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Criteria of Optimal Portfolio Selection: Evidence From Private Investors in Greece, Turkey, Italy

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Abstract

What are the criteria for private investors when they decide to invest their savings in to different investment products? Do these criteria differ between investors from different countries? We are investigating the investment portfolios determinants between private investors from Greece, Turkey and Italy. The study is grounded in the current and potential criteria and sub-criteria influencing investors in selecting financial investment products. The methodology applied in order to satisfy the research aims is the Analytic Hierarchy Process (AHP). The results show that there are considerable differences in the ranking and

significance of factors that determine the selection of financial investment products in these three countries. We conclude that differences in the ranking and significance are related to country-specific rather than investor factors and they are justified by the differences of the three countries, one of which is a member of the Eurozone facing a long time of economic crisis, another a candidate EU member, with unforeseeable political system which influences the economic environment as well, and one is highly developed country which belongs to G20.

Keywords: Investment portfolio, Analytic Hierarchy Process, Greece, Turkey, Italy

1. Introduction

Portfolio theory is an investment approach developed by Chicago University economists during the 1950s. This work deals with the completion of the analysis of the investment portfolio with the development process, the identification and selection of the optimal investment portfolio under conditions of uncertainty. It should be noted that the portfolio selection process is of particular importance as it concerns every category of investors, although the selection by a particular investor meets his objectives and preferences and gives an adequate description of theory, practical portfolio selection and portfolio valuation measures. Consequently, the portfolio comprises of a set of different investments in securities (shares, bonds, mutual funds, etc.) and in cash held by a natural or legal person. The combination of different investments can offset positive and negative returns, resulting in reduced non-systematic investment risk.

Markowitz (1952), explained the optimal way of forming a diversified portfolio and proved that such a portfolio would probably have a satisfactory return. His view was that the risk of a portfolio could be reduced and the expected rate of return could be improved by combining investments with dissimilar price fluctuations. Portfolio theory allows investors to assess both the expected risks and the expected returns, as measured by statistics, for their investment portfolios. It is theoretically possible to derive a portfolio of dangerous assets that returns the smallest risk for a given return (Haugen, 2001, Strong, 1993). The selection option is tantamount to choosing an optimal portfolio from a set of possible portfolios. Very important role in modern portfolio theory plays diversification.

In a first approach to portfolio modeling and selection, the asset allocation method is used to categorize them into a small number of homogeneous groups and to select those of the best-performing portfolio in terms of return and risk. We also look at the risk-return relationship and the way in which we manage investment product portfolios.

In addition to the expected estimate of individual investments, the success of a portfolio depends on the investment risk it contains. Market Risk is linked to movements in the overall market, and investors are exposed to this risk regardless of the number of securities they hold in their portfolio. The risks of an investment can be divided into two broad categories: systematic investment risk and non-systematic investment risk (Capital Invest, 2011). The nature of these two risks is completely different. Systematic investment risk is market-related (purchasing power risk, interest rate risk, liquidity risk, etc.). Systematic risk management is

extremely difficult. It cannot be predicted, as it arises from the macroeconomic environment (legislative changes with an impact on investment, possible conflict, etc.). On the contrary, non-systematic investment risk is unique to an individual asset (business risk, financial risk, other risks associated with investments in a particular asset). Non-systematic investment risk can be predicted and reduced or eliminated through the risk diversification process, where different forms of investment with different risk are selected in a portfolio. Some major categories of investment risks are presented below (Cooper, and Edjett, 2001):

i. The business risk concerns all business actions, in which, investments in shares and bonds are included, etc.

ii. The market risk arises from the changes of the prices of certain products either at the national or international level.

iii. The credit risk or default risk is reported in all investments that are realized with transactions that include payments in the future and result from the probability of breach of some future payment that will influence negatively the cash inflows.

iv. The liquidity risk arises from investments that are difficult or impossible to liquidate and in consequence, they can cause lack of cash flow and lead to breach of other agreements of payment.

v. The interest-rate risk refers to the rise of interest rates that make the investments appear less attractive, since the investors can acquire high return from savings.

vi. The financial risk lies in the investments that include foreign capital and arises from the disability of future obligations settlement.

vii. The inflation risk or purchasing-power risk can affect all the investments but especially those of constant income, such as banking deposits or government bonds.

viii. The exchange-rate risk concerns investments realized in foreign currencies that include the exchange risk, since they can lose part of their value from variation in the exchange parity.

ix. The political risk or country risk refers to the effect of investments on an economy from sudden changes in the current legal framework that has impact on the market.

x. The systemic risk derives from the collapse of the entire economic system and, even if it is a rare occurrence, can involve devastating consequences to the investments.

The main scope of this paper is to investigate the investment portfolios determinants of private investors in different countries. We use a sample of Greek and Turkish private investors. The choice of these two countries was dictated by the following factors. Firstly, one of them belongs to the euro zone while the other is outside the zone and even a non EU member. Secondly, these countries are characterized by different economic situation. One is in a period of recession, the second in a period of economic instability as a result of the political situation. The selection of countries with different structures and characteristics allows parallel analysis of country-specific factors, as well as investor-specific on the initial

level. The study is grounded in the current and potential criteria and sub-criteria influencing investors in selecting financial investment products. We address the following questions: Are the criteria that influence private investors in selecting their investments similar in these two countries? Which factors may explain any cross-country differences?

To answer these questions, we apply the quantitative research analysis, which is based on a sample of data collected via a questionnaire answered by a sample of key experts: specifically, bank executives specialized in financial investment products. A comparison of our findings with those from previous or future researches will provide important implications for decision makers in banking sector.

