

INVESTMENT PREFERENCE AND BEHAVIOURS OF METU STUDENTS

FINAL PROJECT REPORT SUBMITTED
IN FULFILMENT OF THE REQUIREMENTS FOR COURSE
STAT 365
DEPARTMENT OF STATISTICS OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

AHMET METİN

FATİH DALLI

January 2024

ABSTRACT

The study aims to examine the spending habits and preferences of Middle East Technical University (METU) students. The study examines how risk appetite, income-expenditure patterns, sources of financial information and demographic traits affect investment decisions. The study highlights how a student's gender, family background and spending habits affect the investments they make. Additionally, historical trends and the impact of initial public offerings on investment decisions are examined. The findings have ramifications for financial institutions, lawmakers and educators in addition to offering crucial information on the dynamics of college students' investing decision-making processes. This analysis provides a thorough analysis of the factors impacting the investment decisions made by METU students with ramifications for both the academic community and the financial industry.

1. Introduction

It takes a sophisticated understanding of university students' spending patterns and investment decisions to navigate the world of their financial options. This study focuses on the challenging styles that shape the economic behaviours of students at Middle East Technical University (METU), a vibrant educational institution with a diverse student body.

The dataset at the heart of this observation, which includes a wide range of observations, acts as a rich tapestry that captures the spirit of the financial options available to METU college students. These observations capture important demographic characteristics such as age, gender, college and department. They also include important aspects like the tendency to take risks, the dynamics of earnings and expenses and the availability of financial data.

Our main objective is to monitor the variables affecting METU students' financing choices and offer analyses with practical consequences for academics and other interested parties. A series of research questions that probe the many facets of financing behaviour are part of this investigation. Every question adds a different dimension to the overall story, ranging from the influence of gender and academic settings on spending patterns to the interaction between the impulse to take risks and prioritise investing decisions.

Methodologically, our method imparts a comprehensive study of the problem of numbers by combining quantitative analysis with qualitative considerations. This introduction establishes the framework for the next parts by providing a high level overview of the larger backdrop, the importance of the research subject and the methods used to delve deeply into the specifics of METU students' financial options. As we explore the following areas, the study aims to shed light on the dynamics of financial decision-making in an academic setting, offering significant contributions to the academic community and literature.

1.1. Data description

The dataset comprises information about Middle East Technical University (METU) students, encompassing 717 records and 13 attributes. These attributes cover diverse aspects such as academic details, demographic information, financial behaviors and investment preferences.

Attributes

Faculty: Categorical variable denoting the academic faculty to which the student belongs.

Department: Categorical variable indicating the specific department within the faculty.

Age Group: Numeric variable representing the age group of the students.

Year: Numerical variable signifying the number of years a student has been in university.

Gender: Categorical variable specifying the gender of the students.

Participation: Boolean variable indicating whether a student participated in the study.

IPO Participation Year: Numeric variable denoting the year of participation in the study's Initial Public Offering (IPO) phase.

Information Sources: Categorical variable presenting a list of sources from which students gather financial information.

Expense Management: Numeric variable representing the level of expense management on a scale.

Priority Investment Choice: Categorical variable revealing the priority investment choices of the students.

Income-Expense Balance: Categorical variable describing the balance between income and expenses.

Investor in the Family: Boolean variable indicating whether there is an investor in the student's family.

Risk Appetite: Numeric variable reflecting the risk appetite of the students.

Data Collection

The data were collected during the period from 29th December to 16th January. The collection methodology involved visiting locations with a high student concentration and conducting one-to-one voluntary surveys. Students willingly participated in the surveys, providing valuable insights into their financial behaviors and investment preferences.

1.2. Research questions

1.2.1. Do academic year of a student and investment preferences vary among students' indifferent academic years?

This question explores potential variations in departments and investment preferences based on the academic class of METU students.

1.2.2. How does the academic year of a student relate to their income-expense balance?

This question investigates the relationship between academic year and the income-expense balance of METU students.

1.2.3. What role does gender play in shaping METU students' priority investment choices?

Focusing on gender, this question delves into whether there are gender-specific influences on priority investment choices among METU students.

1.2.4. Are there gender-based differences in risk appetite and first choice of investment?

This question extends the gender exploration to risk appetite and investor behavior, examining potential differences in financial decision-making.

1.2.5. What are the primary sources of financial information for METU students, and how do they vary across departments?

This question investigates the sources of financial information for students and explores potential variations across different academic departments.

1.2.6. How do METU students manage their expenses, and are there trends based on their study year or age group?

Exploring expense management, this question seeks to understand how METU students handle their expenses and whether trends can be attributed to study year or age group.

1.2.7. How does risk appetite differ among students in various faculties and age groups?

This question examines the variation in risk appetite across different academic faculties and age groups.

1.2.8. Is there a correlation between risk appetite and priority investment choices?

This question focuses on the interplay between risk appetite and priority investment choices, investigating whether the willingness to take risks aligns with specific investment preferences among METU students.

1.2.9. Is it important for students to participate in public offerings if their families are involved in public offerings?

This question focuses on the effect of family members who invests in IPO's to students' IPO involvement.

1.2.10. Is there a significant correlation between the level of expense management and the risk appetite among individuals?

This question focuses on the relation between expense management and risk appetite.

1.3. Aim of the study

The goal of this study is to examine Middle East Technical University (METU) students' investing options and behaviours in-depth. Our objective is to clarify the problematic links between several demographic aspects, financial qualities, and financing decisions made by METU college students through the analysis of a dataset of 717 observations. In particular, we want to look at how students' financing decisions are influenced by factors including family history, age, gender, and educational level. Additionally, the study aims to investigate how the scholars' financing behaviours are impacted by threat appetite, economic information assets, and fee control. By exploring these aspects, the study hopes to give a comprehensive grasp of the factors influencing METU students' investment preferences, providing insightful information to financial organisations, decision-makers in government, and educators.

2. Literature Review

Students at universities traverse a difficult financial landscape that combines minimal experience, a wide range of risk preferences, and intricate decision-making processes. This student population demonstrates a remarkable heterogeneity in risk tolerance, influenced by individual traits like gender, financial knowledge, and future career aspirations, despite being frequently characterised by conservative investment choices due to a lack of extensive financial literacy (Chen & Volpe, 2002). (Grable & Lytton, 1998). Students use a similarly wide range of information sources, from more established networks such as friends and family to the increasingly popular internet, all of which have differing degrees of efficacy and dependability (Claessens et al., 2015; Strebulaev & Vasconcelos, 2017). Due to the prevalence of cognitive biases like overconfidence and loss aversion, this interaction of factors further complicates students' financial decision-making and may result in less than ideal outcomes (Barberis & Shleifer, 2003).

Notwithstanding these obstacles, there remains a great deal of room for effective action. Studies have shown the noteworthy influence of financial education initiatives in augmenting comprehension, refining decision-making abilities, and eventually cultivating students' financial welfare (Lusardi & Mitchell, 2007; Jumpstart Coalition for Personal Financial Literacy, 2018). But resources, curricular integration, and teacher preparation are among areas where current programmes frequently fall short, calling for a customised strategy to overcome these issues (OECD, 2017). Future study has to go beyond descriptive studies and concentrate on developing and assessing creative intervention techniques that address the unique requirements and environments of varied student populations. Through the application of rigorous methodologies, contextual nuances, and knowledge gaps, research can shed light on the complexities of university students' financial behaviour and provide them with the tools necessary to make informed decisions and navigate the constantly changing financial landscape.

3. Results and Findings

3.1. Exploratory Data Analysis

The 717-observation dataset of Middle East Technical University (METU) undergraduate students provides invaluable insights into their financial choices and behaviours. College students often have an average age of 21.18, with 21 serving as the core age of the school. Notably, the dataset reveals diverse financial activities, including participation in Initial Public Offerings (IPOs), expense management practices and risk appetite assessments.

[Numeric Summary]

The average year of 2022.42 for IPO participation indicates a recent trend in student financial engagement. The majority of students charge 6.48 for expense management, demonstrating a moderate level of financial responsibility. The implied danger appetite score is 5.17, which shows that the different college students in the sample had a fair distribution of risk attitudes.

[Numeric Summary]

The well-known categorization breakdown demonstrates the substantial participation from the Faculty of Engineering, with the most popular department being civil engineering. The gender distribution of college students indicates a balanced gender composition of 297 women and

420 men. College students' financial decisions are influenced by a multitude of information sources, including social media, the internet and friends. **[Categorical Summary]**

According to 202 college students, foreign currencies are the most preferred priority investing choice. Moreover, a sizeable portion of college students reviews an identical balance among earnings and prices, totaling 310 out of 717. **[Categorical Summary]**

Interesting relationships are found through correlation analysis. Age Group well-known for having poor connections with both IPO Participation Year and Expense Management, indicating possible patterns in financial behaviour associated with aging. **[Graph 12, Graph 13]**

Positive connections between participation and risk appetite and expense management are suggested, suggesting that more engaged participants may also have stronger appetites for risk and more pro-active cost control **[Graph 5]**.

The inverse relationship between Risk Appetite and IPO Participation Year shows how people's perceptions of danger have changed throughout time. **[Graph 6]**

The IPO involvement of college students is sensitively correlated with the presence of an investor in the family, suggesting that family dynamics may influence financial decisions. All things considered, this EDA provides a thorough picture of the financial environment of METU students, setting the stage for further studies and visualisations to uncover subtle patterns in the dataset.

