BEHAVIORAL FINANCE AND FINANCIAL DECISION: A CASE STUDY IN TURKEY

Mercan Hatipoglu

Eskisehir Osmangazi University,Turkey

Nurullah Uckun

Eskisehir Osmangazi University,TurkeyThe aim of this paper is to test the degree of rationality of students' invesment decision by using questionnaires. The results show that there is a positive and significant relationship between expectations about future stock invesment and increasing trend holding stock in portfolio.With respect to bond, gold and loan decision there is no significant relationship between related past financial data and future expectitation. Lastly, students haven't monitored the economic data and enough knowledge about financial instruments traded at capital markets in Turkey.

Keywords: Behavioral finance, financial decision

Introduction

Many theories developed in finance literature to explain the relationship between risk and expected return. Most callenging theories are Capital Asset Pricing Model (CAPM) and Efficient Market Hypothesis (EMH). CAPM developed by Sharpe (1964) documents that there is a linear trade off between risk and return in equilibrium. Also CAPM implies that higher expected return is associated with higher risk. According to EMH developed by Fama (1970) stock price reflects all available information quickly thus stock returns cannot be predicted based on its historical data in efficient markets. While there is extensive literature supporting these theories (Fama and Macbeth, 1973), many researchers stated that the CAPM does not work and markets are inefficient (Basu, 1977 ; Fama and French, 1992). After this critics, a new field known as behavioral finance was born. Behavioral finance attempts to explain decision-making process of investors by including the emotional factors that affects the financial choices (Ricciardi and Simon, 2000). Behavioral finance represents a framework to seek financial markets by corparating   psychology and finance. According to behavioral finance, investors are "normal," not rational so their porfolio allocation decision based upon the rules of behavioral portfolio theory, not CAPM (Statman, 2008). Kahneman and Tversky's "Prospect Theory" (1974, 1979) played an important role in the development of behavioral finance literature. Prospect theory is alternative to expected utility as a model of human behavior under risk. The roots of the theory come from psychological intuition such as adaptation, the marginal reaction to changes is decreasing and loosing is more important than winning (Stracca, 2004). Prospect theory implies that losses have more emotional impact on investors than an equivalent amount of gains. As a result behavioral finance stressed that investor intuition can be easily offended,

financial decision are similar to medical, consumer or structured other decision and rationality in financial decision is not always acceptable in real world (DeBondt et al., 2010).

The aim of the study is to examine whether students' financial decision is based on knowledge of past economic data and future expectations. The remainder of the paper is organized as follows. In Section 2, contains a review of a related literature for Turkey. In Section 3, research restrictions are summarised. Section 4, we present the data and the methodology used to analyze the rationally in financial decision. Section 5 describes empirical evidence. Section 6 presents concluding remarks.

Literature review

While there is huge literature that   testing behavioral finance theories by using various econometric methodology in the world stock markets, there are relatively few empirical investigations about validity of behavioral finance approach in Turkey. Sevil et al. (2007) show that small investors' behaviorous in Istanbul Stock Exchange (ISE) are not rational as a result of their descriptive statistics. While Barak (2008) captures the price anomalies in ISE and concludes that these anamolies stem from cognitive biases of investors, Kaderli and Demir (2008) find that cognitive biases have significant influence on Turkish stock market practitioners. Kıyılar and Acar (2009) investigate the influence of color and shapes on the credit card choice of people in Istanbul and find significant relationship   between gender and color preference. Demir et al. (2011) discuss the investors decisions whether rationally based on facts or data and conclude that media, friends and similar environmental affect the investors' decision process in ISE.

Research Restrictions

The sampling frame used for this paper is consisted of 59 students of faculty of business administration and economics who live turkey and completed the turkish economy, money and banking course. This is a prerequisite because questionnaires needs the knowledge corcerning Turkish economy and especially ISE. Questionnaires are filled by students at the date of 17.01.2012. Since the correct answer of questionnaires changes day be day it is compulsory to finished at the same day.