The paper is structured as follows: in Section 1 we briefly review the existing body of literature and summarize major findings, Section 2 presents the methodology used in the study in order to give priorities to the selection of investment products, Section 3 exhibits the empirical results obtained from the case study, and Section 4 summarises the main conclusions drawn from this research, limitations and research implications.

2. Literature Review

The optimal portfolio selection should be the result of investment decisions which consider several factors such as market characteristics, individual risk profiles and financial information (Jagongo and Mutswenje, 2014). The behavior of individual investors deals with the choices for the purchases of securities and the final combination of the investment portfolio for their own account (Nofsinger and Richard, 2002). “The influence of psychology on the behavior of financial practitioners” is according to Shefrin, (2000) the substance of behavioral finance.

No matter how well or not informed they are, investors might behave irrationally with the fear of loss in the future and employ diverse criteria when choosing stocks, as they are influenced by sunk cost considerations and asymmetrical risk preferences for gain/loss situations. (Nagy and Obenberger, 1994; Jagongo and Mutswenje, 2014) This different behavior in the individual investors is caused by various factors which compromise the investor rationality and they are highly affected by classical wealth – maximization criteria.

Recent years’ research on “behavioral finance” reveals that internal and external behavioral factors affect the financial decisions of individual investors (Shefrin, 2000). Individual investors who are not exposed to relevant flow of professional information, rely on investment advisory services and brokerage houses recommendations (Francis and Soffer, 1997).

The choice of individual investments to form an investment portfolio is a complex process determined mainly by the following factors:

I. The prevailing market conditions

ii. The investor's personal expectations

iii. The type of stocks that are marketed

Based on the above-mentioned parameters, there are two strategies that define the portfolio configuration: active and passive strategies (Burton, 2003).

Options are usually made according to the investor's characteristics.

Includes: expected return, return on time, investor risk, occupation, income, possession of financial assets, etc. The question is "to what extent do these factors influence the investor when selecting investments based on Savings in a Portfolio?" This document aims to answer the above question. For the completion of this survey, the Method of Analytical Hierarchy (AHP) was applied.

Over the past 30 years, in the context of Business Research and Decision Science, the Multi-Criteria Decision Making or Decision Support area has been developing dramatically rapidly. Multi-Criteria Analysis is a systematic logic and mathematical approach that helps decision makers resolve dilemmas arising from the pursuit of many conflicting goals in decision-making.

A brief overview of the applications of the multi-criteria approach to portfolio management is given below, and a more detailed and comprehensive overview can be found in Hurson (1995) and Hurson and Zopounidis (1997). The order of presentation of the various approaches follows the categorization of multi-criteria decision support methods.

In the work of Rios-Garsia and Rios-Insua (1983), the problem studied is the composition of a stock portfolio, and the proposed multi-criterion approach is the multi-attribute utility theory and multiobjective linear programming). In the multicriteria utility theory, Evrard and Zisswiller (1993) also relied on the evaluation of a set of shares. The purpose of the study was to show how it is possible to refine models that link the stock-characteristic criteria (profitability, risk, PER and earnings per share) to the investor's preferences.

Saaty et al. (1980) study at the same time the problem of stock valuation and that of determining the composition of a stock portfolio. The proposed methodology is the AHP-Analytic Hierarchy Process, due to Saaty (1980). The authors believe that the shares should be compared according to the criteria that affect their price and the investor's goals. These criteria depend on a number of general economic factors. In this way, they set a hierarchy between the criteria, the objectives and the shares, depending on their comparative importance. Finally, the portion of each share is given and the portion of the share in the portfolio.

Martel et al. (1988), used the ELECTRE I [Roy (1968)] and ELECTRE II (Roy and Bertier (1973)] methods for portfolios valuation. The criteria used are: profitability, logarithmic variance, PER and liquidity.

Khoury et al. (1993), based their research on the same approach is which the ELECTRE IS methods [Roy and Skala (1985)] and ELECTRE III [Roy (1978)] were used to evaluate international portfolios from 16 countries. The criteria on which the evaluation was based are performance and formal deviation, transaction costs, risk and borrowing capacity.

Finally, Szala's work (1990) is the third study based on the rapprochement of relations of excellence and was done in cooperation with a French investment firm. For financial analysts,

Szala uses the ELECTRE III method to obtain a ranking of shares from best to worst. On the contrary, for traders and portfolio managers, who handle a very large number of shares, Szala decided to group the financial criteria into a compositional criterion, based on the PREFCALC interactive system [Jacquet-Lagreze (1984a)]. This composite criterion was used along with the stock criteria in ELECTRE III.

Lee and Chesser (1980) presented a Goal Programming model that supports the decision-making portfolio that satisfies as much as possible its wishes.

Their research model includes 17 key criteria achieved by university professors and exchange experts. After exporting effective exchange rate criteria, the weights of each criterion were achieved with a paired comparison table.

The findings of this survey suggest that the most important criteria for investors' choice of stocks are international risk, international economy, competitiveness and profits, quality of management, information, transparency and efficiency.

We approach the problem of optimal portfolio selection by looking at criteria. Our approach has major implications for decision makers in the banking sector. We assume that it is very important to understand the criteria that determine the financial products that include the investment portfolios of private investors in country analysis. The majority of surveys have focused on the regulatory approach to portfolio selection (the investor has to choose the "total" that provides the greatest usefulness), little attention is paid to positive theory, which describes the investment behavior of people with uncertainty. Financial institutions in the age of globalization must be effective, efficient, flexible, adaptable and ready for the future. In conditions of increasing competitiveness, market development strategies and market penetration must be considered as strategic factors for the development of financial institutions. To do this, one of the main tasks is to study the decision-making process of investors and the factors that influence them in the selection process of their investment portfolio.