3.2. Confirmatory Data Analysis

3.2.1. Do academic year of a student and investment preferences vary among students' indifferent academic years?

The analysis conducted on the 'Priority Investment Choice' among students in different academic years revealed a lack of significant variation. Utilizing analysis of variance (ANOVA), the F-statistic was computed at 0.0545, accompanied by a p-value of 0.9832. The F-statistic, a measure of differences in group means, was notably low, suggesting minimal dissimilarity among the academic years. Furthermore, the associated p-value, representing the probability of obtaining such results under the null hypothesis, was remarkably high. Consequently, the evidence does not support the rejection of the null hypothesis, signifying that the 'Priority Investment Choice' means across academic years are not statistically different. The ANOVA table further illustrates this outcome, with degrees of freedom indicating the number of groups minus one (5) and residuals (711), mean squares reflecting variance, and the F-statistic reinforcing the absence of significant differences. In summary, the statistical analysis underscores the uniformity in 'Priority Investment Choice' across different academic years among METU students. **[Anova Table 1]**

3.2.2. How does the academic year of a student relate to their income-expense balance?

The analysis of variance (ANOVA) for the relationship between the academic year of a student and their income-expense balance yielded a F-statistic of 0.4005 with a corresponding p-value of 0.7527. The F-statistic tests the null hypothesis that the means of the income-expense balance across different academic years are equal. The high p-value suggests that there is no significant difference in income-expense balance among academic years. Therefore, we do not have sufficient evidence to reject the null hypothesis, indicating that academic year is not a significant factor influencing the income-expense balance of METU

students. The results are summarized in the ANOVA table, where the mean square, degrees of freedom and p-values are presented for the 'Year' variable and the residuals. **[Anova Table 2]**

3.2.3. What role does gender play in shaping METU students' priority investment choices?

The hypothesis that gender influences METU students' priority investment choices was tested using a chi-square statistic, revealing a significant association ($\chi^2 = 65.45$, $p < 0.001$) between gender and priority investment preferences. This finding implies that gender plays a substantial role in shaping the investment decisions of METU students. Specifically, the chi-square test highlighted that males and females exhibit distinct preferences in their priority investment choices. These results underscore the importance of considering gender-specific factors in understanding and addressing the financial behaviors of METU students, providing valuable insights for tailored financial education programs or interventions. **[Graph 16]**

3.2.4. Are there gender-based differences in risk appetite?

T-test for Risk Appetite:

A two-sample t-test was conducted to assess whether there are gender-based differences in risk appetite among METU students. The results revealed a statistically significant difference in risk appetite between male and female students (T -statistic = 6.88, $p < 0.001$). The low p-value suggests strong evidence against the null hypothesis, indicating that gender plays a significant role in shaping students' risk appetite. **[Graph 14]**

3.2.5. What are the primary sources of financial information for METU students, and how do they vary across department?

The Chi-square test was conducted to assess the association between Information Sources and Departments among METU students. The test revealed a Chi-square statistic of 85.91 with a corresponding p-value of approximately 1.0. In statistical hypothesis testing, a p-value greater than the conventional significance level (e.g., 0.05) suggests that there is insufficient evidence to reject the null hypothesis. Therefore, in this analysis, the p-value exceeding 0.05 indicates that there is no significant association between the Information Sources chosen by students and the academic Departments they belong to.

3.2.6. How do METU students manage their expenses, and are there trends based on their study year or age group?

The Kruskal-Wallis tests were conducted to explore potential variations in Expense Management among METU students concerning their study years and age groups. For the Expense Management across study years, the H-statistic was found to be 6.94, with a corresponding p-value of 0.23. Similarly, for Expense Management across age groups, the H-statistic was 8.90, and the associated p-value was 0.45. Interpreting the results, the p-values for both tests exceeded the significance level of 0.05. Consequently, we do not have sufficient evidence to reject the null hypotheses. Therefore, it is plausible that there may not be a statistically significant difference in Expense Management across various study years or age groups among METU students. **[Graph 12, Graph 17]**

3.2.7. How does risk appetite differ among students in various faculties and age groups?

The Mann-Whitney U tests revealed statistically significant differences in risk appetite among METU students across various faculties. Notably, the risk appetite of students in the Faculty of Economic and Administrative Sciences differed significantly from that of students in the Faculty of Architecture ($U = 2589.5$, $p = 0.0379$), Faculty of Arts and Sciences ($U = 10210.0$, $p = 0.0313$), and Faculty of Education ($U = 2640.5$, $p = 0.0213$). Additionally, significant differences in risk appetite were found between specific faculties, such as Faculty of Architecture vs. Faculty of Engineering ($U = 5848.5$, $p = 0.0418$) and Faculty of Arts and Sciences vs. Faculty of Engineering ($U = 26404.5$, $p = 0.0163$). Age-wise, students aged 21.0 exhibited distinct risk preferences compared to those aged 27.0 ($U = 1268.0$, $p = 0.0496$). These findings underscore the nuanced influences of academic background and age on students' attitudes toward financial risks at METU. **[Graph 18, Graph 19]**

3.2.8. Is there a correlation between risk appetite and priority investment choices?

The Pearson Correlation Coefficient between 'Risk Appetite' and 'Priority Investment Choice' is approximately 0.051, with a corresponding p-value of 0.170. The correlation coefficient quantifies the strength and direction of the linear relationship between two variables, ranging from -1 (perfect negative correlation) to 1 (perfect positive correlation), with 0 indicating no linear correlation. In this case, the coefficient is close to 0, suggesting a very weak positive correlation. The p-value, which assesses the statistical significance of the correlation, is 0.170. With a commonly used significance level of 0.05, the p-value exceeds this threshold. Therefore, we fail to reject the null hypothesis, indicating that there is no statistically significant correlation between 'Risk Appetite' and 'Priority Investment Choice'. **[Graph 20]**

3.2.9. Is it important for students to participate in public offerings if their families are involved in investment?

A statistically significant relationship between college students' involvement in public offerings and having someone in their family who invests was found using Pearson's Chi-squared check with Yates' continuity correction ($X^2 = 5.7294$, $df = 1$, $p\text{-value}=0.01668$). The null hypothesis is rejected, demonstrating a strong correlation and emphasising the impact of family involvement on college students' decisions to engage in similar financial activities.

This link highlights the critical role that familial background plays in influencing the financial behaviours of college students. The results offer practical guidance to educators, legislators, and financial institutions, indicating that customised interventions that capitalise on well-established family effects might play a significant role in encouraging responsible financial decision-making among college students. **[Graph 21]**

3.3. Modelling

3.3.1. Is there a significant correlation between the level of expense management and the risk appetite among individuals?

The multilinear regression analysis was conducted to explore the relationship between Risk Appetite and two predictor variables, namely Expense Management and Age Group. The

overall model was statistically significant, as indicated by the F-statistic ($F = 13.08, p < 0.001$), suggesting that the regression equation was able to explain a significant proportion of the variance in Risk Appetite. However, the R-squared value of 0.035 indicates that only a small portion of the variability in Risk Appetite can be explained by the included predictors.

Breaking down the individual predictors, Expense Management was found to have a statistically significant positive effect on Risk Appetite ($coef = 0.2079, p < 0.001$), suggesting that higher levels of expense management are associated with increased risk appetite. On the other hand, Age Group did not reach statistical significance ($p = 0.153$), implying that there is no strong evidence to suggest a linear relationship between age group and risk appetite in this model. The results should be interpreted cautiously, considering the limited explanatory power of the model and the potential influence of other unaccounted factors.

4. Discussions and Conclusion

In conclusion, the comprehensive analysis of various financial aspects among METU students has shed light on the nuanced dynamics of their investment preferences, risk attitudes, and financial behaviours. The findings contribute valuable insights to both academic understanding and practical considerations for educators, policymakers, and financial institutions.

Firstly, the study revealed a remarkable uniformity in 'Priority Investment Choice' across different academic years among METU students, indicating that the academic year does not significantly influence investment preferences. Similarly, no substantial variation was observed in the income-expense balance based on academic years, highlighting the stability of financial habits within the student population.

Gender emerged as a crucial factor influencing METU students' financial decisions. The distinct preferences in 'Priority Investment Choice' and significant differences in risk appetite between male and female students underscore the importance of considering gender-specific factors in financial education programs and interventions.

Moreover, the research emphasized the impact of familial background on students' financial behaviors. The correlation between family involvement in investments and students' participation in public offerings underscores the influence of family dynamics on financial decision-making among college students.

The analysis also explored the role of academic background in shaping financial behaviors. Significant differences in risk appetite were identified across various faculties and age groups, highlighting the need for tailored approaches in financial education programs that consider the diverse influences within the student body.

Furthermore, the correlation analysis between risk appetite and priority investment choices yielded a very weak positive correlation, suggesting that these two aspects may not be strongly linked among METU students. This nuanced understanding is crucial for designing targeted interventions that address specific financial attitudes and choices.

In the modeling section, the multilinear regression analysis provided insights into the relationship between expense management, age group, and risk appetite. While expense

management exhibited a positive effect on risk appetite, the model's limited explanatory power emphasizes the need for a more comprehensive exploration of factors influencing financial behaviors.