Data and the Methodology

This study adopted questionnaires developed by Cohen and Kudryavtsev (2012). The copy of questionnaire appears in Appendix. The data collected from 59 students studying in Turkey. The survey is consisting of three sections and totally 14 questions. First section shows the students` demographic information. In section 2, a number of recent economic and financial data related with Turkish economy asked to participants. In final section we asked to participants to constract a portfolio and examined whether this portfolio was characteristic of a rational investor or not. Also rational investment decision process depends on the basis of expectations, past experience, and knowledge. 25 men and 34 women with a mean age of 21.11 years took part in research. Figure 1 shows the portfolio preferences of our sample investors.
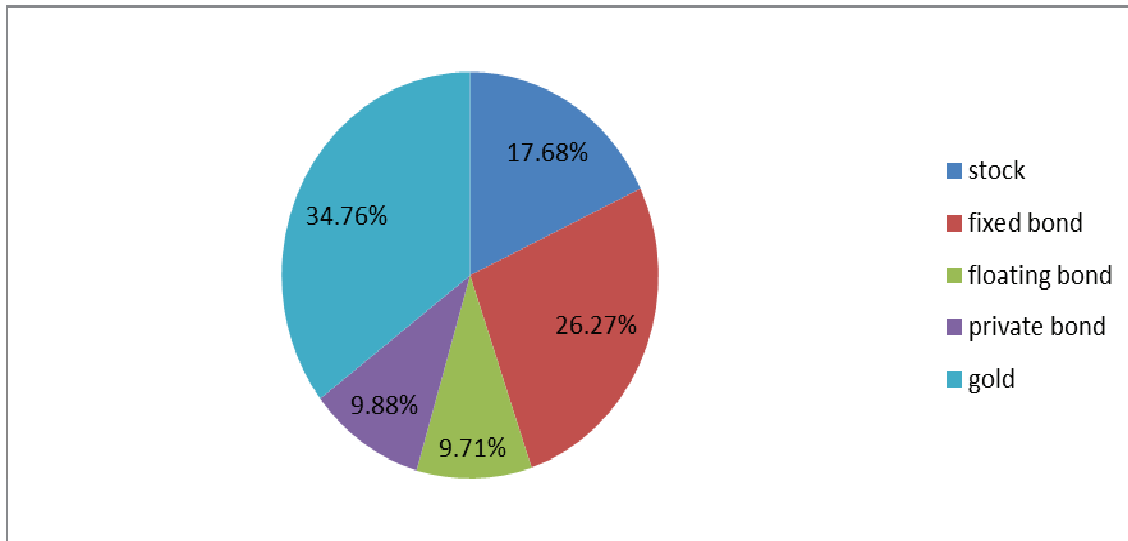
Figure 1. Portfolio preferences for 2012.

As shown in Figure 1, 17% of the aggregate portfolio was invested in stocks, 26% in fixed-income goverment bonds, and 12% in CPI indexed goverment bond 10%, in private sector bonds and %35 in gold. Our next work is to investigate that this portfolio allocation by an investor based on rationally.

Empirical Evidence

Stock Related Decisions

The first four questions in section 2 were designed to measure knowledge of students about the major stock index in the Turkey capital market, ISE-100. The Istanbul Stock Exchange National 100 Index (ISE-100) is a capitalization-weighted index composed of National Market companies except investment trusts. Table 1 illustrates the errors made by the students in their answers, presented as a percentage of their deviation from the correct numbers. As seen from the table while students remember the latest data, but they have not enough knowledge about historical data related their portfolio allocation decisions.

Table 1. Percentage of Mistakes Made by Students in Their Responses to Questions 1–4.

Questions	Mean	Standart deviation	Max	Min
1. The current value of ISE-100 index is	-7.35%	16.70%	85.79%	0.52%
2.The ISE-100 index annual return in 2011 was	-100.86%	0.71%	102.97%	100.12%
3. The average annual return of ISE-100 Index over the years 2008–2011 was	-99.50%	0.42%	99.94%	98.03%
4. The current return of ISE-100 index differs from the index's historical high by	1023.97%	1259.12%	4515.38%	13.85%

Note. The max, min calculations are in absolute numbers.

Our next task is to investigate whether the stock related decision based up on rationally. We expect that rational investor who wants to invest in stocks while make a portfolio allocation to be benefit from past knowledge and future expectations. Equation[1] 1 describes the results:

$$\text{Stock} = \quad 79248.77 \quad + 0.51(\text{Expectation}) \quad -84269.82(\text{know}) \quad (1)$$
$$R^2 = 0.58 \quad (10757.43) \quad (0.07) \quad (15694.29)$$

Paranthesis show standart errors of parametres. In the regression, independent variable stocks means the answer series of students to question fourth in section 2 of survey. Expectation is the answer series of students to first question in second section of survey. Know means the series in absolute number of the average percentage of mistakes in questions 1 and 2 in table 1. We found a positive and significant relationship between the willingness to invest in stocks and the investors' expectations. However relationship between past knowledge and the willingness to invest is significant and negative. This is an unexpected situation in the context of rationally.