3. Methodology

The aim of this work is the result of an empirical research to (a) identify the criteria determining the financial products comprising the investment portfolios of private investors in three countries: Greece, Turkey and Italy and (b) conclude on the hierarchy that each of these criteria has. The methodology that we used in this research is illustrated in the Figure 1, below.

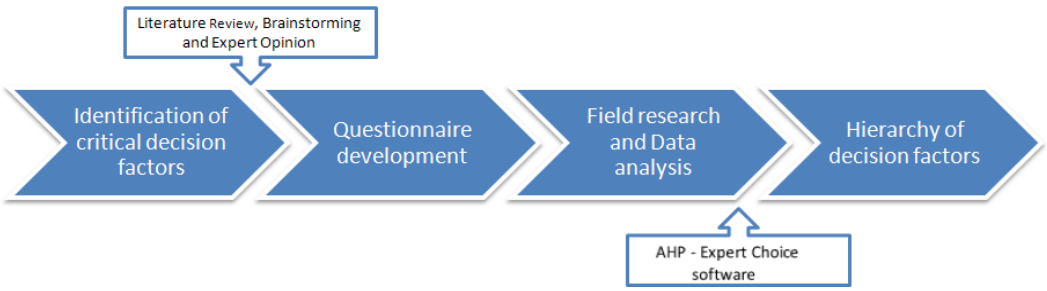

Figure 1. Methodological Framework

More precisely, the first Step was to identify the key parameters that affect the factors that influence the decisions of potential investors concerning the structure of their portfolio and particularly the key parameters that affect their private savings investment. Literature on this specific area is rather scant. Therefore, a brainstorming session was performed, in order to map the total number of factors that could influence this kind of decision. The next Step of the research was the development of a questionnaire based on the findings of the previous Step. The structure of the questionnaire comprises 34 pairwise comparisons on a 9-point Likert type scale. The final stage was the data elaboration and the calculation of the importance of each factor by using the Analytic Hierarchy Process (AHP) (Diakomihalis and Stefanidaki, 2012).

Analytical Hierarchy (AHP) uses mathematical decision-making hierarchy models. The proposed method is widely applied and can be used in general for any decision that an investor is called upon to take. However, its use is proposed for long-term, complex decisions involving different issues. Once the problem has been built hierarchically at levels, then the priorities of the criteria must be determined.

This can be done through the aforementioned pairs comparisons in binary comparison tables using a fundamental 9-membered graded scale of preferences available from the method. Modeling the survey data based on the analytical hierarchical structure was done with Expert Choice. With the introduction of data into the system, the hierarchy of the model is built, followed by the identification of priorities among the alternatives for each criterion. Multicriteria support allows us to manage both quantitative and qualitative criteria.

The method was created in the early 1980s by Thomas Saaty (as we mentioned in the previous chapter) and Ernest Forman, founder of Expert Choice Inc., and was the first decision support system to implement the AHP methodology. It is one of the most popular decision-making software, since it is used by businesses and public institutions as well as by educational institutions worldwide.

The degree of importance of the criteria applied for the assessment of the various alternative scenarios is determined by the weighting factor attributed to these criteria. Depending on the case, direct gravity or indirect factors are used. Direct gravity coefficients are used when the number of criteria is small and gravity ratios can be selected.

3.1 Identifying Critical Decision Makers and Developing a Questionnaire

The first step involves identifying factors that influence the decisions of potential investors about their portfolio structure and especially the key parameters that affect their private savings investments. Given the limited research in this area, the exchange of ideas was initially used to identify the wide range of actors that can play an important role in deciding on an investment portfolio. This process was conducted with key players from the Greek and Turkish investment experts (bank investment consultants) who were asked to confirm or eliminate the factors they consider relevant or unrelated to private savings investments from a number of registered assets. Following a discussion with local bankers, the list of key players was limited to a total of four major categories, each of which was subdivided into sub-criteria. These categories are:

i. Characteristics of potential investors: includes all the characteristics of the potential investor, such as gender, age, education, marital status and familiarity with technology.

ii. Financial condition of potential investors: refers to the profession or profession of the investor, possession of his assets and annual income and, finally, the provision for future personal or family income.

iii. The type of investor: includes his investment experience, the time of investment, the psychological reaction in periods of negative fluctuations, and his tolerance to losses during a recession.

iv. The type of investment: refers to the purpose of the investment, the level of yield fluctuations, the risk the investor is willing to take and the return time.

The hierarchical structure of the criteria levels, as well as the number of criteria at each level, are quite important in the application of AHP. For this reason, the structure of this research is relatively simple, with two-tier data ("criteria" and "secondary criteria"). The groups of selected criteria and the individual criteria for each group are presented below per pair in the form of the final questionnaire.

A questionnaire consisting of a total of 34 questions (comparisons per couples) was developed. The questionnaire just asks for pairs of comparison of the "secondary criteria" for the four major criteria categories which is the major input of the AHP analysis. It should be noted that the structure of the questionnaire was such that the respondents were asked to compare each sub criterion included in the criterion with the other sub-criteria of the criterion. Therefore, there is no comparison of all the individual criteria separately with the balances belonging to other criteria. This was done to reduce the number of questions. However, with the Expert Choice software used, gravity coefficients were calculated without such a comparison.

3.2 Field Research and Data Analysis

The purpose of the survey was to collect data that will lead to an understanding of the selection of Investment Portfolio in Banks of Greece, namely the Region of Epirus, Turkey, particularly the Mugla Region, and Italy, the Campania region. The results of the survey should be appropriate to fit into the AHP methodology. The questionnaires were processed with the ExpertChoice program.