In summary, this study offers a comprehensive understanding of the financial landscape among METU students, providing actionable insights for educational institutions, policymakers, and financial service providers. The findings underscore the importance of considering multiple factors, including gender, family background, and academic influences, in developing effective strategies to enhance financial literacy and responsible financial decision-making among college students.

References

- Barberis, N., & Shleifer, A. (2003). *Finance and the biased mind*. *The Journal of Economic Perspectives*, 17(2), 105-131.
- Chen, H., & Volpe, R. P. (2002). *Investment behavior of young adults: An exploratory study*. *Financial Services Review*, 11(2), 109-122.
- Claessens, S., Jansen, S., & van Rooij, C. (2015). *Financial literacy of young adults: Evidence from the Netherlands*. *Economic Letters*, 139, 1-3.
- Grable, J. E., & Lytton, R. H. (1998). *Young adults' financial risk tolerance: Effects of gender, financial knowledge, and financial experience*. *Journal of Economic Psychology*, 19(4), 655-672.
- Jumpstart Coalition for Personal Financial Literacy. (2018). *National report on the state of financial literacy in America*. <https://www.jumpstart.org/who-we-are/partners/nefe/>
- Lusardi, A., & Mitchell, O. S. (2007). *Financial literacy and retirement saving: New evidence from the RAND HRS*. *American Economic Review*, 97(4), 806-834.
- OECD. (2017). *Financial education and the youth: 2017 survey results*. OECD Publishing.
- Strebulaev, I. A., & Vasconcelos, H. M. (2017). *Financial literacy and information sources used by young adults*. *Journal of Family and Economic Issues*, 38(3), 498-512

Appendices

[UNIQUE VALUES]

Unique values in Faculty column:

- [Faculty of Economic and Administrative Sciences, Faculty of Architecture, Faculty of Arts and Sciences, Faculty of Education, Faculty of Engineering, Graduate Schools]

Unique values in Department column:

- [Department of International Relations, Department of Architecture, Department of Psychology, Department of Foreign Language Education, Department of Petroleum and Natural Gas Engineering, Department of Mathematics and Science Education, Department of Political Science and Public Administration, Department of Biological Sciences, Department of Civil Engineering, Department of Economics, Department of Sociology, Department of Aerospace Engineering, Department of Industrial Engineering, Department of Electrical and Electronics Engineering, Department of Mechanical Engineering, Department of Business Administration, Department of Food Engineering, Department of Mathematics, Department of Physics, Department of Environmental Engineering, Department of Computer Engineering, Department of Industrial Design, Department of Geological Engineering, Department of Chemistry, Department of Computer Education and Instructional Technology, Department of City and Regional Planning, Department of Chemical Engineering, Department of Metallurgical and Materials Engineering, Department of Elementary and Early Childhood Education, Department of Mining Engineering, Department of History, Department of Statistics, Graduate School of Social Sciences]

Unique values in Age Group column:

- [24.0, 21.0, 18.0, 29.0, 30.0, 27.0, 33.0, 34.0, 50.0, 31.0]

Unique values in Year column:

- [4, 3, 2, Other, 1, Preparatory School]

Unique values in Gender column:

- [Female, Male, Other, Not prefer to say]

Unique values in Participation column:

- [False, True]

Unique values in IPO Participation Year column:

- [NaN, 2023, 2022, 2021, 2020, 2019, 2016, 2018]

Unique values in Information Sources column:

- [TV News, Internet, Friends, Other, Social Media, Books & Magazines]

Unique values in Expense Management column:

- [8, 5, 6, 2, 9, 7, 4, 10, 3, 1]

Unique values in Priority Investment Choice column:

- [Foreign Currencies, Other, Precious Metals, Stock Markets, Saving Accounts, Crypto Currencies]

Unique values in Income-Expense Balance column:

- [Income less than expenses, Equal, Income more than expenses]

Unique values in Investor in the Family column:

- [True, False]

Unique values in Risk Appetite column:

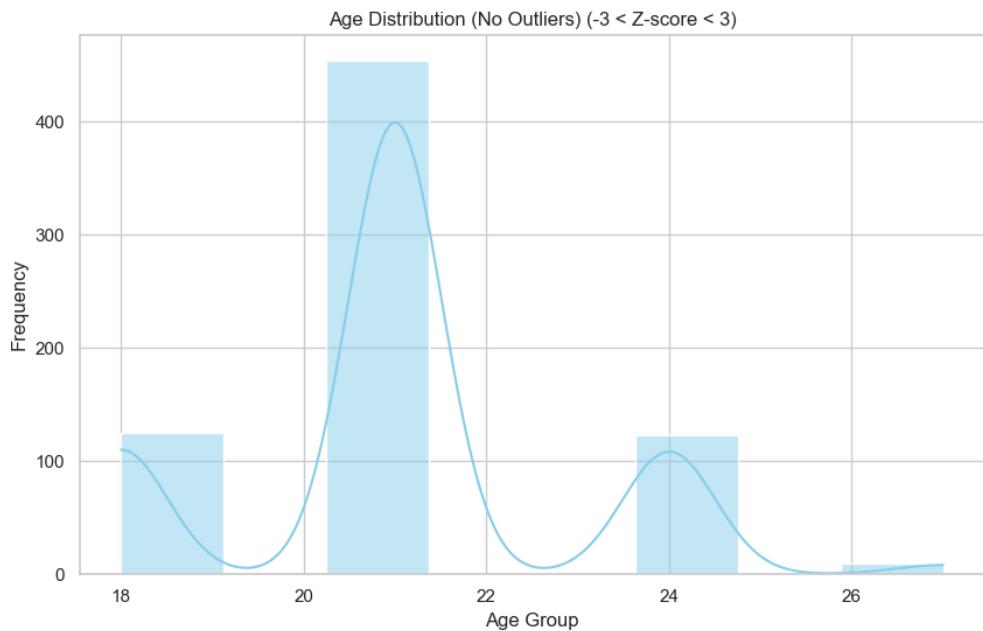
- [2, 1, 3, 6, 4, 7, 5, 9, 8, 10]

Numeric Columns Summary:										
Column	Count	Mean	Std	Min	25%	50%	75%	Max	Unique Values	
Age Group	717.0	21.179916317991633	2.3433582581305052	18.0	21.0	21.0	21.0	50.0	10	
IPO Participation Year	326.0	2022.420245398773	1.0309463619086154	2016.0	2022.0	2023.0	2023.0	2023.0	7	
Expense Management	717.0	6.475592747559275	2.0944269202854993	1.0	5.0	7.0	8.0	10.0	10	
Risk Appetite	717.0	5.165969316596931	2.3663285245730465	1.0	3.0	5.0	7.0	10.0	10	

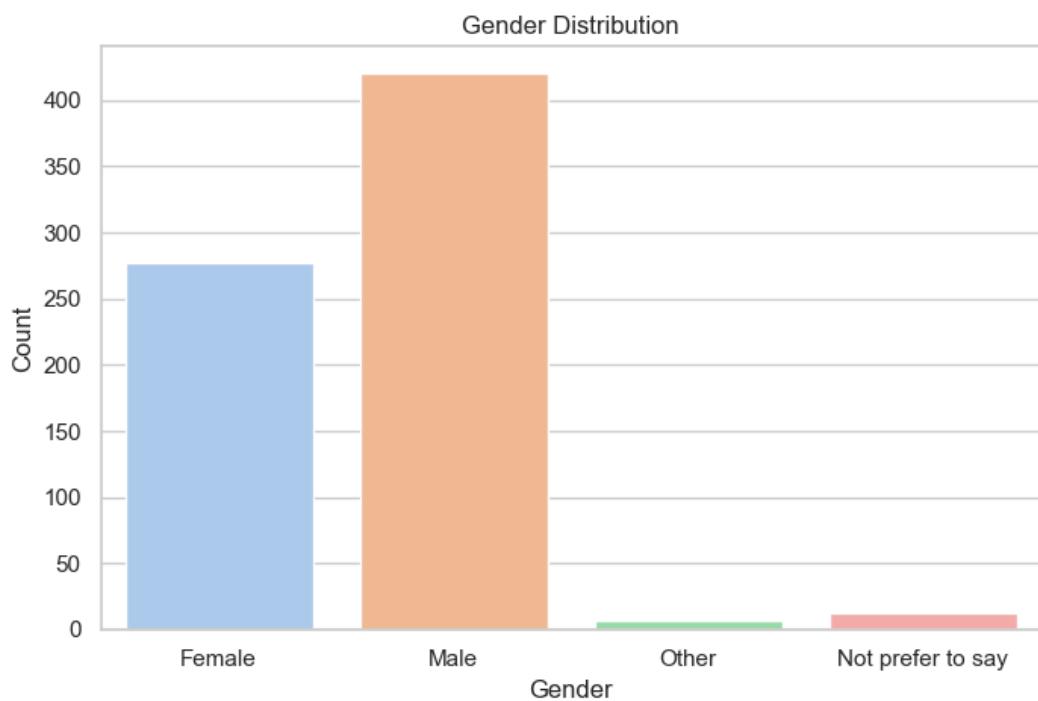
[Numeric Summary] Numeric columns summary

Categorical Columns Summary:					
Column	Count	Unique Values	Top	Frequency	
Faculty	717	6	Faculty of Engineering	363	
Department	717	33	Civil Engineering	65	
Year	717	6	1	255	
Gender	717	4	Male	420	
Information Sources	717	6	Social Media, Internet, Friends	147	
Priority Investment Choice	717	6	Foreign Currencies	202	
Income-Expense Balance	717	3	Equal	310	

