vector,

x_t= Deterministic variables vector,

ε_t = Error terrm.

Two test statistical has been used due to analyzing of r times of cointegration relation. First of all is iz test. At this test, zero hypothesis investigates cointegration relation r times, alternate hypothesis investigates to cointegration relation k times. The second test named as eigenvalue test. This test investigates to cointegration relation r times and investigates to présense of cointegration relation r +1 times. According to these analysis results; portfolio selection model was made based on Markowitz Mean Variance Model for 3 different circumstances.

4. Findings

Basic statistical values of 20 countries were given at Table 1.

According the table 1, Sweden has the biggest yield, on the contrary Portugal has the smallest yield. England has the smallest standard deviation level on the other hand Czech Republic has the biggest one. France, Germany, Holland, Portugal, Switzerland and England have normal dispersion. Volatility of developing countries' market is higher than volatility of developed countries' market.

Correlation matrix values of European Countries including research has been given in the Table 2.

As correlation values, we have noticed that negative correlation between Czech Republic and Ireland. Other all countries have positive correlation values. Turkey has positive correlation values with 19 countries and the strongest one is with Sweden. The most lowed same wayed relation is with Ireland. Greece has the strongest same wayed relation is with Italy. The most lowed same wayed relation of Greece is with Czech Republic. As correlation matrix, all countries' financial markets have same wayed relation with each other at the small period. According to this finding, it can be said that realizing to effective portfolio diversification is not possible. Because correlation values are positive and much higher among the countries.

We applied cointegration analysis to test the long time portfolio diversification. Before applying this analysis, we have investigated to index values of 20 countries aspect of stagnant or nonstagnant with Corrected Dickey-Fuller Test. We have taken natural logarithm of index data. According to these natural logarithm of index data, we have taken unit root results. These show that all financial markets which are representative of European financial market are cointegrated.

According to this result, data of Corrected Dickey-Fuller Test are at Table 3.

Index values of 16 developed and 4 developing countries' financial markets have strong cointegrated relation. For this reason, before applying cointegration test we have developed VAR Model using country index values. Optimal number of delay has been taken as based on VAR Model. As results, Johansen Cointegration Test has been applied to data. As to analysis result, cointegration test results are given in the Table 4-5 and results between Turkey and Greece are given in the Table 4.

As a result; Turkey has long term relation with Denmark, Germany, Sweden and Switzerland. Accordingly, it is natural that Turkey has high yield at smaller risk level at the portfolios not including these countries (Denmark, Germany, Sweden and Switzerland). Johansen Cointegration Test results for Greece are at Table 5

As a result; Greece has long term relation with only Belgium. Accordingly, it is possible to say that Greece may realize effective diversification at European Financial Markets. We have selected portfolio with different scenarios to test the effects of long term relation among the financial markets for Turkey and Greece. This portfolio selection process has been made for 2 countries separately. For all circumstances, it is applied to invest national portfolio at the proportion of % 50 for 2 countries.

> Scenario 1: Portfolio is created which gives the lowest risk in spite of the highest yield among the countries.
>
> Scenario 2: Countries having long term relation are not included in the selection, creating portfolios which have the most yields.
>
> Scenario 3: Portfolio selection process was used only among the countries having long term relation.

Risk and Yield basic values belonging to portfolio alternatives are given at Table 6-7;
As results, if countries having long term relation pile to the same portfolio, encountered risk value will be 1 point yield bigger. It shows that countries having long term relation between each other could not pile to the same portfolio for Turkey. We can say the same result for Greece. Piling to the countries having long term relation into the same portfolio means facing more risk for 1 point yield.

5. Conclusion

The main purpose of portfolio selections is to collect options that do not act in the same way and in the same portfolio. In other words, diversification is achieved by adding the same portfolio in the long-term relationship with non-efficient markets. In this study, Greece as a developed financial market in European Financial Markets, and Turkey which is developing markets, which is to diversify its financial markets, co-integration analysis is to evaluate the response. According to obtained data, Greece which is developed country, only Belgium it moves along with the long-term.