So a questionnaire was created which asked the Bank's Investment Advisors to anonymously submit the answers. In this way, 241 responses were gathered, of which 80 concerned replies from the Banks of the Region of Epirus, 91 replies from the Mugla Region Banks and 70 replies from the Campania region.

The sample for Greece covers 80 experts from the four larger cities of Epirus, Arta, Preveza, Ioannina and Igoumenitsa. Experts work in the field of financial investment as banking in banks such as (Piraeus, National, Alpha Bank, EuroBank and Epirus Cooperative Bank).

The sample for Turkey covers 97 experts from the Mugla Region. The valid number of questionnaires included 91 after deleting invalid 6 items. Experts work in the banking financial sector (81 experts from Garanti, TEB and Akbank), a private pension (6 experts

from AVIVASA) and financial management academics (4 experts from Mugla Sitki Kocman University).

The sample for Italy covers 75 experts from the Campania Region. The valid number of questionnaires included 70 after deleting invalid 5 items. Experts work in the banking financial sector, specifically from the "Banca Popolare di Torre del Greco" (BPTG) and its 67 subsidiaries, which is a big bank group located in Campania, Italy.

The research period for all the three countries lasted from the end of 2016 until the mid of 2018.

The questions were formulated in a unified form, ensuring reliable data quantification without risking the subjective interpretation of any open answers or requiring coding for free answers. ExpertChoice is an intelligent system designed to support investment decisions. In particular, the system supports the process of portfolio synthesis and management (as we mentioned earlier).

4. Results

This Section presents the results derived by using the Expert Choice ™ software. The degree of participation of each criterion and sub-criterion, which depicts its gravity for the achievement of the objective, reveals the existing differences and ranks the decision factors.

Figures 2 and 3 present the local (L) and global (G) priorities based on our goal. Global priorities (G) are obtained for nodes by applying each node's local priority (L) and its parent's global priority (G). The global priorities for each alternative are then summed to yield overall or synthesized priorities. The preferred alternative is the one with the highest priority.

Goal: Criteria determining Portfolio Investment	LOCAL	GLOBAL
□ 1) CHARACTERISTICS OF POTENTIAL INVESTOR	**0,172**	**0,172**
□ GENDER	0,121	0,021
□ AGE	0,167	0,028
□ EDUCATION	0,289	0,050
□ MARITAL STATUS	0,228	0,039
□ FAMILIARITY WITH TECHNOLOGY	0,197	0,034
□ 2) FINANCIAL SITUATION OF POTENTIAL INVESTOR	**0,343**	**0,343**
□ PROFESSION / OCCUPATION	0,252	0,086
□ INCOME	0,300	0,104
□ POSSETION OF ASSETS	0,220	0,075
□ FORECAST FOR FUTURE INCOME (INDIVIDUAL OR FAMILY)	0,228	0,078
□ 3) TYPE OF INVESTOR	**0,239**	**0,239**
□ LENGTH OF TIME HOLDING INVESTMENTS	0,185	0,044
□ INVESTMENT EXPERIENCE	0,331	0,079
□ PSYCHOLOGICAL REACTION IN NEGATIVE FLUCTUATIONS	0,262	0,063
□ TOLERANCE OF LOSSES DURING 1 YEAR IN RECESSION PERIOD	0,223	0,053
□ 4) TYPE OF INVESTMENT	**0,246**	**0,246**
□ AIM OF INVESTMENT	0,221	0,055
□ LEVEL OF RETURN AND FLUCTUATION	0,271	0,066
□ RISK LEVEL	0,266	0,065
□ TIME OF INVESTMENT RETURN	0,242	0,060

Figure 2. Tree view of Criteria and Sub-Criteria for Investors from Greece

Goal: Criteria determining Portfolio Investment	LOCAL	GLOBAL
□ 1) CHARACTERISTICS OF POTENTIAL INVESTOR	**0,073**	**0,073**
□ GENDER	0,044	0,003
□ AGE	0,114	0,008
□ EDUCATION	0,319	0,023
□ MARITAL STATUS	0,086	0,006
□ FAMILIARITY WITH TECHNOLOGY	0,437	0,032
□ 2) FINANCIAL SITUATION OF POTENTIAL INVESTOR	**0,413**	**0,413**
□ PROFESSION / OCCUPATION	0,044	0,018
□ INCOME	0,177	0,073
□ POSSETION OF ASSETS	0,252	0,104
□ FORECAST FOR FUTURE INCOME (INDIVIDUAL OR FAMILY)	0,527	0,218
□ 3) TYPE OF INVESTOR	**0,223**	**0,223**
□ LENGTH OF TIME HOLDING INVESTMENTS	0,061	0,014
□ INVESTMENT EXPERIENCE	0,190	0,042
□ PSYCHOLOGICAL REACTION IN NEGATIVE FLUCTUATIONS	0,373	0,083
□ TOLERANCE OF LOSSES DURING 1 YEAR IN RECESSION PERIOD	0,376	0,084
□ 4) TYPE OF INVESTMENT	**0,290**	**0,290**
□ AIM OF INVESTMENT	0,056	0,016
□ LEVEL OF RETURN AND FLUCTUATION	0,228	0,066
□ RISK LEVEL	0,302	0,088
□ TIME OF INVESTMENT RETURN	0,414	0,120