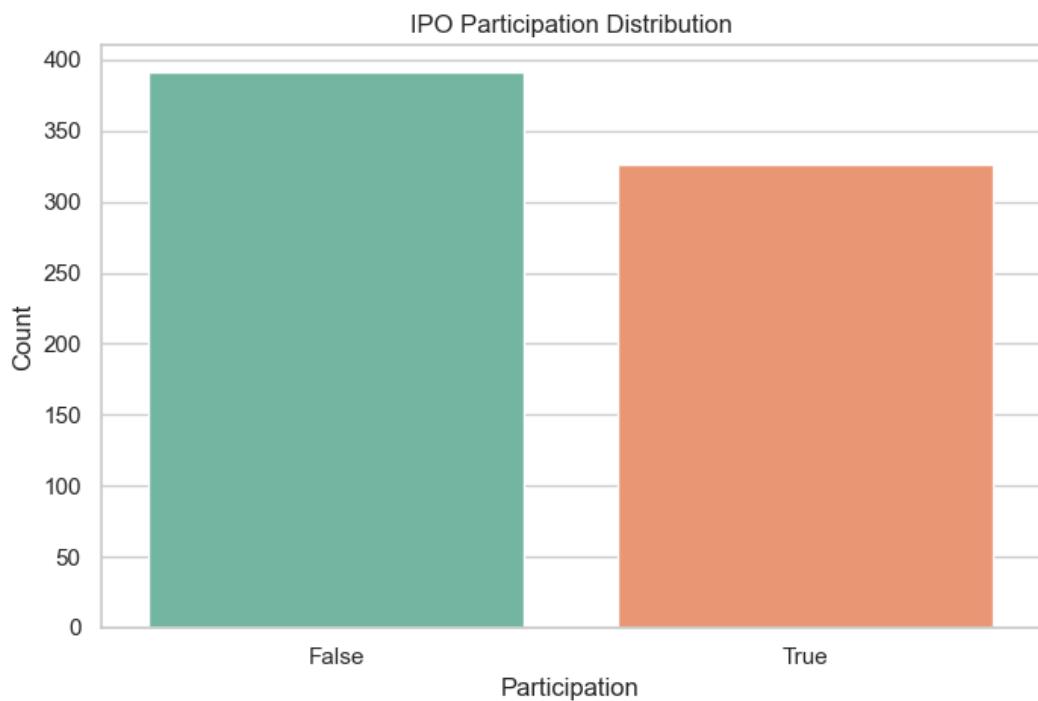
[Categorical Summary] Categorical columns summary



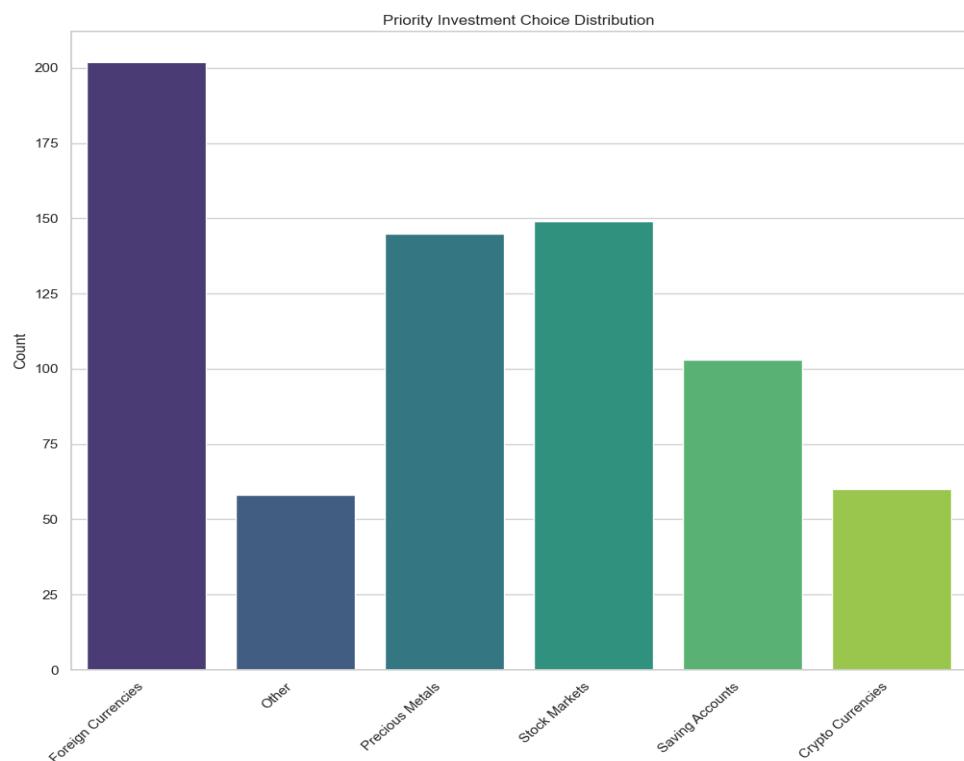
Graph 1: Age distribution of sample data with no outliers (filtered with $-3 < z \text{ score} < 3$)



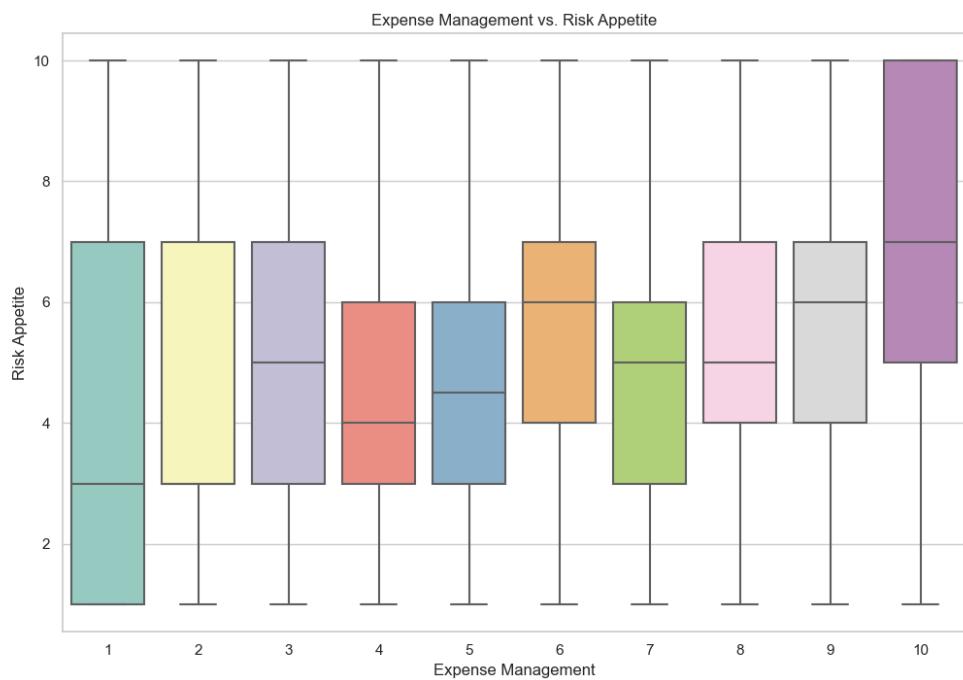
Graph 2: Gender distribution of sample data



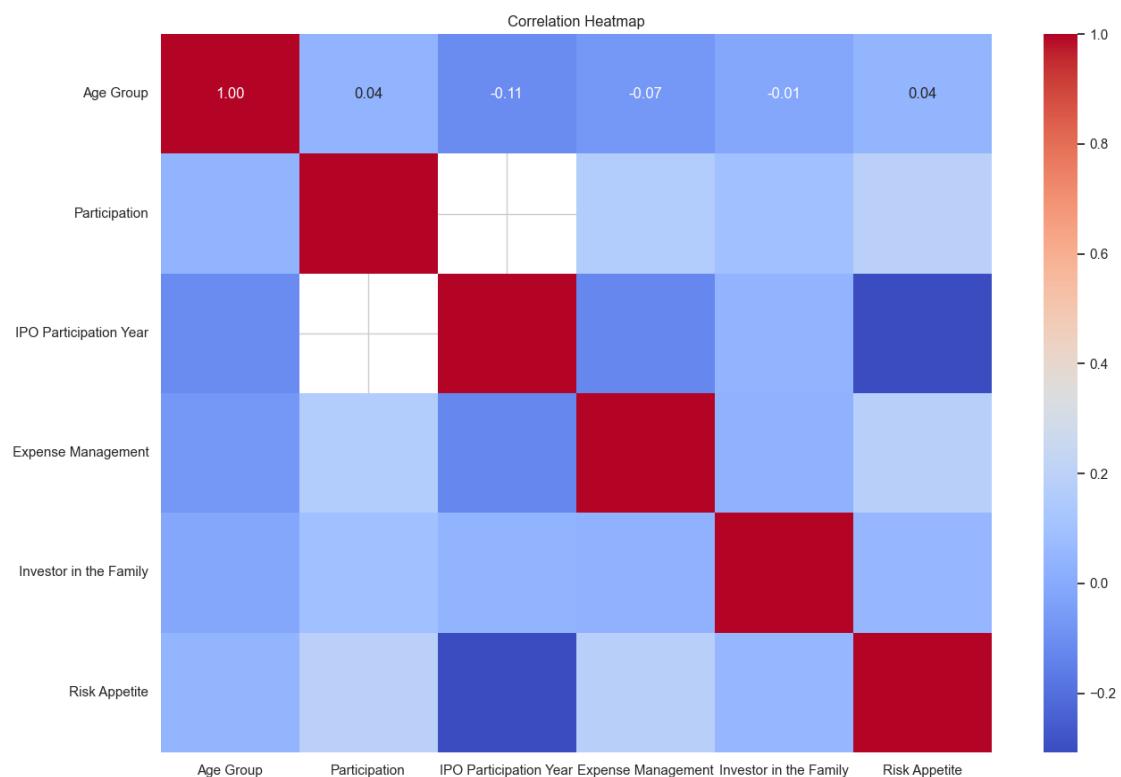
Graph 3: *IPO Participation distribution over data*