On the other hand, Turkey as an emerging market moving along with Germany, Switzerland, Sweden and Finland on the long term. Countries having long term relation between each other could not pile to the same portfolio for Turkey and Greece. This means that higher yield at lower risk level. Not accumulating the countries having long term relationship into the same portfolio gives investors to get more yields at both developed and developing markets.

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Tables

Table 1. Basic Statistical Values of European Countries

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability	Observations
Devoloped Countries							
AUSTRIA	0,071	0,005	0,806	2,359	24,468	0,000	195
BELGIUM	0,071	0,003	0,411	2,369	8,723	0,013	195
DENMARK	0,078	0,005	0,221	1,992	9,847	0,007	195
FINLAND	0,080	0,006	-0,495	2,675	8,827	0,012	195
FRANCE	0,071	0,003	-0,196	2,362	4,553	0,103	195
GERMANY	0,071	0,003	0,030	2,451	2,476	0,290	195
GREECE	0,060	0,005	0,246	1,850	12,712	0,002	195
IRELAND	0,056	0,004	-0,713	2,855	16,673	0,000	195
ITALY	0,059	0,003	-0,081	2,200	5,409	0,067	195
NETHERLANDS	0,075	0,003	-0,179	2,490	3,155	0,206	195
NORWAY	0,074	0,005	0,675	2,151	20,672	0,000	195
PORTUGAL	0,048	0,003	0,021	2,483	2,186	0,335	195
SPAIN	0,059	0,005	-0,321	2,569	4,863	0,088	195
SWEDEN	0,082	0,004	-0,183	2,156	6,880	0,032	195
SWITZERLAND	0,078	0,003	-0,248	2,531	3,791	0,150	195
UNITEDKINGDOM	0,069	0,002	-0,148	2,447	3,198	0,202	195
Devoloping Countries							
CZECH REP.	0,052	0,009	0,388	1,495	23,278	0,000	195
HUNGARY	0,059	0,007	-0,157	2,199	6,013	0,049	195
POLAND	0,064	0,004	0,549	2,246	14,403	0,001	195
TURKEY	0,055	0,006	0,055	1,756	12,672	0,002	195