Figure 3. Tree view of Criteria and Sub-Criteria for Investors from Turkey

Goal: Criteria determining Portfolio Investment	L	G
□ 1) CHARACTERISTICS OF POTENTIAL INVESTOR	**0,294**	**0,294**
□ GENDER	0,040	0,012
□ AGE	0,296	0,087
□ EDUCATION	0,426	0,125
□ MARITAL STATUS	0,055	0,016
□ FAMILIARITY WITH TECHNOLOGY	0,183	0,054
□ 2) FINANCIAL SITUATION OF POTENTIAL INVESTOR	**0,356**	**0,356**
□ PROFESSION / OCCUPATION	0,346	0,123
□ INCOME	0,369	0,132
□ POSSETION OF ASSETS	0,186	0,066
□ FORECAST FOR FUTURE INCOME (INDIVIDUAL OR FAMILY)	0,099	0,035
□ 3) TYPE OF INVESTOR	**0,185**	**0,185**
□ LENGTH OF TIME HOLDING INVESTMENTS	0,142	0,026
□ INVESTMENT EXPERIENCE	0,449	0,083
□ PSYCHOLOGICAL REACTION IN NEGATIVE FLUCTUATIONS	0,231	0,043
□ TOLERANCE OF LOSSES DURING 1 YEAR IN RECESSION PERIOD	0,178	0,033
□ 4) TYPE OF INVESTMENT	**0,165**	**0,165**
□ AIM OF INVESTMENT	0,157	0,026
□ LEVEL OF RETURN AND FLUCTUATION	0,205	0,034
□ RISK LEVEL	0,419	0,069
□ TIME OF INVESTMENT RETURN	0,219	0,036

Figure 4. Tree view of Criteria and Sub-Criteria for Investors from Italy

The ranking of factors and their significance presented in Table 1 is also illustrated in Figure 5. As described, "financial situation of potential investors" is the major drive for portfolio selection. Based on the results of the data analysis, "financial situation of potential investors," is indeed a very important factor, ranked as the top criterion for Greek Investors (GIs), Turkish Investors (TIs) and Italian Investors (IIs).

Table 1. The Criteria of Investors from Greece, Turkey and Italy and their ranking by significance

Criteria	Greece		Turkey		Italy		Differences	
	Rank	Significance	Rank	Significance	Rank	Significance		
FINANCIAL SITUATION OF POTENTIAL INVESTOR	1	0,343	1	0,413	1	0,356	G-T	-0,070
							G-I	-0,013
							T-I	+0,057
TYPE OF INVESTMENT	2	0,246	2	0,290	4	0,165	G-T	-0,044
							G-I	+0,081
							T-I	+0,125
TYPE OF INVESTOR	3	0,239	3	0,223	3	0,185	G-T	+0,016
							G-I	+0,054
							T-I	+0,038
CHARACTERISTICS OF POTENTIAL INVESTOR	4	0,172	4	0,073	2	0,294	G-T	+0,099
							G-I	-0,122
							T-I	-0,221

It is remarkable that the ranking of all four criteria is the same for both Greek and Turkish investors. We noticed a diversification though in the evaluation of the Italian investors. Specifically, the difference concerns the criteria "type of investment", which ranks 4th, and "characteristics of potential investor", which ranks in 2nd place. "Financial situation of potential investors," is the most significant of all criteria for the three categories of investors, but we notice a difference in the evaluation among them. The TIs attributed higher significance (0,413) which the highest, followed by the IIs evaluation of 0,356 and then by the GIs with 0,343 (see Table 1).

The "type of investment" is evaluated as the second most significant for TIs (0.290) and for GIs (0.246), while it ranks last for IIs (0,165). The "type of investor" ranks 3nd in significance for the three categories of investors, specifically with 0.239 for GIs, 0.223 for Tis and 0,185 for IIs. The "characteristics of potential investors," receive 4th place, with 0.172 for GIs and 0.073 for TIs, but it has been evaluated much higher by the IIs, 0,294, as it is considered the 2nd most significant criterion for them.

Regarding the differences in significance among the criteria, the results (gravities) from the AHP analysis clearly demonstrates that the "characteristics of potential investors," depicts the greatest difference in significance (0.221) for the IIs compared to that of the TIs, (illustrated

in Figure 4). The significance of the "type of investment" shows the second highest difference between the TIs and the IIs, with 0.125 higher gravity for the Turkish investors. The "characteristics of potential investors," give the third highest difference of significance (0,122), which occurs between the IIs and the GIs. In the same criterion we find also the fourth highest difference, and this is between the GIs aver the TIs. The type of investment" shows the fifth higher difference in significance for the GIs, by 0.081 to the IIs. Finally, "financial situation of potential investors," displays the least difference in significance for the GIs over IIs (0.013).