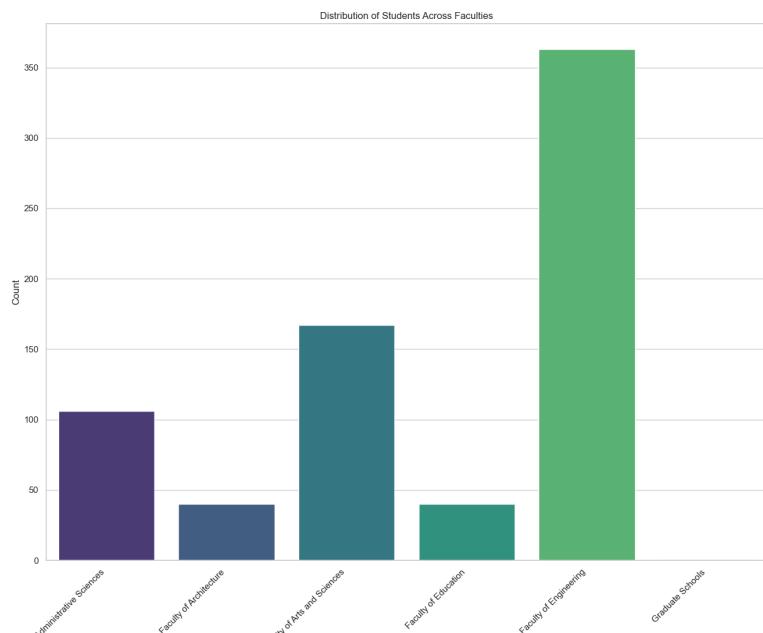
Graph 4: *Priority investment choices of sample data*



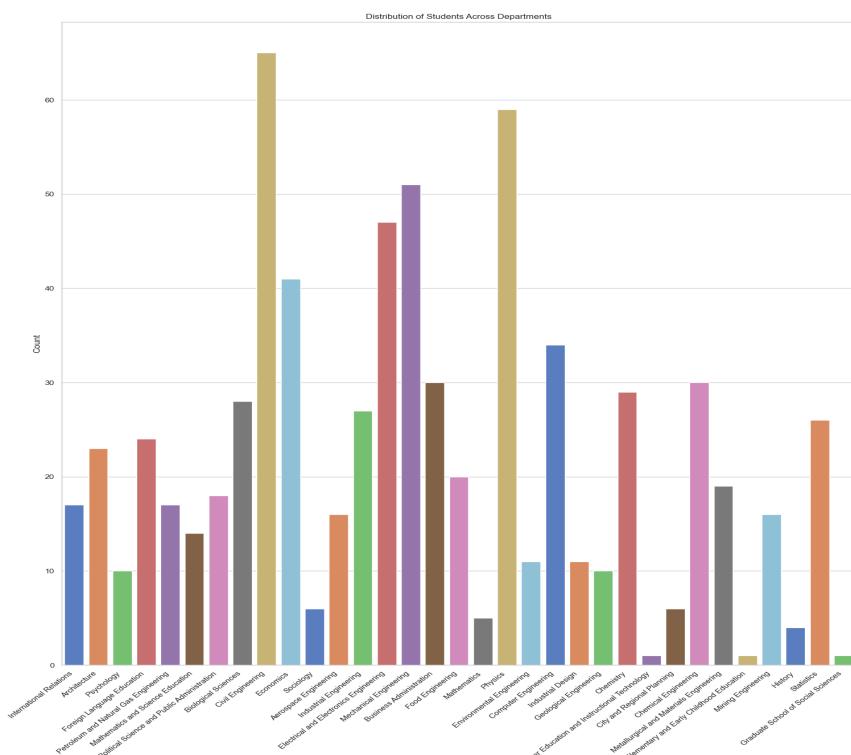
Graph 5: *Expense management vs risk appetite*



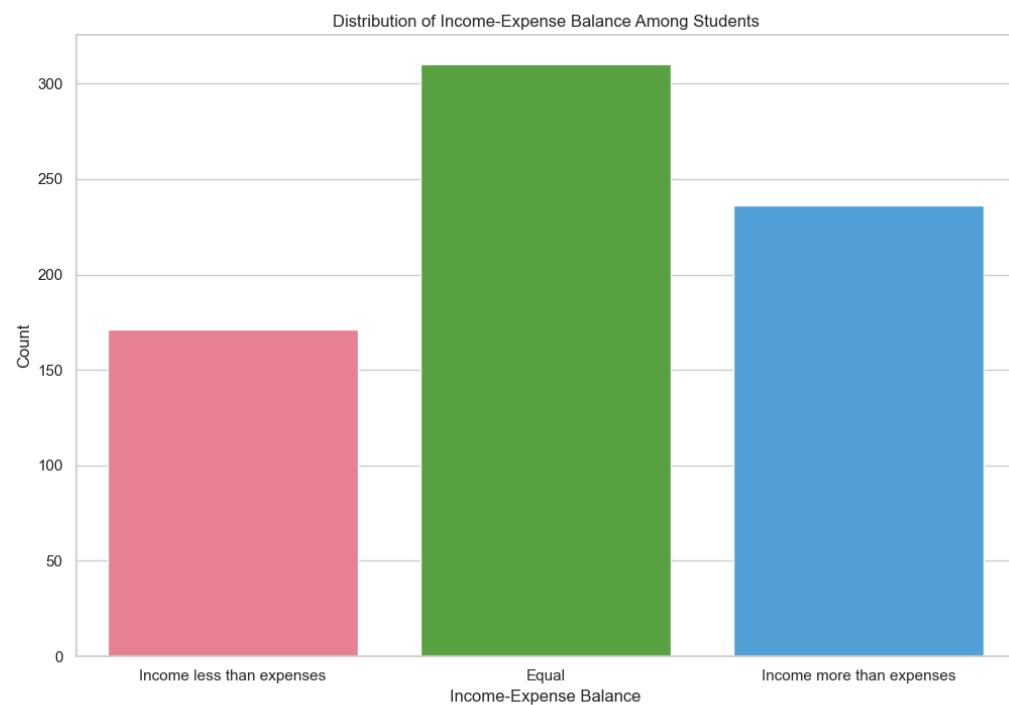
Graph 6: *Correlation matrix visualization*



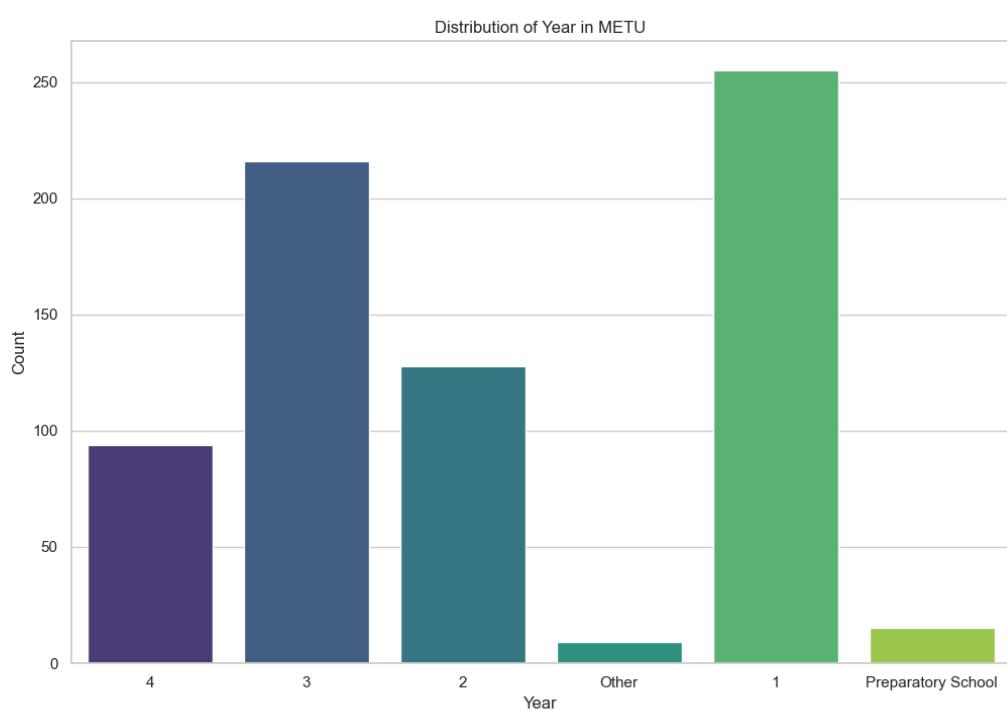
Graph 7: Distribution of students across faculties