Bond Decisions

There is a trade off between interest rates and bond price. Also both expected inflation and realized inflation used in bond valuation as a discounted rate. Questions 5 through 11 of the second section in survey were designed to measure students' knowledge about the Turkish bond market. Table 2 shows the errors made by the students in their answers, presented as a percentage of their deviation from the correct numbers.

Table 2. Percentage of Mistakes Made by Students in Their Responses to Questions 5–11.

Questions	mean	Standart deviation	max	min
5. The benchmark bond's annual return in 2011:	9.50%	74.14%	261.34%	0.63%
6. The current yield of CPI indexed goverment bond:	488.44%	458.64%	2744.44%	11.11%
7. The current yield of fixed income goverment bond:	106.36%	148.78%	650.00%	0.00%
8. The inflation rate in Turkey since the beginning of 2012:	77.40%	148.22%	715.60%	6.38%
9. The inflation rate annually in Turkey in 2011:	-11.04%	51.06%	282.78%	2.20%
10. The average annual inflation rate in Turkey over the years 2009–2011:	11.06%	42.37%	156.74%	2.70%
11. The current interest rate of central bank of Turkey	38.82%	79.71%	491.30%	4.35%

Note. The max, min calculations are in absolute numbers.

As seen from table 2, students were familiar with the current and past inflation data but have no idea about bond yields, especially those related CPI indexed goverment bond. Our next task is

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[1] Since students' average of investments frequency in the capital market is 1.28. we ignore the experiences as a independent variable or dummy variable.For detail of equation please look at Cohen and Kudryavtsev (2012).

to investigate whether the bond related decision based up on ratioanally.We expect that their bond allocation depends on inflation and expectitation of interest rates. Results are summarized in the following equations:

$$\text{FX Bond} = \underset{(0.04)}{0.26} + \underset{(0.04)}{0.07(\text{int})} + \underset{(0.06)}{0.04(\text{know})} \quad (2)$$
$$R^2 = 0.04$$

$$\text{CPI Bond} = \underset{(0.02)}{0.09} + \underset{(0.02)}{0.02(\text{int})} + \underset{(0.03)}{0.03(\text{know})} \quad (3)$$
$$R^2 = 0.03$$

$$\text{PR Bond} = \underset{(0.02)}{0.09} \quad \underset{(0.02)}{-0.002(\text{int})} + \underset{(0.02)}{0.02(\text{know})} \quad (4)$$
$$R^2 = 0.01$$

- FX Bond:fixed rate bond ratio in portfolio allocation
- CPI Bond: consumer price index linked ratio in porfolio allocation
- PR Bond: private sector linked bond ratio in portfolio allocation
- Int:expectitation of change in interest rate
- Know: past knowledge of inflation

As seen from the equations all parametres are insignificant except from constant term. Consequently students don't take inflation and interest rates into consideration.

Gold Related Decisions

Gold is percieved both investment and saving tool as an financial insturement in Turkey. We used 12., 13. and 14. questions in second section of survey to measure the rationally of investment in gold.

Table 3. Percentage of Mistakes Made by Students in Their Responses to Questions 12–14.

Questions	mean	Standart deviation	max	min
12. The quarter gold coin's annual return in 2011	-44.19%	38.67%	96.59%	2.27%
13 The current price of quarter gold coin:	-4.65%	16.25%	75.90%	0.00%
14. The average annual return of quarter gold coin in Turkey over the years 2009–2011:	-21.52%	50.26%	191.21%	0.99%

Note. The max, min calculations are in absolute numbers.

Table 3 demonstrates that students remember the current value of gold but have no ideo about its past value. Results are presented in Equation 5.

$$\text{Gold} = 0.39 - 0.16(\text{today}) - 0.11(\text{know}) \quad (5) \quad R^2 = 0.01$$

$$(0.09) \quad (0.25) \quad (0.17)$$

- Gold: gold ratio in portfolio allocation

- Today:current value of gold.
- Know:past value of gold

Loan-Related Decisions

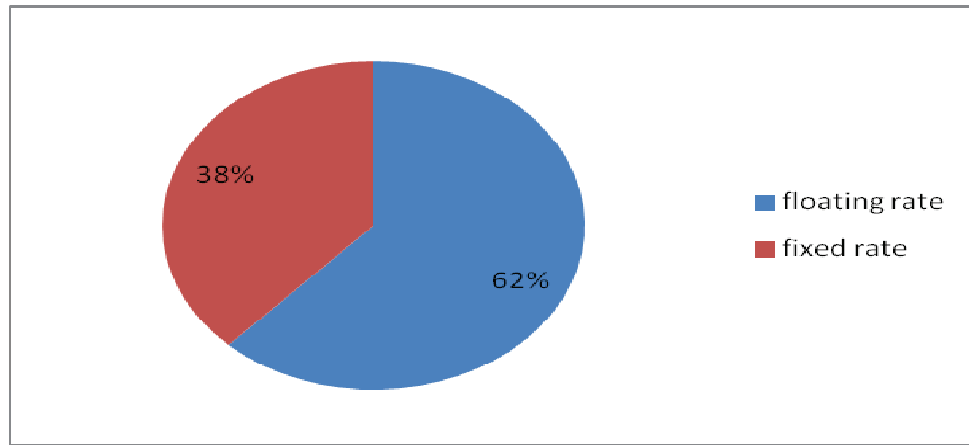Figure 2 demonstrates the loan preferences of our sample investors.