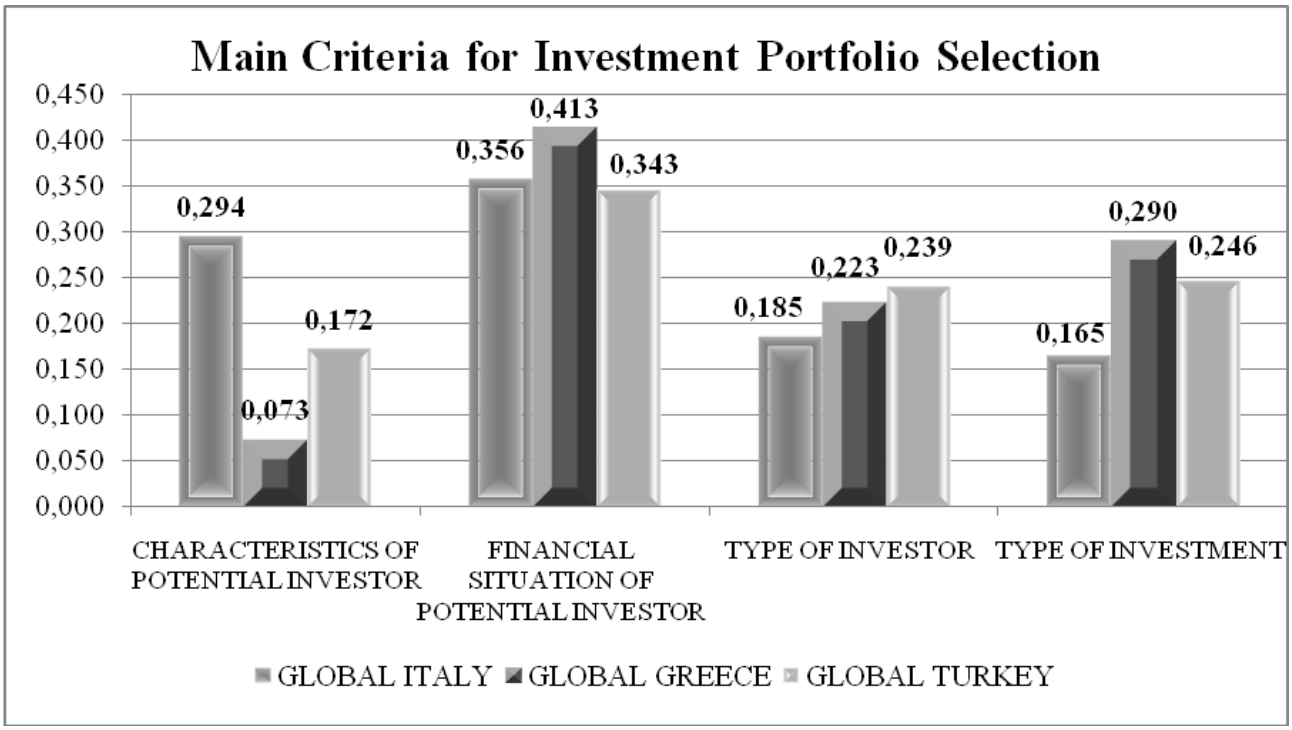

Figure 5. Criteria differences between Greek, Turkish and Italian investors

Table 2. The total of Sub-Criteria of Investors from Greece, Turkey and Italy and their ranking by significance

Criteria	**Greece**		**Turkeys**		**Italy**			
	Rank	Significance	Rank	Significance	Rank	Significance	Differences	
INCOME	1	0,104	7	0,073	1	0,132	G-T	+0,031
							G-I	-0,028
							T-I	-0,059
PROFESSION / OCCUPATION	2	0,086	12	0,018	3	0,123	G-T	+0,068
							G-I	-0,037
							T-I	-0,105
INVESTMENT EXPERIENCE	3	0,079	9	0,042	5	0,083	G-T	+0,037
							G-I	-0,004

							T-I	-0,041
FORECAST FOR FUTURE INCOME (INDIVIDUAL OR FAMILY)	4	0,078	1	0,218	11	0,035	G-T	-0,140
							G-I	+0,043
							T-I	+0,183
POSSESSION OF ASSETS	5	0,075	3	0,104	7	0,066	G-T	-0,029
							G-I	+0,009
							T-I	+0,038
LEVEL OF RETURN AND FLUCTUATION	6	0,066	8	0,066	12	0,034	G-T	0
							G-I	+0,032
							T-I	+0,032
RISK LEVEL	7	0,065	4	0,088	6	0,069	G-T	-0,023
							G-I	-0,004
							T-I	+0,019
PSYCHOLOGICAL REACTION IN NEGATIVE FLUCTUATIONS	8	0,063	6	0,083	9	0,043	G-T	-0,020
							G-I	+0,020
							T-I	+0,040
TIME OF INVESTMENT RETURN	9	0,060	2	0,120	10	0,036	G-T	-0,060
							G-I	+0,024
							T-I	+0,084
AIM OF INVESTMENT	10	0,055	13	0,016	14	0,026	G-T	+0,039
							G-I	+0,029
							T-I	-0,010
TOLERANCE OF LOSSES DURING 1 YEAR IN RECESSION PERIOD	11	0,053	5	0,084	13	0,033	G-T	-0,031
							G-I	+0,020
							T-I	+0,051
EDUCATION	12	0,050	11	0,023	2	0,125	G-T	+0,027
							G-I	-0,075
							T-I	-0,102
LENGTH OF TIME HOLDING INVESTMENTS	13	0,044	14	0,014	15	0,026	G-T	+0,030
							G-I	+0,018
							T-I	-0,012
MARITAL STATUS	14	0,039	16	0,006	16	0,016	G-T	+0,033
							G-I	+0,023
							T-I	-0,010
FAMILIARITY WITH TECHNOLOGY	15	0,034	10	0,032	8	0,054	G-T	+0,002
							G-I	-0,020
							T-I	-0,022
AGE	16	0,028	15	0,008	4	0,087	G-T	+0,020
							G-I	-0,059
							T-I	-0,079
GENDER	17	0,021	17	0,003	17	0,012	G-T	+0,018
							G-I	+0,009
							T-I	-0,009

The synthesis with respect to our goal for the GIs, TIs and the IIs was also calculated by the Expert Choice™ software and is shown in Figure 6. Note that synthesis is the process of weighting and combining priorities throughout the model to yield the final result after judgments have been made.