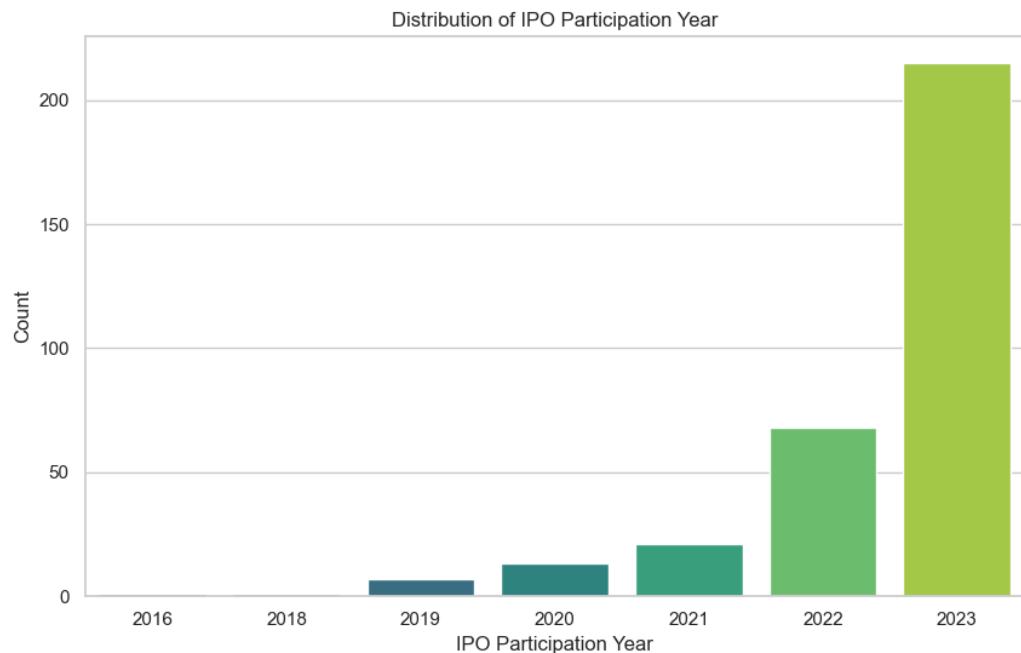
Graph 8: Distribution of students across departments



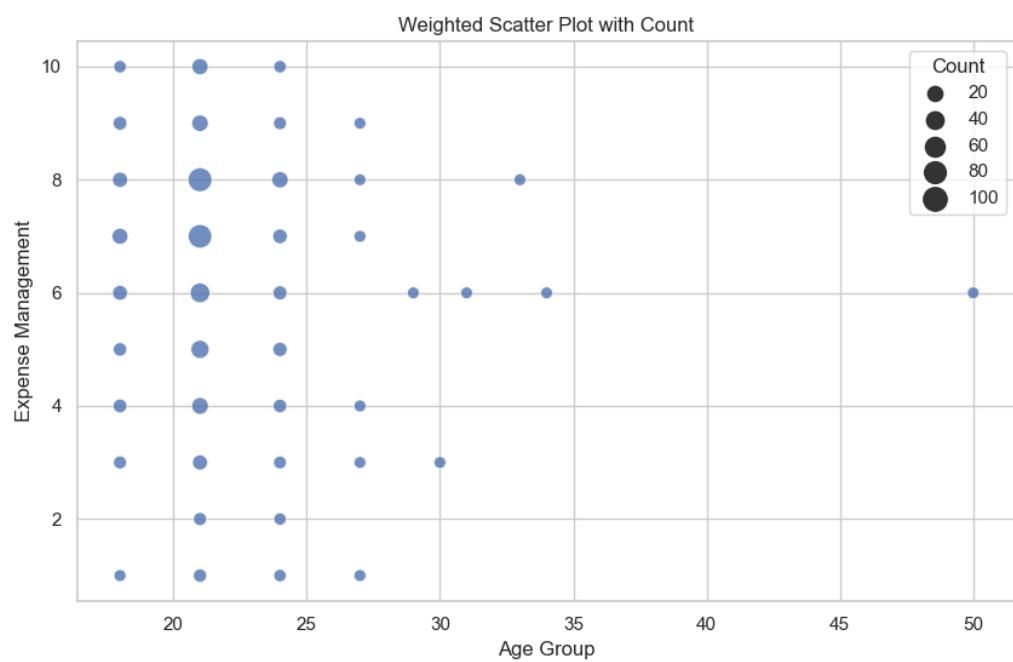
Graph 9: *Distribution of Income-Expenses balance among the students*



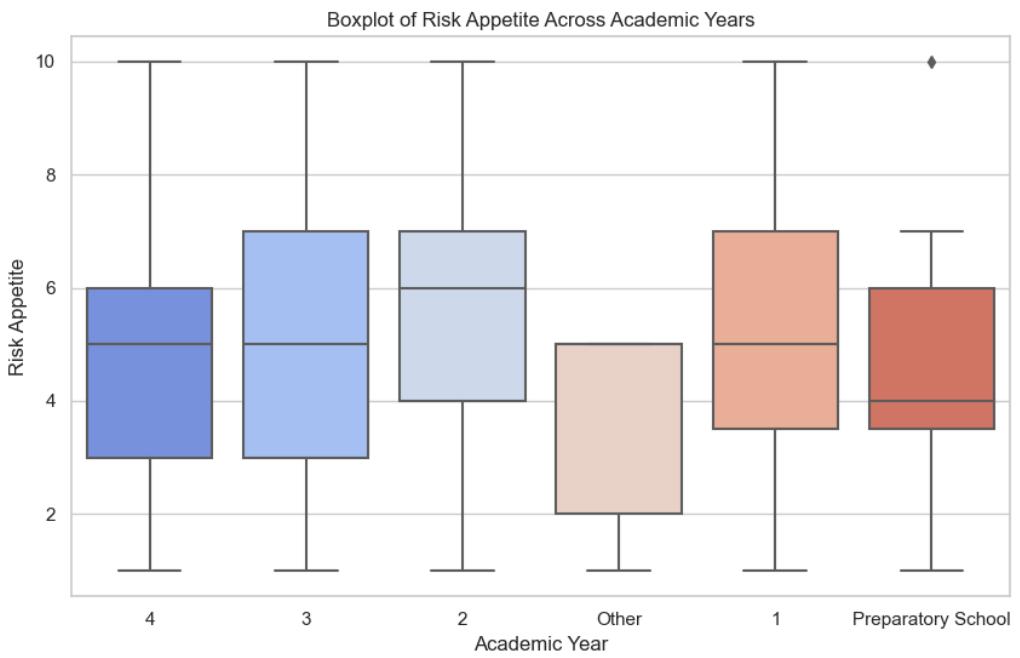
Graph 10: *Distribution of level of students in METU*



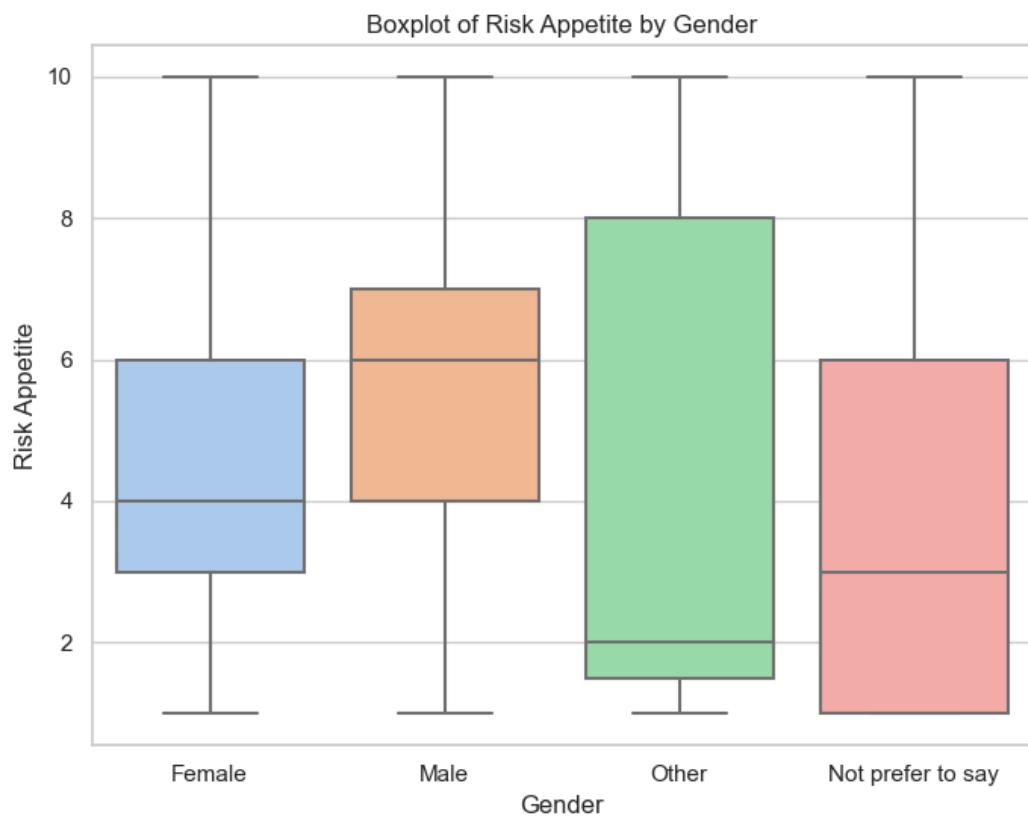
Graph 11: *Distribution of first IPO participation year*