Table 2. Corelation Matrix Values of European Countries

	AUSTRIA	BELGIUM	DENMARK	FINLAND	FRANCE	GERMANY	GREECE	IRELAND	ITALY	NETHERLANDS	NORWAY	PORTUGAL	SPAIN	SWEDEN	SWITZERLAND	UNITEDKINGDOM	CZECH	HUNGARY	POLAND	TURKEY
Austrıa	1,00	0,75	0,77	0,39	0,69	0,67	0,63	0,40	0,69	0,56	0,92	0,68	0,73	0,66	0,74	0,66	0,84	0,82	0,89	0,71
Belgıum	0,75	1,00	0,59	0,60	0,78	0,78	0,87	0,79	0,89	0,84	0,64	0,86	0,69	0,70	0,71	0,92	0,42	0,67	0,66	0,57
Denmark	0,77	0,59	1,00	0,70	0,90	0,85	0,60	0,07	0,73	0,72	0,92	0,76	0,95	0,91	0,96	0,73	0,90	0,94	0,86	0,89
Fınland	0,39	0,60	0,70	1,00	0,90	0,78	0,75	0,35	0,85	0,77	0,49	0,70	0,80	0,83	0,75	0,78	0,44	0,68	0,47	0,65
France	0,69	0,78	0,90	0,90	1,00	0,93	0,83	0,38	0,93	0,88	0,78	0,87	0,95	0,95	0,93	0,90	0,69	0,88	0,76	0,83
Germany	0,67	0,78	0,85	0,78	0,93	1,00	0,83	0,36	0,84	0,94	0,79	0,93	0,90	0,93	0,91	0,91	0,63	0,80	0,80	0,86
Greece	0,63	0,87	0,60	0,75	0,83	0,83	1,00	0,68	0,90	0,84	0,59	0,87	0,75	0,75	0,71	0,89	0,43	0,66	0,62	0,62
Ireland	0,40	0,79	0,07	0,35	0,38	0,36	0,68	1,00	0,65	0,53	0,17	0,54	0,24	0,25	0,23	0,64	-0,07	0,23	0,21	0,08
Italy	0,69	0,89	0,73	0,85	0,93	0,84	0,90	0,65	1,00	0,86	0,66	0,89	0,86	0,83	0,83	0,93	0,52	0,80	0,64	0,67
Netherlands	0,56	0,84	0,72	0,77	0,88	0,94	0,84	0,53	0,86	1,00	0,66	0,93	0,81	0,87	0,84	0,96	0,43	0,71	0,68	0,73
Norway	0,92	0,64	0,92	0,49	0,78	0,79	0,59	0,17	0,66	0,66	1,00	0,72	0,83	0,80	0,85	0,69	0,92	0,89	0,96	0,86
Portugal	0,68	0,86	0,76	0,70	0,87	0,93	0,87	0,54	0,89	0,93	0,72	1,00	0,86	0,85	0,87	0,95	0,54	0,79	0,73	0,75
Spaın	0,73	0,69	0,95	0,80	0,95	0,90	0,75	0,24	0,86	0,81	0,83	0,86	1,00	0,93	0,98	0,83	0,80	0,95	0,80	0,84
Sweden	0,66	0,70	0,91	0,83	0,95	0,93	0,75	0,25	0,83	0,87	0,80	0,85	0,93	1,00	0,93	0,86	0,71	0,88	0,81	0,91
Swıtzerland	0,74	0,71	0,96	0,75	0,93	0,91	0,71	0,23	0,83	0,84	0,85	0,87	0,98	0,93	1,00	0,85	0,79	0,94	0,82	0,85
Unıtedkıngdom	0,66	0,92	0,73	0,78	0,90	0,91	0,89	0,64	0,93	0,96	0,69	0,95	0,83	0,86	0,85	1,00	0,47	0,77	0,70	0,72
Czech	0,84	0,42	0,90	0,44	0,69	0,63	0,43	**-0,07**	0,52	0,43	0,92	0,54	0,80	0,71	0,79	0,47	1,00	0,87	0,88	0,79
Hungary	0,82	0,67	0,94	0,68	0,88	0,80	0,66	0,23	0,80	0,71	0,89	0,79	0,95	0,88	0,94	0,77	0,87	1,00	0,85	0,85
Poland	0,89	0,66	0,86	0,47	0,76	0,80	0,62	0,21	0,64	0,68	0,96	0,73	0,80	0,81	0,82	0,70	0,88	0,85	1,00	0,87
Turkey	0,71	0,57	0,89	0,65	0,83	0,86	0,62	0,08	0,67	0,73	0,86	0,75	0,84	0,91	0,85	0,72	0,79	0,85	0,87	1,00

Table 3. Corrected Dickey-Fuller Root Test Results

	LEVEL			FIRST DIFFERENCES		
	INTERCEPT	**INTERCEPT AND TREND**	**UNIT ROOT**	**INTERCEPT**	**INTERCEPT AND TREND**	**UNIT ROOT**
AUSTRIA	-1,70785	-2,21104	YES	-5,5096	-5,49187	**NO**
BELGIUM	-2,57958	-2,54536	YES	-4,92812	-4,94557	**NO**
CZECH	-0,48782	-1,74132	YES	-6,08358	-6,07331	**NO**
DENMARK	-0,9926	-2,51074	YES	-4,65781	-4,63734	**NO**
FINLAND	-2,15175	-1,85327	YES	-5,53344	-5,62874	**NO**
FRANCE	-1,99572	-2,37356	YES	-5,45199	-12,3802	**NO**
GERMANY	-2,06797	-2,43094	YES	-5,27818	-12,8606	**NO**
GREECE	-2,23859	-1,97914	YES	-5,7018	-12,3679	**NO**
HUNGRAY	-1,80158	-2,41151	YES	-5,54563	-12,5409	**NO**
IRELAND	-1,58836	-1,82947	YES	-4,32976	-10,7828	**NO**
ITALY	-2,32333	-2,1977	YES	-5,21803	-13,2672	**NO**
NETHERLANDS	-2,58228	-2,61875	YES	-5,05993	-12,6928	**NO**
POLAND	-1,45254	-2,24661	YES	-6,17571	-14,116	**NO**
NORWAY	-1,22778	-2,28964	YES	-6,04361	-11,8228	**NO**
PORTUGAL	-2,32433	-2,31032	YES	-5,09964	-11,9457	**NO**
SPAIN	-2,08076	-2,36438	YES	-5,85959	-12,5601	**NO**
SWEDEN	-2,0577	-2,74513	YES	-4,88375	-12,3909	**NO**
GREECE	-1,78115	-2,90419	YES	-6,45176	-13,9513	**NO**
SWITZERLAND	-1,87083	-2,43938	YES	-5,05636	-12,0204	**NO**
UNITED KINGDOM	-2,70392	-2,77719	YES	-4,99829	-4,99494	**NO**
TURKEY	-1,92078	-2,626954	YES	-13,98651	-13,93133	**NO**
Test critical values:				Test critical values:		
1% level	-3,46483	-4,00708		-3,46501	-4,00735	
5% level	-2,8766	-3,43365		-2,87668	-3,43378	
10% level	-2,57487	-3,1407		-2,57492	-3,14077	