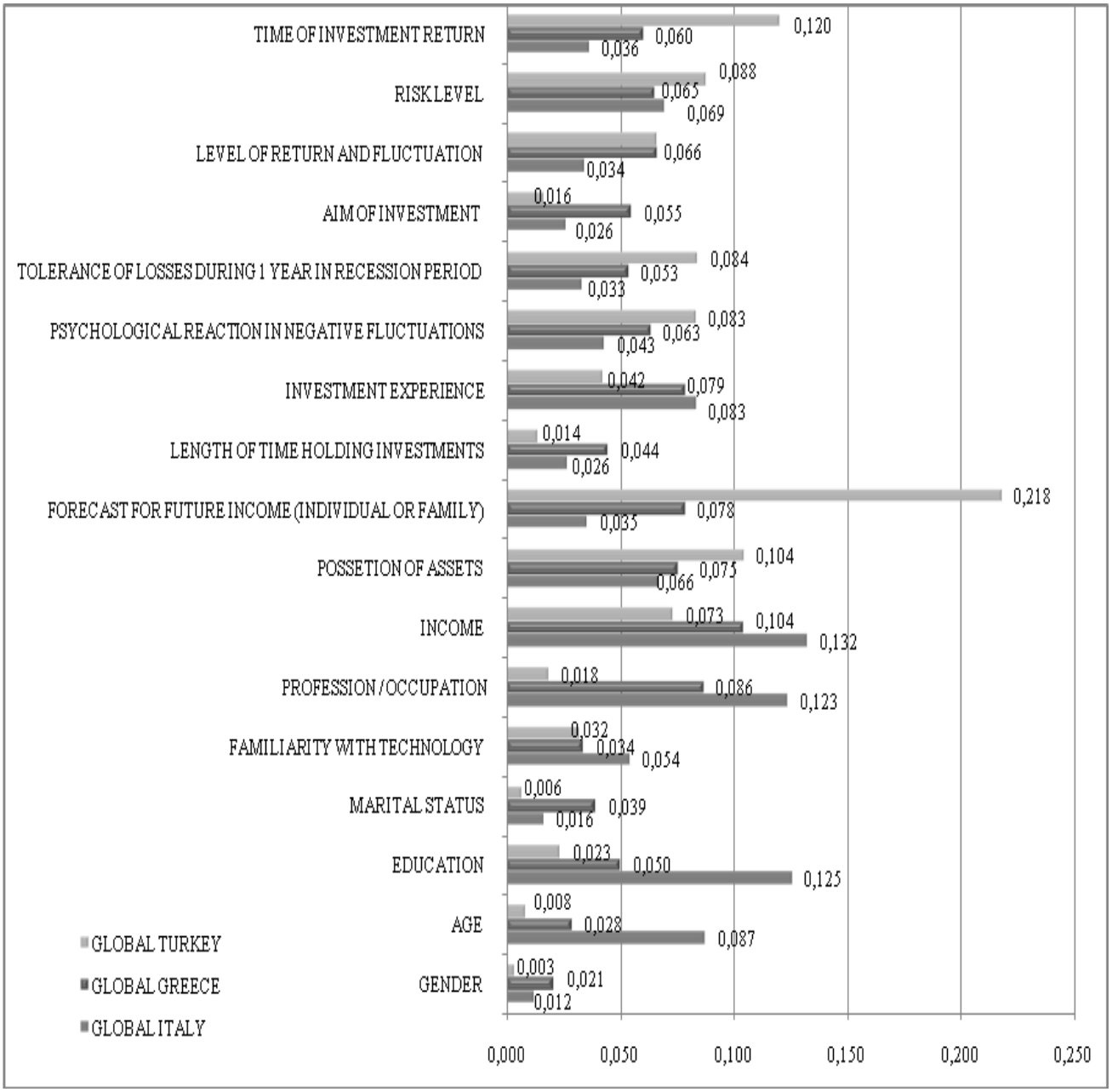

Figure 6. Sub-Criteria Differences between Investors from Greece, Turkey and Italy

The significance differences of the sub-criteria between the GIs and the TIs are illustrated in Figure 6. For comparison purposes, we selected the five most and the five least significant sub-criteria to present the difference in their evaluation between GIs, TIs and IIs.

The five most significant sub-criteria for GIs ranked by gravity are “income” (0.104), “profession/occupation” (0.086), “investment experience” (0.079), “forecast for future income” (0.078), and “possession of assets” (0.075). “Respectively for the TIs are “forecast

for future income" (0.218), "time of investment return" (0.120), "possession of assets" (0.104), "risk level" (0.088), and "tolerance of losses during 1 year in recession period" (0.084). The IIs have judged as the five most significant the sub-criteria: "income" (0,132), "education" (0,125), "profession/occupation" (0,123), "age" (0,087), and "investment experience" (0,083).

The five least significant sub-criteria for GIs are "gender" (0.021), "age" (0.028, "familiarity with technology" (0.034), "marital status" (0.039) and "length of time holding investments" (0.044). For the TIs, the five least significant sub-criteria are "gender" (0.003), "marital status" (0.006), "age" (0.008, "length of time holding investments" (0.014) and "aim of investment" (+0.016). Respectively, for the IIs, the five least significant sub-criteria are: "gender" (0,012), "marital status" (0,016), "length of time holding investments" (0,026), "aim of investment" (0,026), and "tolerance of losses during 1 year in recession period" (0,033).

According to significance comparison (see Table 2 and Figure 5), the highest difference in absolute value, is located in the "forecast for future income" with 0.183 higher significance for IIs compared to TIs. In the same sub-criteria we find the second highest difference (0,140) and this occurs between the TIs aver the GIs. Such difference is expected due to the ranking differences of the specific sub-criterion, which is 1st for TIs, 4th for GIs and 11th for the IIs. The third highest difference occurred in the "profession/occupation" sub-criteria with 0.105 higher significance for IIs compared to TIs. The difference is justified by the ranking gap of the sub-criterion, which is 2rd for GIs, 3rd for IIs and 12th for TIs.

The fourth highest difference in absolute value concerns the "education" which is evaluated 0.102 higher for IIs compared to TIs. The ranking difference is also very high, 2rd for IIs, 11th for TIs and 12th for GIs. The fifth higher difference in significance appears in "time of investment return", which is 0.084 higher for TIs to IIs. The ranking difference is also very high, 2nd for the TIs, 9th for GIs and 10th for IIs.