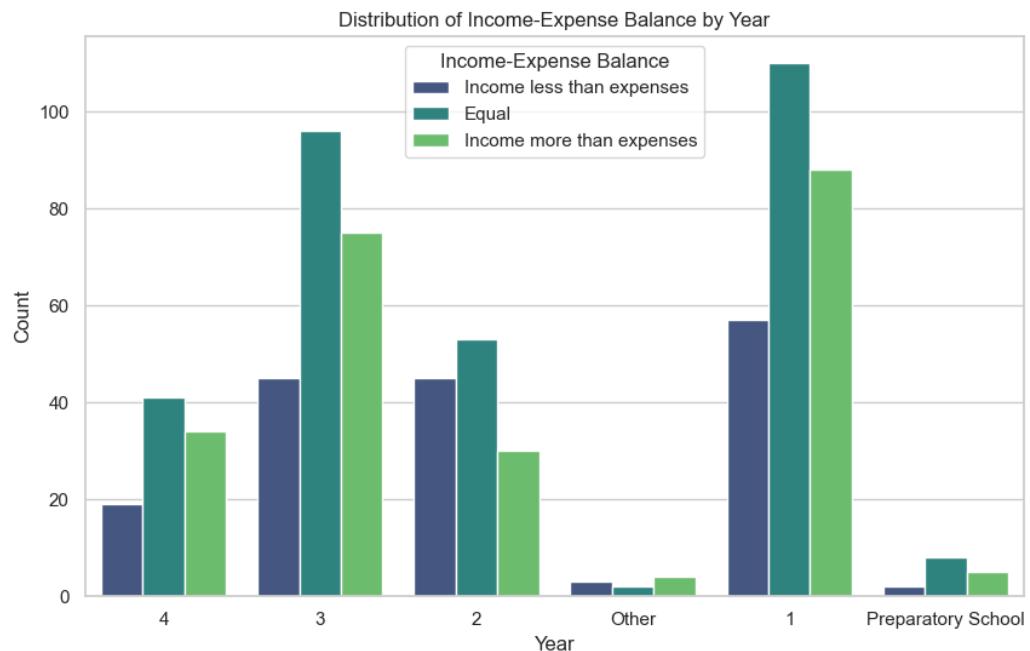
Graph 12: *Scatter plot between age and expense management*



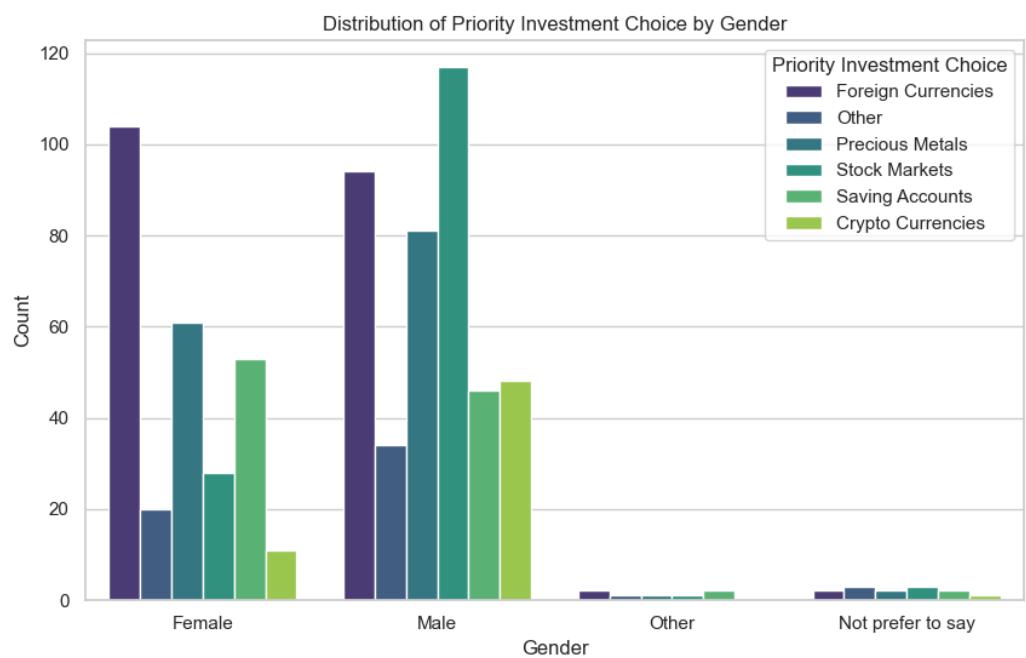
Graph 13: Boxplot of risk appetite across academic years



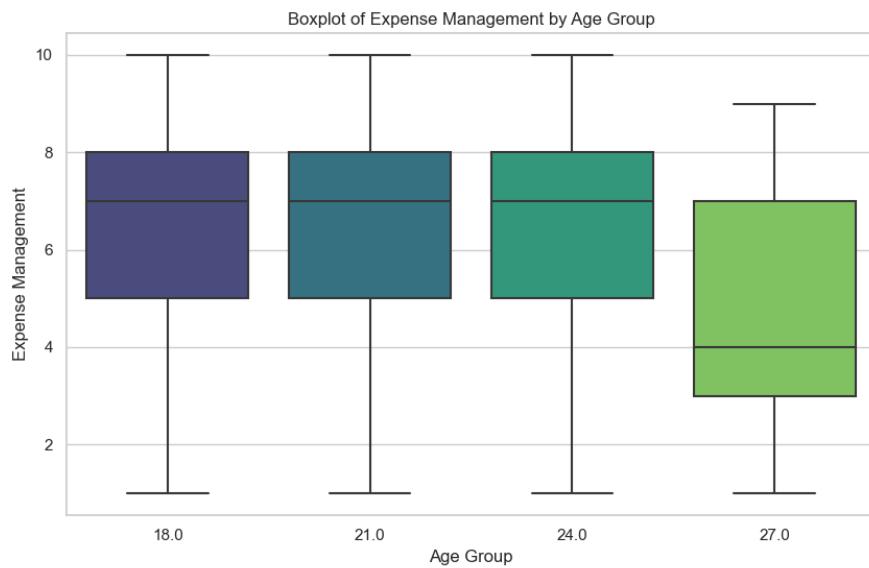
Graph 14: Boxplot of risk appetite by gender



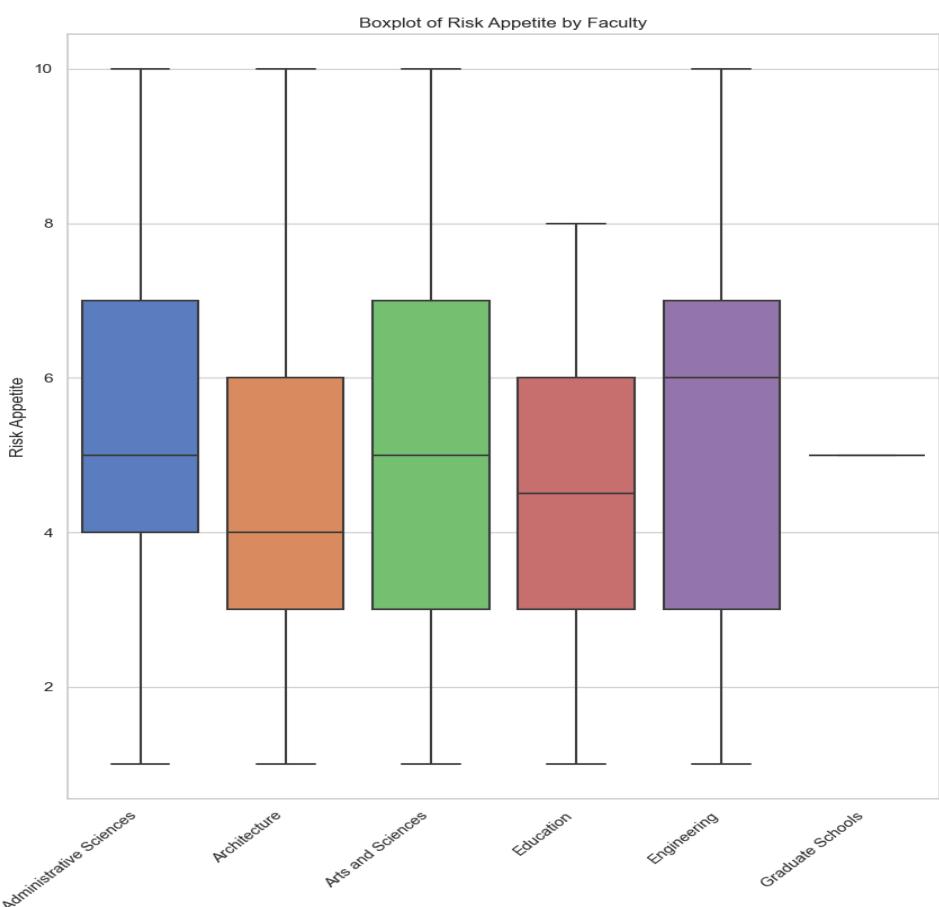
Graph 15: Distribution of Income-Expense balance by academic year