Table 4. Johansen Cointegration Test Results for Turkey

Country	**Trace Value**	**Probability**	**Trace Value**	**Probability**	**Max. Eigenvalue**	**Probability**	**Max. Eigenvalue**	**Probability**
Hypothesis	**H_0 : r=0**	**H_1: r>1**	**H_0 : r≥1**	**H_1 : r=2**	**H_0 : r=0**	**H_1: r>1**	**H_0 : r≥1**	**H_1 : r=2**
Turkey-Austria	9,114508	0,7255	2,074883	0,7628	7,039625	0,6647	2,074883	0,7628
Turkey-Belgium	10,8899	0,5527	3,351952	0,5171	7,537946	0,6036	3,351952	0,5174
Turkey-Czech Rep.	11,17858	0,525	1,712035	0,834	9,466547	0,3854	1,712035	0,834
Turkey-Denmark	22,62329	0,0232*	4,429554	0,3519	18,19374	0,0214*	4,429554	0,3519
Turkey-Fınland	9,748671	0,6645	3,297156	0,5267	6,451515	0,7358	3,297156	0,5267
Turkey-France	14,30363	0,2691	4,343625	0,3634	9,960004	0,338	4,343625	0,3634
Turkey-Germany	18,11855	0,0960**	4,069369	0,4019	14,04918	0,0952**	4,069369	0,4019
Turkey-Greece	8,251712	0,8033	1,961631	0,7853	6,290081	0,7548	1,961631	0,7853
Turkey-Hungary	14,19283	0,2764	4,101731	0,3972	10,0911	0,3261	4,101731	0,3972
Turkey-Swıtzerland	23,52809	0,0171*	4,775885	0,3089	18,7522	0,0173*	4,775885	0,3089
Turkey-Ireland	7,28748	0,8782	1,348426	0,8992	5,939054	0,7947	1,348426	0,8992
Turkey-Italy	8,201536	0,8076	3,666665	0,464	4,534871	0,9249	3,666665	0,464
Turkey-Netherlands	14,11356	0,2817	4,183687	0,3855	9,929869	0,3408	4,183687	0,3855
Turkey-Norway	15,49157	0,1995	2,856306	0,6079	12,63527	0,152	2,856306	0,6079
Turkey-Poland	12,15242	0,4353	3,698873	0,4588	8,453544	0,4945	3,698873	0,4588
Turkey-Portugal	10,48392	0,5923	4,252434	0,3758	6,231482	0,7616	4,252434	0,3758
Turkey-Spaın	16,46164	0,1539	6,02055	0,1891	10,44109	0,2959	6,02055	0,1891
Turkey-Sweden	21,90655	0,0294*	4,9423	0,2898	16,96425	0,0338*	4,9423	0,2898
Turkey-England	11,20066	0,5229	3,962735	0,4177	7,237929	0,6404	3,962735	0,4177
Note: *, ** represent cointegration relation at %5, %10 importance level.								