The five smallest differences in significance are depicted in the sub-criteria which are evaluated with not or the least differences in evaluation between the three groups of investors and these are: "familiarity with technology" (0.002) between GIs and TIs, "risk level" (0,004) between GIs and IIs, "investment experience" (0,004) between GIs and IIs, "gender" (0,009) between GIs and IIs, and the same difference between TIs and IIs.

5. Conclusion, Limitation and Research Implications

This paper dealt with the complex issue of portfolio investment and, specifically, the factors that determine the selection of financial investment products.

An investment portfolio choice is characterized by high complexity. According to the literature, the success of a portfolio is determined by the expected return and the investment risk, while the suitable combination of different investment products decreases the unsystematic risk. The decisions involved in conducting an investment portfolio synthesis are affected and determined by a number of different factors and how those factors are related to the specific investor.

In this study we try to explain cross-country differences on portfolio selection determinants. For this purpose, we use a sample of investors from two countries with different structure and characteristics.

To this end, the methodology presented in Section 3 was applied. At the beginning, a set of key factors was identified based on the literature review and discussions with experts (Diakomihalis and Stefanidaki, 2012; Diakomihals et all 2017). Next the questionnaire was developed. The responses were analyzed with specialized software using the Analytic Hierarchy Process (AHP) to determine the key decision factors regarding an optimal portfolio investment.

We find that there exist differences in the determinants of portfolio selection in the two countries. The differences are judged by the ranking and significance of the portfolio selection criteria and sub-criteria.

We find that for the groups of investors:

i. Regarding the criteria, the analysis revealed that the factor of “financial situation of potential investors” is the top drive for portfolio investment for the three groups of investors.

ii. The ranking of the significance of all Criteria is the same for the GIs and TIs, while the IIs judge in 2nd place “characteristics of potential investor” and “type of investment” in 4th place.

iii. Between the five most important sub-criteria there is not even one common for the three categories of investors. We can find though common, high evaluated sub-criteria between two groups. Namely, GIs and IIs have three sub-criteria among the five most significant, which are: “income”, “profession/occupation” and “investment experience”. GIs have two sub-criteria among the five more significant, common with TIs. These are "possession of assets" and "forecast for future income" are major determinants of portfolio selection for both investors groups.

It is peculiar that we could not find any common sub-criterion to be among the five most significant for TIs and IIs.

iv. Between the five least important sub-criteria three of them are common for the three types of investors. Specifically, “gender”, “marital status” and “length of time holding investments”. There are though common least significant sub-criteria between two groups of investors. Specifically, “age” in one the least five important sub-criteria for GIs and TIs, and “aim of investment” is among the five leat important sub-criteria for TIs and IIs.

The main differences between the three types of investors are summarized in the following:

i. The highest difference of significance was found for the criterion “characteristics of potential investor” with almost 4 times higher significance for Italian Investors vs the Turkish investors.

ii. The sub-criterion "forecast for future income" shoes the highest difference of significance, which is more than six times high for Turkish Investors vs the Italian Investors.

iii. “Profession/occupation” is the sub-criteria with the highest difference, almost five times, for Greek investors against the Turkish Investors.

iv. "Forecast for future income" shows the highest difference of significance, which is almost three times higher for Turkish Investors vs the Greek Investors.

The high significance of the sub-criterion "forecast for future income" for Turkish investors, the “time of investment return” in connection with relatively low level of “length of time holding investment” shows the emphasis on sort time investments. Also, relatively low rank for Turkish investors of the sub-criteria “income”, "profession-occupation" and “investment experience” shows the anticipation for rather quick earnings instead of the concentration of portfolio investment in some professional groups and for long time holding. The high difference for Turkish investors, which concerns the sub-criterion "psychological reaction in negative fluctuations" confirms the influence of the country’s characteristics on the portfolio selection decisions. It should be connected with relatively high gravity for Turkish investors in “tolerance of losses during the period of the first year of investment”. The nearly zero difference in sub-criterion "familiarity with technology" supports two main characteristics: on one side, the development of investment advisors sector and the development of technological instruments, for these two investor groups.

Comparing the GIs with the IIs as for their attitude and investing culture we realize that “education” ranks 2nd, with two and half times higher significance for IIs over the GIs, “age” is also evaluated almost three times more significant for IIs over the GIs, while “forecast for future income” ranks 4th for GIs vs 11th for IIs, with more than double significance. We may assume that the IIs are more mature, more professional and more patient investors, compared to GIs.

The differences between the TIs and the IIs are similar with the above, concluding that the TIs are more close to the GIs regarding their attitude and investing culture than to IIs.

We conclude based on the results that differences in the ranking and significance are related to country-specific rather than investor factors. This suggestion may shift the emphasis of future researches from investor to country specific factors. The significance of those factors has implications for the decision makers in banking sector. Although the factors influencing optimal portfolio selection have been studied extensively, to our best knowledge this is one of the few studies which tries to investigate similarities and differences between different countries with economic and other differences, such as Greece, a member of the Eurozone facing a long time of economic crisis, Turkey, a candidate EU member, with unforeseeable political system which influences the economic environment as well, and finally, Italy, a highly developed country which belongs to G20.

Among the limitations that may have affected the results of our study is the cross-sectional nature of the study. It is however very difficult, to find a large sample of investors and to have them participate in a longitudinal study. Finally, we did not include in our analysis some other personality variables which play an important role in portfolio selection. Future studies may address these issues and provide greater insight in the task of explaining the criteria of

optimal portfolio selection. Another one, exciting challenge for future research is to include investors from more countries, both from EU as well as non EU members. Finally, a research agenda of mixed methods would be useful.

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