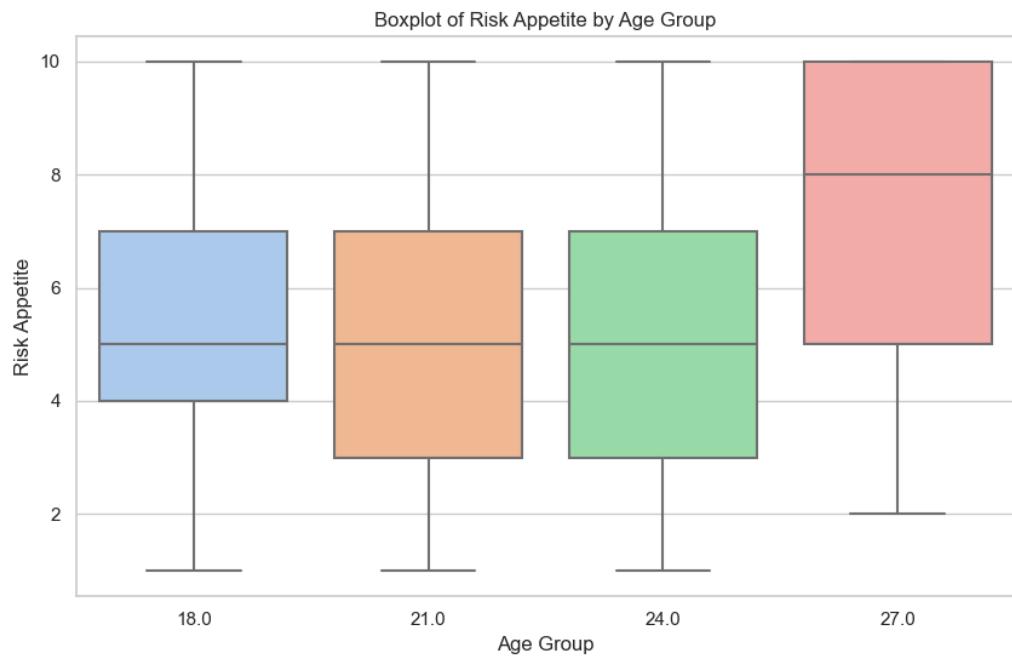
Graph 16: Distribution of priority investment choice by gender



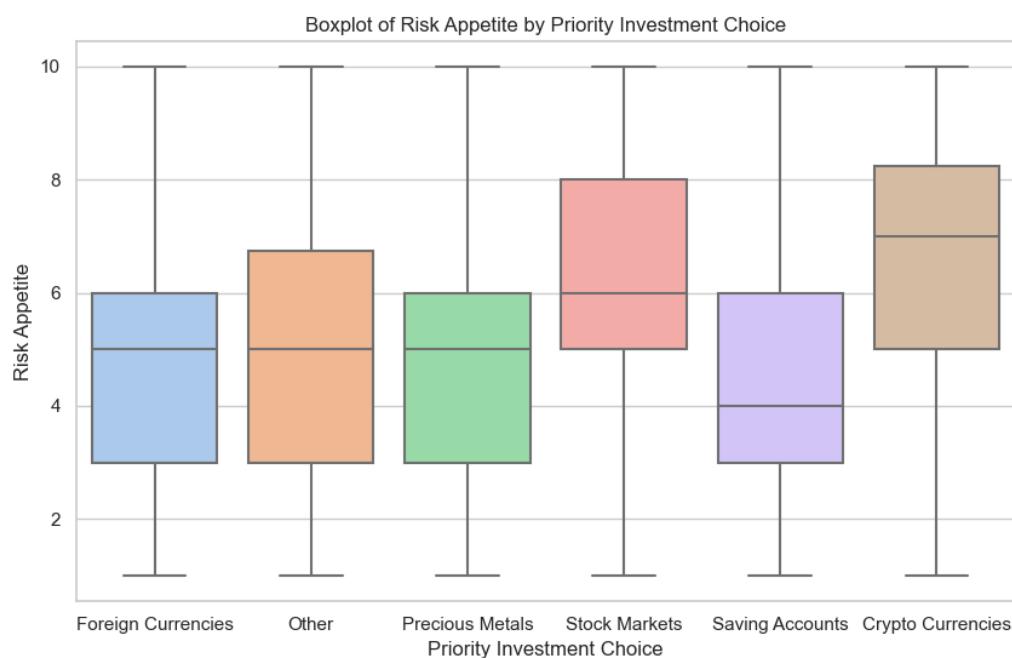
Graph 17: Boxplot of expense management by age (-3<z-score<3)



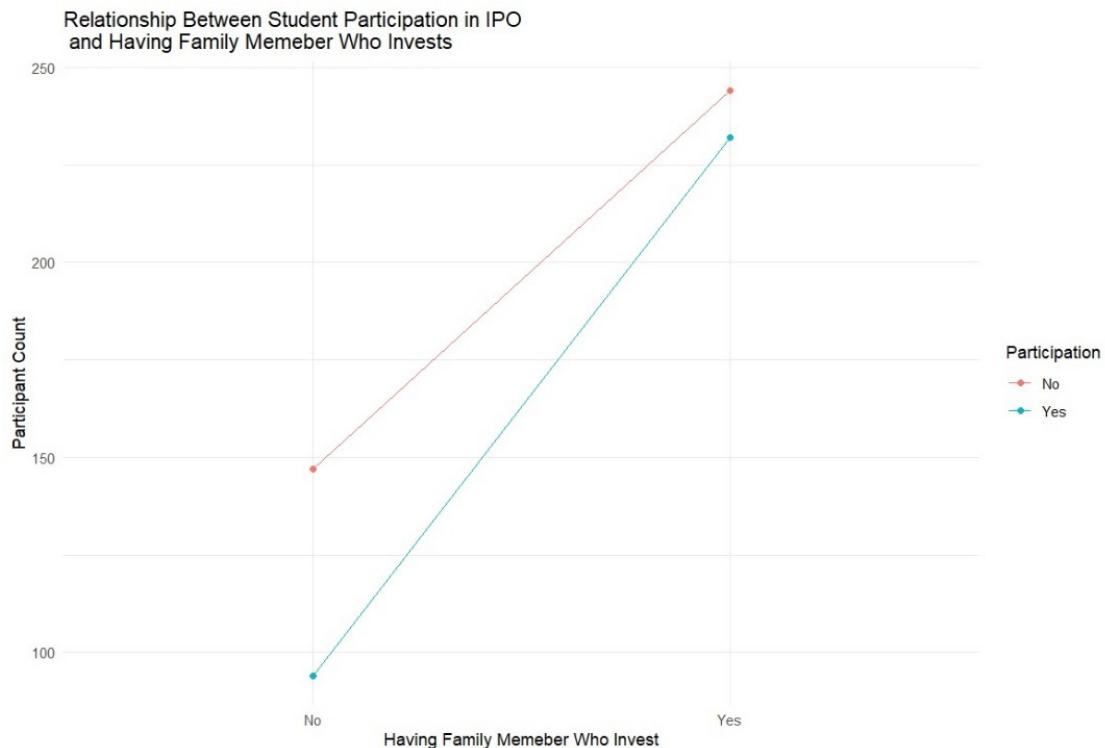
Graph 18: Boxplot of risk appetite by faculty



Graph 19: Boxplot of risk appetite by age



Graph 20: Boxplot of risk appetite by priority investment choice



Graph 21: Linear model between student participation in IPO and having family members who invests

```
F-statistic: 0.054524212826480165
p-value: 0.983229145973744
      df      sum_sq   mean_sq      F      PR(>F)
C(Year) 5.0      4.564337  0.912867  0.321402  0.90021
Residual 711.0  2019.430084  2.840267      NaN      NaN
```

Anova Table 1: ONE WAY ANOVA Table for research question 1

```
F-statistic: 0.4005120261770812
p-value: 0.7526781088539535
      df      sum_sq   mean_sq      F      PR(>F)
C(Year) 5.0      2.000861  0.400172  0.530468  0.7533
Residual 711.0  536.361761  0.754377      NaN      NaN
```

Anova Table 2: ONE WAY ANOVA Table for research question 2

OLS Regression Results						
<hr/>						
Dep. Variable:	Risk Appetite	R-squared:	0.035			
Model:	OLS	Adj. R-squared:	0.033			
Method:	Least Squares	F-statistic:	13.08			
Date:	Wed, 17 Jan 2024	Prob (F-statistic):	2.65e-06			
Time:	15:01:29	Log-Likelihood:	-1621.6			
No. Observations:	717	AIC:	3249.			
Df Residuals:	714	BIC:	3263.			
Df Model:	2					
Covariance Type:	nonrobust					
<hr/>						
	coef	std err	t	P> t	[0.025	0.975]
const	2.6928	0.854	3.152	0.002	1.015	4.370
Expense Management	0.2079	0.042	4.995	0.000	0.126	0.290
Age Group	0.0532	0.037	1.430	0.153	-0.020	0.126
<hr/>						
Omnibus:	23.885	Durbin-Watson:	1.961			
Prob(Omnibus):	0.000	Jarque-Bera (JB):	15.039			
Skew:	0.213	Prob(JB):	0.000543			
Kurtosis:	2.433	Cond. No.	219.			
<hr/>						
Notes:						
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.						
<hr/>						

Regression Table 1: Regression result table for research question 10