FIGURE 2 Loan preferences for 2012

As noted in Figure 2, while 38% of our sample preferred to take out a loan at fixed rate; 62% preferred to take loan at floating rate. Borrowing decision depends on expectations about inflation and interest rates. Results are presented in Equation 6 and 7.

$$
\begin{array}{lllll}
\text{Fixed rate=} & 0.58 & + 0.05(\text{int}) & + 0.56(\text{inf}) & (6) \\
R^2=0.01 & (0.08) & (0.05) & (0.78) &
\end{array}
$$

$$
\begin{array}{lllll}
\text{Floating rate=} & 0.42 & - 0.05(\text{int}) & - 0.56(\text{inf}) & (7) \\
R^2=0.01 & (0.08) & (0.05) & (0.78) &
\end{array}
$$

- Fixed rate: series of fixed rate in loan decision
- Floating rate: series of floating rate in loan decision
- Int: expectitation of change in interest rate
- Know: past knowledge of inflation 2011

As seen from the equations all parametres are insignificant except from constant term. Consequently students don't take inflation and interest rates into consideration while borrowing choice.

Conclusion

This study is an application of adopted questionnaires developed by Cohen and Kudryavtsev (2012) in Turkey as a emerging market. Questionnaires are designed to test the degree of rationality exhibited by students when they construct an portfolio or make decisions about loans. The results show that there is a positive and significant relationship between expectations about future stock invesment and increasing trend holding stock in portfolio.With respect to bond, gold and loan decision there is no significant relationship between related past financial data and

future expectitations.Lastly, students haven't monitored the economic data and enough knowledge about financial instruments traded at capital markets in Turkey.

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Appendix

The Research Questionnaire

Thank you for taking part in the experiment! Please, don't consult your colleagues while answering thequestions. The questionnaire is anonymous and is intended for research purposes only. Please fill in your basic personal details:

1. Sex:

- Male
- Female

2. Age :

3. Previous education:

- B.A. in:
- M.Sc. in:

4. Field of activity :

5. I make investments in the capital market (using eithermy own or other investors' capital):

- Never
- Rarely
- Occasionally
- Often
- All the time

Part I: Please fill in the missing numbers, according to your best estimation.

18. 1)The current value of the ISE-100 Index is.................... points.

19. 2)The ISE-100 Index's annual return in 2011 was……………%

20. 3) The average annual return of the ISE-100 Index over the years 2009–2011 was………..%

21. 4) The current value of the TA25 Index differs from the index's historical high by……%

22. 5) The benchmark bond's annual return in 2011 was…………%

23. 6) The current yield of CPI indexed goverment bond is equal to…………..%

24. 7) The current yield of fixed income goverment bond is equal to…………..%

25. 8) The inflation rate in Turkey from the beginning of this year is equal to…………..%

26. 9) The inflation rate in Turkey in 2011 was……..%

27. 10) The average annual inflation rate in Turkey over the years 2009–2011 was………..%

28. 11) The current interest rate of the Central Bank of Turkey is equal to….%

29. 12) The quarter gold coin's annual return in 2011 is equal to….%

30. 13) The current price of quarter gold coin is equal to….TL

31. 14) The average annual return of quarter gol coin in Turkey over the years 2009–2011 was……%

Part II: Please answer the questions, according to your forecasts or best estimations.

32. 1) I expect that the value of the ISE-100 Index at the end of 2010 will be……points

33. 2) I expect that the interest rate of the Central Bank of Turkey at the end of 2012 will be equal to……..%

34. 3) If I needed to take out a loan today, I would divide it into the following proportions:

35. Fixed rate loan:………..%

36. Floating rate loan:……..%

37. 4) For the rest of this year I would divide my stock market investments between different kinds of securities in the following proportions:

38. Stocks…….%

39. Fixed-income goverment bonds……..%

40. CPI indexed goverment bond………..%

41. Private sector bonds……..%

42. Gold:………..%