Table 5. Johansen Cointegration Test Results for Greece

Country	Trace Value	Probability	Trace Value	Probability	Max. Eigenvalue	Probability	Max. Eigenvalue	Probability
Hypothesis	H_0 : r=0	H_1: r>1	H_0 : r≥1	H_1 : r=2	H_0 : r=0	H_1: r>1	H_0 : r≥1	H_1 : r=2
Greece-Austria	6,549878	0,9236	0,866897	0,9672	5,682981	0,8224	0,866897	0,9672
Greece-Belgium	23,48806	0,0174*	6,832523	0,1355	16,65554	0,0379*	6,832523	0,1355
Greece-Czech Rep.	7,291045	0,8779	2,175688	0,7426	5,115356	0,8781	2,175688	0,7426
Greece-Denmark	9,058994	0,7307	4,243602	0,371	4,815392	0,9037	4,243602	0,371
Greece-Fınland	16,797	0,1403	5,169156	0,2654	11,62785	0,2086	5,169156	0,2654
Greece-France	9,439241	0,6946	2,87378	0,6046	6,565461	0,7222	2,87378	0,6046
Greece-Germany	8,903735	0,7452	1,875982	0,8022	7,027753	0,6661	1,875982	0,8022
Greece-Turkey	8,251712	0,8033	1,961631	0,7853	6,290081	0,7548	1,961631	0,7853
Greece-Hungary	11,58085	0,4871	1,495852	0,8741	10,08502	0,3267	1,495852	0,8741
Greece-Ireland	13,70925	0,3099	5,842929	0,2032	7,866326	0,5638	5,842929	0,2032
Greece-Italy	8,347947	0,7951	4,062359	0,4029	4,285588	0,9413	4,062359	0,4029
Greece-Netherlands	9,759408	0,6634	1,688963	0,8384	8,070445	0,5394	1,688963	0,8384
Greece-Norway	5,778205	0,9587	1,229449	0,9189	4,548757	0,9239	1,229449	0,9189
Greece-Poland	6,40338	0,9312	1,169477	0,928	5,233861	0,8672	1,169477	0,928
Greece-Portugal	10,68411	0,5727	4,598642	0,3303	6,085464	0,7783	4,598642	0,3303
Greece-Spaın	12,93847	0,3688	3,152508	0,5526	9,785966	0,3542	3,152508	0,5526
Greece-Sweden	8,071603	0,8184	2,288122	0,7199	5,783483	0,8117	2,288122	0,7199
Greece-Swıtzerland	10,30022	0,6106	1,704053	0,5356	8,596167	0,4783	1,704053	0,5356
Greece-England	10,14571	0,6255	2,846366	0,6098	7,299345	0,6328	2,846366	0,6098
Note: *, ** represent cointegration relation at %5, %10 importance level.								

Table 6. Basic Values Created For Turkey Belonging To Portfolio Alternatives

		Scenario 1	**Scenario 2**	**Scenario 3**
Number of Country Included To Portfolio		3	3	3
Countries Included To Portfolio	**IRELAND**	0,296	0,296	-
	ENGLAND	0,204	0,204	-
	GERMANY	-	-	0,419
	SWITZERLAND	-	-	0,081
	TURKEY	0,500	0,500	0,500
Total Portfolio Risk		0,00376	0,00376	0,00437
Total Portfolio Return		0,05849	0,05849	0,06396
Risk/Return		0,064284	0,064284	0,068324

Table 7. Basic Values Created For Greece Belonging To Portfolio Alternatives

		Scenario 1	**Scenario 2**	**Scenario 3**
Number of Country Included To Portfolio		2	2	2
Countries Included To Portfolio	**ENGLAND**	0,5	0,5	-
	BELGIUM	-	-	0,5
	GREECE	0,5	0,5	0,5
Total Portfolio Risk		0,00336	0,00336	0,003749
Total Portfolio Return		0,064907	0,064907	0,065681
Risk/Return		0,05176	0,05176	0,05707